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Public Exhibition - EPBC 2023/09648



Torrens Title 8-Lot Industrial Subdivision, Wyong, NSW

Prepared for: Red Eye Constructions Pty Ltd

Document list

1. 2023 - 09648 Referral
2. Att A - BDAR_460 Pacific Highway_Wyong_redacted
3. Att B - SWMP_ 460 Pacific Highway, Wyong
4. Att C - Environmental Management Plan
5. Att D - Red Eye Trust Deed
6. 2023/09648 Notification of referral decision and designated proponent – controlled action. Preliminary documentation (2 February 2024)
7. Ecoplanning 2024 - Preliminary Documentation for EPBC2023-09648_v1.1_20240729_redacted
8. -Appendix A - Ecoplanning 2023_EPBCAct_referral_redacted
9. -Appendix B - 2023-09648 - PD RFI_redacted
10. -Appendix C - PD checklists_redacted
11. -Appendix D - Ecoplanning_2024_Translocation plan_NorthWyong_v3.0_20240620_redacted
12. -Appendix E - HES_Biodiversity_Development_Assessment_Report_redacted
13. -Appendix F - Redeye Environmental Management Plan

Torrens Title 8-Lot Industrial Subdivision

Application Number: **01943**

Commencement Date:
27/07/2023

Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Torrens Title 8-Lot Industrial Subdivision

1.1.2 Project industry type *

Commercial Development

1.1.3 Project industry sub-type

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1.1.4 Estimated start date *

01/12/2023

1.1.4 Estimated end date *

01/12/2025

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

The proposed action involves a one (1) into eight (8) lot Torrens Title subdivision. The purpose of the subdivision would be to allow for future industrial land uses consistent with the zoning of the land under the Central Coast Local Environment Plan 2022.

The specific actions subject to this referral would include:

- One (1) into eight (8) lot subdivision.

- Construction of 10m wide Brussels Road extension along the western boundary of the site.
- Orchid relocation.
- An interim internal road during orchid relocation process.
- Construction of an internal access road including cul-de-sac, as an extension of the future Donaldson Road to the west.
- Extension of culvert crossing underneath the Pacific Highway.
- Installation of electrical and hydraulic services.
- Earthworks associated with the proposal.
- Tree removal.
- Stormwater Management works.

The proposed action would involve clearing of approximately 0.49 ha of native vegetation and 4.20 ha of exotic grassland within the approximately 4.7 ha study area. A detailed description of vegetation within the study area is provided within Attachment A, Section 3.2, page 21.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

Yes

1.2.5 Provide information about the staged development (or relevant larger project).

The action represents the first stage (subdivision and site preparation works) before subsequent industrial land uses within the newly created lots. The subsequent developments within each of the lots (stage 2 of the development) would be subject to separate environmental assessments under NSW and Commonwealth legislation.

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The legislative context of the action is summarised in Attachment A, section 1.6, page 11-16. This includes the following acts and policies:

- NSW Biodiversity Conservation Act 2016 (BC Act)
- NSW Biodiversity Conservation Regulation 2017 (BC Regulation)
- NSW Biosecurity Act 2015
- NSW Coastal Management Act 2016
- NSW Environmental Planning and Assessment Act 1979 (EP&A Act)
- NSW Local Land Services Act 2013 (LLS Act)
- NSW Water Management Act 2000 (WM Act)
- NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021
- NSW State Environmental Planning Policy (Resilience and Hazards) 2021
- Central Coast Environmental Plan (LEP) 2022
- Central Coast Development Control Plan (DCP) 2022.
- Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Entry into the Biodiversity Offset Scheme, established under Part 6 of the NSW Biodiversity Conservation Act 2016 (BC Act), is triggered for the action by the potential for significant impacts to a species which is listed under the BC Act. Consequently, a Biodiversity Development Assessment Report (Attachment A - BDAR) has been prepared.

Species which require control prior to and post construction of the Project to ensure they are not spread due to construction and clearing works, in accordance with the NSW Biosecurity Act 2015, are identified within Attachment A, Table 18, page 67.

No water courses are mapped within the Study Area. The proposed development does not constitute a 'controlled activity' as per the NSW Water Management Act. Therefore Approval from the Natural Resources Access Regulator (NRAR) is not required.

The Study Area is located within the Central Coast LGA, which is listed within Schedule 1 of Chapter 4 of the Biodiversity and Conservation SEPP (Koala Habitat Protection 2021). Chapter 4 of the Biodiversity and Conservation SEPP was therefore deemed applicable to the action. As such, an assessment of Koala habitat suitability was conducted in accordance with the SEPP including the determination of 'Highly Suitable Koala Habitat' and 'Core Koala Habitat' within the Study Area. Koala use tree species listed under Schedule 3 of the SEPP (Central Coast Koala Management Area) were identified within the Study Area, including *Eucalyptus robusta* (Swamp Mahogany). This species constitutes more than 15% of the total number of trees within the regenerating areas of the site (Vegetation Zone 2 – PCT 1718). As such, this vegetation zones represents "highly suitable habitat" under the SEPP. No evidence of a Koala population within the Study Area was found during the assessment. The nearest record of Koalas to the site was recorded to the west at Watanobbi in 1994. No records of Koalas within the past 18 years occur within 2.5 km of the Study Area. Therefore, the habitats within the Study Area do not meet the definition of 'Core Koala Habitat' under the SEPP.

The Study Area does not contain or adjoin Wetland Protection Area; therefore, Part 10.6 of the NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021 does not apply.

The aim of Chapter 2 (Coastal Management) of the State Environmental Planning Policy (Resilience and Hazards) 2021 is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the NSW Coastal Management Act 2016, including the management objectives for each coastal management area. The Study Area does not contain areas mapped as any of the four coastal management areas. The Coastal Management Act does not apply to this proposed development.

Under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), approval is required for actions that are likely to have a significant impact on matter of national environmental significance including threatened species. As the proposed action has potential to impact upon a threatened species listed under the EPBC Act, this referral has been prepared.

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Once the presence of a threatened species within the study area was identified, the applicant worked with the NSW Department of Planning, Industry and Environment (now NSW Department of Planning and Environment, DPE) for conservation efforts. The applicant enabled officers from the Departments Save Our Species team to access the site to undertake conservation works.

Since the conservation works during late 2020, the proponent has had several meetings with Council and DPE in relation to the conservation of the species and development constraints at the site. The meetings occurred on:

- 5th August 2021
- 23rd September 2021
- 12th October 2022
- 15th December 2022

Subsequent meetings have also been held with Council and the proponent ecologists and DPE. Throughout this period discussions have occurred in relation to the best conservation outcomes. Throughout this process Council and DPE have been engaged and involved in assisting the proponent, viewing options to understand the best pathway to develop the site in a manner that would reduce the potential for adverse impacts. During the consultation, it was agreed that a staged translocation program to a recipient site was likely to have the best conservation outcome.

1.3.1 Identity: Referring party

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Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

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Confirm that you have read and understand this Privacy Notice *

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details	
ABN/ACN	48602713691
Organisation name	ECOPLANNING PTY. LTD.
Organisation address	2516 NSW
Referring party details	
Name	Brian Towle
Job title	Senior Ecologist
Phone	0477 888 251
Email	brian.towle@ecoplanning.com.au
Address	428 Princes Highway, Woonona NSW 2517

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Person proposing to take the action organisation details

ABN/ACN 116100657
Organisation name Red Eye Constructions Pty Ltd
Organisation address Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Person proposing to take the action details

Name Brad Ridge
Job title Director
Phone 02 4389 8933
Email brad.ridge@redeyeconstructions.com.au
Address Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

Yes

1.3.2.16 Describe the nature of the trust arrangement in relation to the proposed action. *

The trust arrangements are detailed within the attached Trust Deed (Attachment D - Red Eye Trust Deed)

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Red Eye Constructions Pty Ltd. has a satisfactory record of responsible environment management. There have been no proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against Red Eye Constructions Pty Ltd. Red Eye Constructions Pty Ltd has not been responsible for undertaking any action previously referred under the EPBC Act.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Red Eye Constructions Pty Ltd has prepared and operates in accordance with its Environmental Management Plan (Attachment C - Environmental Management Plan).

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN 116100657

Organisation name Red Eye Constructions Pty Ltd

Organisation address Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Proposed designated proponent details

Name Brad Ridge

Job title Director

Phone 02 4389 8933

Email brad.ridge@redeyeconstructions.com.au

Address Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN 48602713691

Organisation name ECOPLANNING PTY. LTD.

Organisation address 2516 NSW

Representative's name Brian Towle

Representative's job title Senior Ecologist

Phone 0477 888 251

Email brian.towle@ecoplanning.com.au

Address 428 Princes Highway, Woonona NSW 2517

✔ Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	116100657
Organisation name	Red Eye Constructions Pty Ltd
Organisation address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261
Representative's name	Brad Ridge
Representative's job title	Director
Phone	02 4389 8933
Email	brad.ridge@redeyeconstructions.com.au
Address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

✔ Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

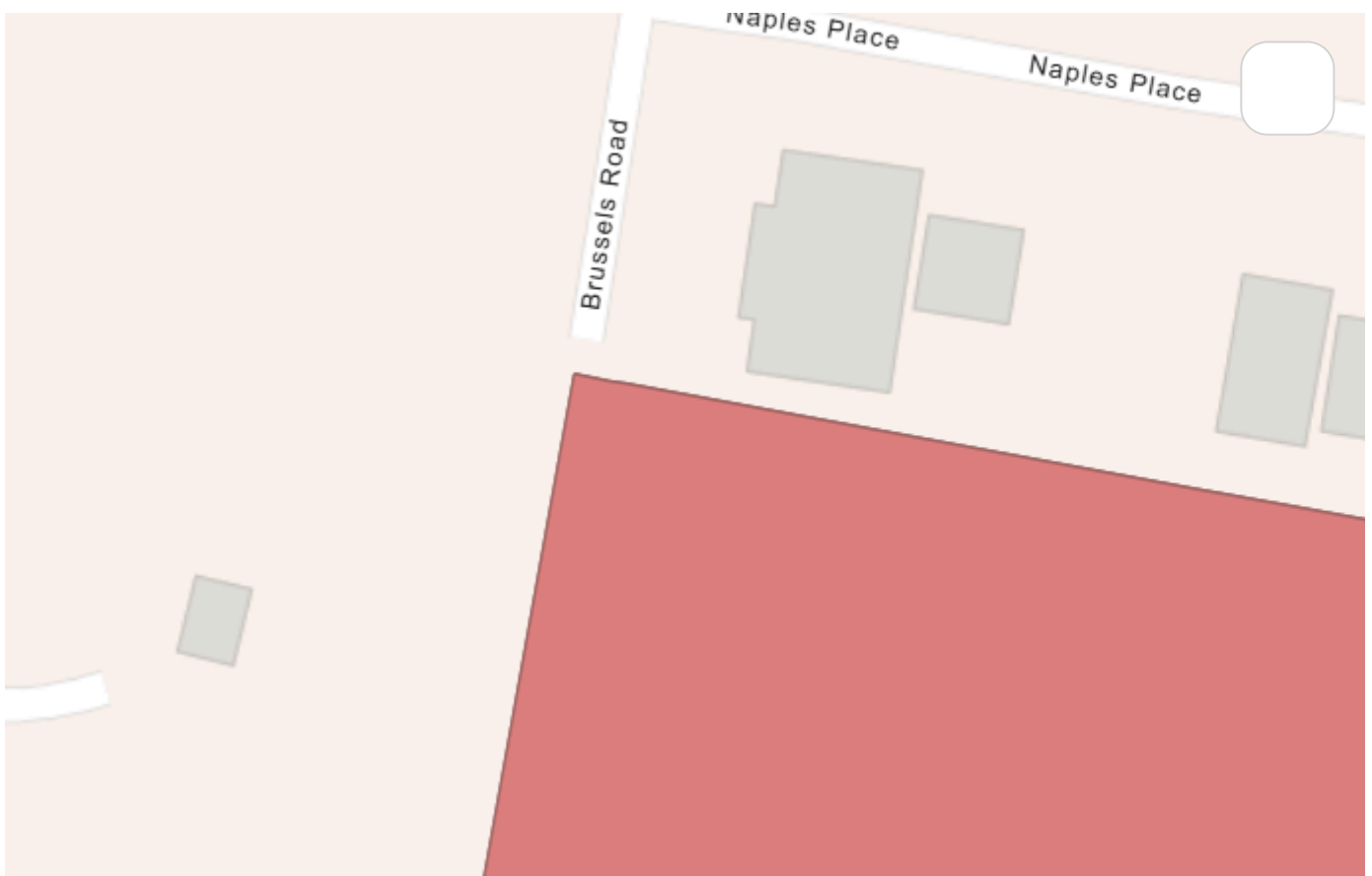
1.4 Payment details: Payment allocation

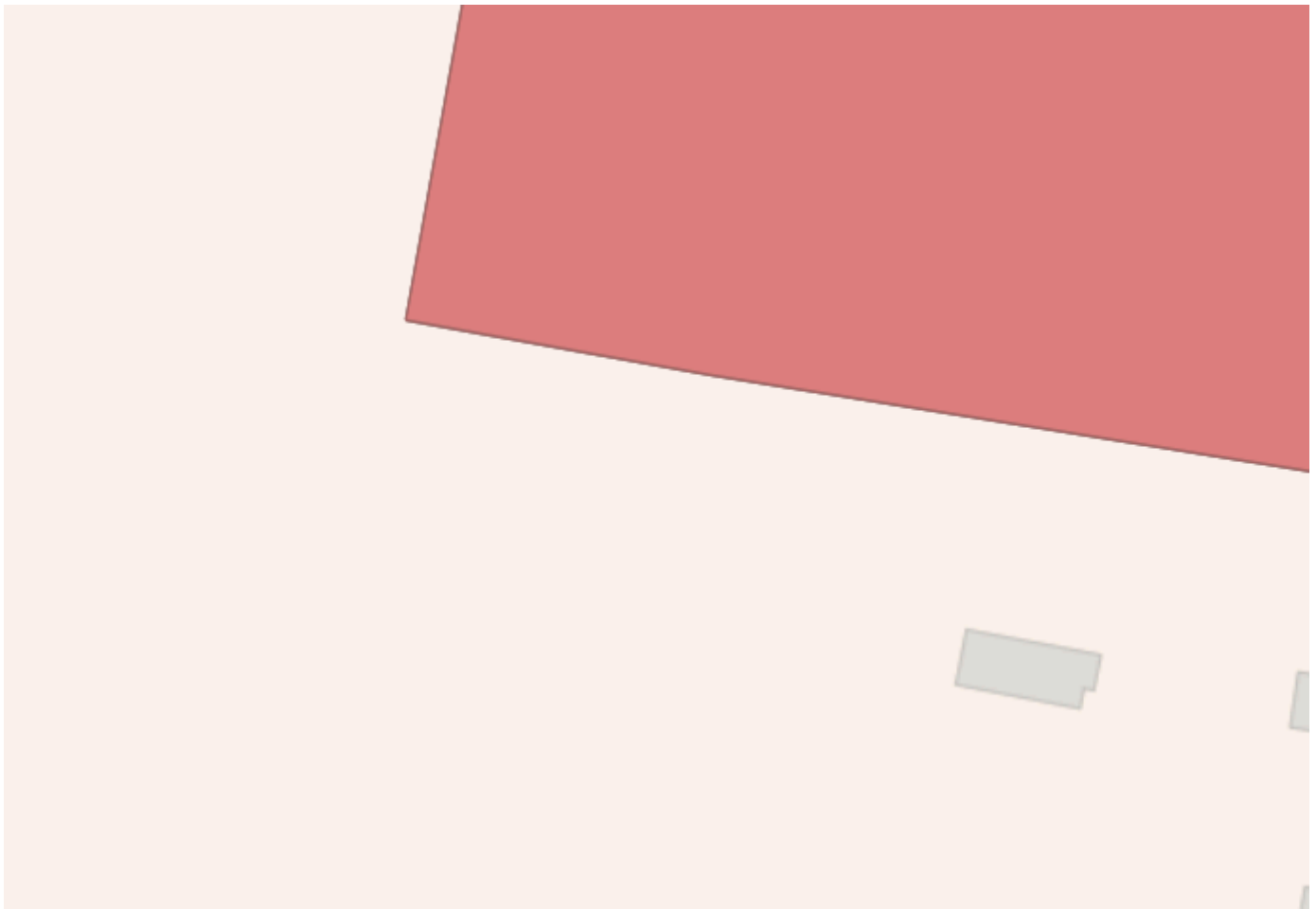
1.4.11 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint





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2.2 Footprint details

2.2.1 What is the address of the proposed action? *

460 Pacific Highway, Wyong

2.2.2 Where is the primary jurisdiction of the proposed action? *

New South Wales

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The entire action is located on Lot 1212 // DP 818944 which is Freehold.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The project area has been subjected to historical disturbance such as vegetation clearing and earthworks. No key habitat features such as hollow-bearing trees, large water bodies or dense vegetation containing a complex structure occur within the site. Across the approximately 4.72 ha site, areas cleared of native vegetation occur across approximately 4.20 ha. Native vegetation was limited to approximately 0.33 ha of regenerating vegetation or isolated trees. Additionally, aquatic native species have colonised a constructed drainage channels and low-lying areas containing pooling water accounting for approximately 0.17 ha of the site.

The project area is located within the town of Wyong.

3.1.2 Describe any existing or proposed uses for the project area.

There are no ongoing current uses of the site. Most of the site has been historically cleared and there are several stockpiles of soil, gravel and large rocks (sandstone) located in the north-west of the site. A constructed channel runs along the western boundary which is connected to a perpendicular constructed channel which traverses the centre of the site (east to west).

Future uses of the site would be for light industrial purposes consistent with the zoning of the site under the Central Coast Local Environment Plan 2022.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

There are no natural features and/or any other important or unique values relevant to the project area. The site has been historically cleared and landforms have been modified, including from stockpiling soil, gravel and large rocks (sandstone) and construction of an east west channel through the centre of the site.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The site is relatively flat ranging in elevation from approximately 14m above sea level in the south-east corner to approximately 8m above sea level in the north-west corner of the site.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Detailed assessment of the flora and fauna within the project area have been completed within Attachment A, section 4, page 32-43. A total of 91 flora species were identified during field surveys, 60 of these species are exotic species, of which 14 are considered 'High Threat Exotics' and three are listed Priority Weeds for the Central Coast LGA. A list of the flora species identified within the Study Area is provided in Attachment A, Appendix B, page 93-95. Exotic Grassland is the dominant vegetation type within the Study Area.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Vegetation is described in detail within Attachment A, chapter 3, page 21-31. Exotic Grassland is the dominant vegetation type within the project area. This vegetation occupies approximately 4.20 ha of the site and is dominated by exotic perennial grasses such as *Paspalum urvillei* (Kikuyu), *Paspalum dilatatum* (Paspalum) and *Cenchrus clandestinus* (Kikuyu). Several exotic herbs also occur including *Senecio madagascariensis* (Fireweed), *Hydrocotyle bonariensis* (Pennywort) *Trifolium repens* (White Clover) and *Medicago polymorpha* (Burr Medic).

The landscape of the site is described as containing texture-contrast soils on lithic sandstones and shales, loamy sand alluvium along creeks, and organic sand and mud in lagoons and swamps. However, within the site historic land use activities have disturbed the soil profile across the site including importation of fill across the site and a mosaic of clays, gravels and sandy loams were observed throughout the site.

Two native Plant Community Types (PCTs) were identified within the site, namely:

- PCT 1718: Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast: 0.33 ha total (0.28 ha area of regenerating forest in the western portion of the Study Area and 0.05 ha of isolated trees near the eastern boundaries).
- PCT 1737: Typha Rushland (0.17 ha area of aquatic emergent vegetation was identified within the constructed drainage channel and low-lying areas of the site).

PCT 1718 within the site is characterised by a canopy of regenerating Swamp Mahogany (*Eucalyptus robusta*) and occurs in fragmented and isolated patches of regenerating vegetation within the site; however, an intact canopy, shrub and groundcover is present. A large number of exotic plant species occur, including several High Threat Weeds. The PCT 1737 within the project area is restricted to constructed drainage channels and low-lying areas containing pooling water. A large number of exotic plant species occur, including several High Threat Weeds.

Vegetation identified as PCT 1718 is equivalent to the 'Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland' endangered ecological community. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification under the EPBC listing as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the site is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2

ha, and is part of a larger area of native vegetation of at least 5 ha.

- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the vegetation is commensurate with the EEC and is classified as Class C2: A small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

There are no Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the site. Additionally, the site is not identified as a heritage item or being within a heritage conservation area as per the Central Coast LEP 2022.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

The site is located on Darkinjung Country. No specific heritage values relevant to this region have been identified within the site.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

Hydrology of the site is detailed within the Stormwater management report (Attachment B - Stormwater Management Plan).

Review of Central Coast Council's online flood mapping system indicates that the subject site is impacted by flooding. However, landform modification associated with development to the west of the site would significantly alter the flow of floodwaters to what is indicated by the online flood mapping system. The flooding shown on the online mapping system would no longer be valid due to the extreme topography changes that have occurred since the time of the study. It can be observed that the extent of flooding shown is likely a result of the conveyance of the upstream runoff through the site, which has been assessed in detail as outlined in Attachment B, section 4.2, page 3. It demonstrates that adequate conveyance of the 1% Annual Exceedance Probability is provided by the proposed drainage infrastructure, with provision for overland surface flow to be conveyed with the road reserve.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes

EPBC Act section	Controlling provision	Impacted	Reviewed
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no world heritage areas in proximity to the site. The action would not involve any direct or indirect impacts to any world heritage areas.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no national heritage places in proximity to the site. The action would not directly or indirectly impact any national heritage places.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The site is located approximately 50 km away from, and in a separate catchment area, to the nearest RAMSAR Wetland, being the Hunter Estuary Wetlands. The proposed action would not directly or indirectly impact this or any other RAMSAR Wetland.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species	Common name
No	No	<i>Acacia bynoeana</i>	Bynoe's Wattle, Tiny Wattle
No	No	<i>Angophora inopina</i>	Charmhaven Apple
No	No	<i>Anthochaera phrygia</i>	Regent Honeyeater
No	No	<i>Botaurus poiciloptilus</i>	Australasian Bittern
No	No	<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid, Daddy Long-legs
No	No	<i>Calidris canutus</i>	Red Knot, Knot
No	No	<i>Calidris ferruginea</i>	Curlew Sandpiper
No	No	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo
No	No	<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo
No	No	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat
No	No	<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover
No	No	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)
No	No	<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid
No	No	<i>Cynanchum elegans</i>	White-flowered Wax Plant

Direct impact	Indirect impact	Species	Common name
No	No	<i>Dasyurus maculatus maculatus</i> (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)
No	No	<i>Diuris praecox</i>	Newcastle Doubletail
No	No	<i>Erythrotriorchis radiatus</i>	Red Goshawk
No	No	<i>Eucalyptus camfieldii</i>	Camfield's Stringybark
No	No	<i>Euphrasia arguta</i>	
No	No	<i>Falco hypoleucos</i>	Grey Falcon
No	No	<i>Grantiella picta</i>	Painted Honeyeater
No	No	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea
No	No	<i>Hirundapus caudacutus</i>	White-throated Needletail
Yes	Yes	<i>Lathamus discolor</i>	Swift Parrot
No	No	<i>Litoria aurea</i>	Green and Golden Bell Frog
No	No	<i>Melaleuca biconvexa</i>	Biconvex Paperbark
No	No	<i>Melanodryas cucullata cucullata</i>	South-eastern Hooded Robin, Hooded Robin (south-eastern)
No	No	<i>Mixophyes balbus</i>	Stuttering Frog, Southern Barred Frog (in Victoria)
No	No	<i>Neophema chrysostoma</i>	Blue-winged Parrot
No	No	<i>Notamacropus parma</i>	Parma Wallaby
No	No	<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew
No	No	<i>Persicaria elatior</i>	Knotweed, Tall Knotweed
No	No	<i>Petauroides volans</i>	Greater Glider (southern and central)
No	No	<i>Petaurus australis australis</i>	Yellow-bellied Glider (south-eastern)
No	No	<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)
No	No	<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (northern)
No	No	<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila
No	No	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox

Direct impact	Indirect impact	Species	Common name
No	No	<i>Pycnoptilus floccosus</i>	Pilotbird
No	No	<i>Rhizanthella slateri</i>	Eastern Underground Orchid
No	No	<i>Rhodamnia rubescens</i>	Scrub Turpentine, Brown Malletwood
No	No	<i>Rhodomyrtus psidioides</i>	Native Guava
No	No	<i>Rostratula australis</i>	Australian Painted Snipe
No	No	<i>Rutidosis heterogama</i>	Heath Wrinklewort
No	No	<i>Stagonopleura guttata</i>	Diamond Firetail
No	No	<i>Sternula nereis nereis</i>	Australian Fairy Tern
No	No	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry
No	No	<i>Tetradlea juncea</i>	Black-eyed Susan
Yes	Yes	<i>Thelymitra adorata</i>	Wyong Sun Orchid
No	No	<i>Thesium australe</i>	Austral Toadflax, Toadflax

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community
Yes	No	Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland
No	No	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The proposed action would involve the loss of all habitat for a threatened species within the project area. However, it is noted that this habitat is heavily modified and does not currently support any identifiable native vegetation communities. This habitat is characterised further in the Biodiversity Development Assessment Report (BDAR) prepared for the project, Attachment A, section 4, page 32-43 and Attachment A, Table 13, page 53.

The proposed action would involve direct removal of 0.33 ha of regenerating vegetation which meets the definition of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.

A portion of the 0.33 ha of native vegetation which forms part of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community (approx. 0.15 ha) is identified as 'important habitat' for the Swift Parrot (*Lathamus discolor*) under the NSW Biodiversity Assessment Method. Important habitat maps prepared under the BAM identify areas that are considered essential to support critical life stages of the species, in this case foraging habitat. Therefore, the removal of 0.15 ha of this 'important habitat' has potential to directly impact the Swift Parrot.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact?

*

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

The proposed impacts to a threatened species include loss of all habitat and translocation as per the translocation plan, Attachment A, Appendix G, page 138. However, as detailed in Section 1.7 of the translocation plan (Attachment A, Appendix G, page 152) the risk associated with the action (including translocation) are considered less than the current risks to the species which would remain unaddressed in the absence of the project. Specifically, the prospects of long-term survival of the threatened species within the project area is very low due to the high degree of habitat modification which has occurred from historic disturbances including:

- An altered hydrological regime resulting from modified landforms across the project area. Stockpiling of soil has occurred across much of the project area, including where a threatened species has been recorded. The result of this landform modification includes prolonged ponding of water after rainfall. Additionally, soil stockpiles may face water stress due to more rapid drying out of soils compared to natural conditions.
- Competition from exotic species. Details of the extent and diversity of exotic species across the source site are detailed within Attachment A, Appendix B, page 91. A large number of exotic species are present within the source site including species identified as representing a specific risk to threatened species.
- The presence and persistence of necessary biotic interactions within the source site is questionable.

The proposed action would involve direct removal of 0.33 ha of regenerating vegetation which meets the definition of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. Therefore, an assessment of significance in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) was completed for the ecological community (see Appendix F of Attachment A).

This assessment concluded that although the extent of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community within the project area will be removed as

part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

A portion of the 0.33 ha of native vegetation which forms part of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community (approx. 0.15 ha) is identified as 'important habitat' for the Swift Parrot (*Lathamus discolor*) under the NSW Biodiversity Assessment Method. Important habitat maps identify areas that are considered essential to support critical life stages of the species, in this case foraging habitat. Therefore, an assessment of significance in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) was completed for the Swift Parrot (see Appendix F of Attachment A). This assessment concluded that the vegetation within the project area is highly degraded and contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that the habitat to be removed is important to the long-term survival of the Swift Parrot.

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action.

*

The proposed action would involve the permanent loss of all habitat for a threatened species within the project area. For reasons stated above and included within Attachment A, Appendix G, section 1.7, page 152, the project is considered unlikely to have a significant impact as the proposed action represents less risk to the threatened species within the project area than the existing risks to this population. Therefore, the project is also considered unlikely to be a controlled action.

The project would represent the permanent loss of a small area (approx. 0.33 ha) of native vegetation comprising the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. A smaller proportion of this habitat (0.15) has been mapped as important foraging habitat for the Swift Parrot. However, due to the very small area of these impacts and the very highly degraded condition of the impacted habitat, these impacts are unlikely to be significant to either the threatened ecological community or Swift Parrot and therefore the proposed action is not considered to be a controlled action.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The project area has been chosen for the proposed development based upon the limited extent of native vegetation and the zoning of the land (which takes into account the perceived environmental values of the land). All areas of native vegetation within the project area are proposed to be removed. However, this is limited to a very small area of native vegetation. Due to the limited extent of native vegetation within the project area, its poor condition and lack of key habitat features such as hollow-bearing trees or habitat logs, further avoidance of native vegetation (other than choosing a project area with very limited cover of native vegetation) has not been proposed.

The proposed translocation of a threatened species within the project area in accordance with Attachment A , Appendix G, page 139 represents a mitigation action which aims to avoid and mitigate impacts to this species associated with the project.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

Impacts to biodiversity associated with the proposed action are to be offset in accordance with the Biodiversity Offset Strategy established under Part 6 of the NSW *Biodiversity Conservation Act 2016*. Details of these offsets are included within Attachment A, section 6.3, page 61 and Attachment A, Section 6.4, page 61 and would include retirement of biodiversity credits for a threatened species, Swift Parrot and vegetation equivalent to the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species	Common name
No	No	<i>Actitis hypoleucos</i>	Common Sandpiper
No	No	<i>Apus pacificus</i>	Fork-tailed Swift
No	No	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper
No	No	<i>Calidris canutus</i>	Red Knot, Knot
No	No	<i>Calidris ferruginea</i>	Curlew Sandpiper
No	No	<i>Calidris melanotos</i>	Pectoral Sandpiper
No	No	<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover
No	No	<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo
No	No	<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe
No	No	<i>Hirundapus caudacutus</i>	White-throated Needletail

Direct impact	Indirect impact	Species	Common name
No	No	Monarcha melanopsis	Black-faced Monarch
No	No	Motacilla flava	Yellow Wagtail
No	No	Myiagra cyanoleuca	Satin Flycatcher
No	No	Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew
No	No	Rhipidura rufifrons	Rufous Fantail
No	No	Symposiachrus trivirgatus	Spectacled Monarch
No	No	Tringa nebularia	Common Greenshank, Greenshank

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.5.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project is unlikely to have any direct or indirect impacts on listed migratory species as the project area has undergone substantial historic modification and disturbance such that it does not represent suitable habitat for any migratory species. Therefore, the project would not reduce or fragment any available habitat for migratory species and would not cause a decrease in, or threaten the viability of, any populations of these species. Similarly, the project would not displace or substantially limit the movement or dispersal of any migratory species.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The proposed action is not a nuclear action, nor would it interact with any nuclear actions.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The proposed action would not impact any commonwealth marine areas, directly or indirectly.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project would be confined to a small area in NSW and would not involve any impacts to waterways or habitats connected to the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project does not involve any coal mining or coal seam gas extraction and would not impact any water resources associated with these activities.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project would not involve any direct or indirect impacts to commonwealth land.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project would not involve any direct or indirect impacts to any commonwealth heritage places overseas.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

In the context of the project, the only alternatives would involve either not undertaking the action, or undertaking the action in a way which would avoid impacts to threatened species. However, these alternatives are unlikely to improve the long-term survival prospects for threatened species within the project area. As detailed within Attachment A, Appendix G, section 1.7, page 152, the prospects of long-term survival of the threatened species within the project area is very low due to the high degree of habitat modification which has occurred from historic disturbances. Specifically, current threats to threatened species within the project area include:

- An altered hydrological regime resulting from modified landforms across the source site. Stockpiling of soil has occurred across much of the source site, including where threatened species have been recorded. The result of this landform modification includes prolonged ponding of water after rainfall.
- Competition from exotic species. Details of the extent and diversity of exotic species across the source site are detailed within Attachment A, Section 3.2, page 23-31. A large number of exotic species are present within the source site including species identified as representing a specific risk to threatened species.
- The presence and persistence of necessary biotic interactions for threatened species within the project area is questionable.

The risks of the proposed action are considered to be less than the current risks to threatened species.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	12/09/2020	Yes	High

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

Type	Name	Date	Sensitivity	Confidence
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#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Yes	High
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1.3.2.16 (Person proposing to take the action) Nature of the trust arrangement in relation to the proposed action

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att D - Red Eye Trust Deed.pdf	20/10/2005	Yes	

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att C - Environmental Management Plan.pdf Environmental Management Plan	03/05/2018	No	High

3.2.1 Flora and fauna within the affected area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Yes	High

3.2.2 Vegetation within the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Yes	High

3.4.1 Hydrology characteristics that apply to the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att B - SWMP_460 Pacific Highway, Wyong.pdf Stormwater Management Report	02/05/2018	No	High

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Yes	High

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Yes	High

4.1.4.9 (Threatened Species and Ecological Communities) Why you do not think your proposed action is a controlled action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

4.1.4.11 (Threatened Species and Ecological Communities) Proposed offsets relevant to avoidance or mitigation measures

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

4.3.8 Why alternatives for your proposed action were not possible

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	48602713691
Organisation name	ECOPLANNING PTY. LTD.
Organisation address	2516 NSW
Representative's name	Brian Towle
Representative's job title	Senior Ecologist
Phone	0477 888 251
Email	brian.towle@ecoplanning.com.au
Address	428 Princes Highway, Woonona NSW 2517

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

By checking this box, I, **Brian Towle of ECOPLANNING PTY. LTD.**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	116100657
Organisation name	Red Eye Constructions Pty Ltd
Organisation address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261
Representative's name	Brad Ridge
Representative's job title	Director
Phone	02 4389 8933
Email	brad.ridge@redeyeconstructions.com.au
Address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

I, **Brad Ridge of Red Eye Constructions Pty Ltd**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

- I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

- Check this box to indicate you have read the referral form. *

- I would like to receive notifications and track the referral progress through the EPBC portal. *

- I, **Brad Ridge of Red Eye Constructions Pty Ltd**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

- I would like to receive notifications and track the referral progress through the EPBC portal. *



Biodiversity Development Assessment Report

460 Pacific Highway, Wyong NSW

Version 5.0

12/09/2023



Biodiversity Development Assessment Report

460 Pacific Highway, Wyong NSW

Document No: HBT0045_BDAR_V5.0

12/09/2023

BAAS Case Number: 00036952/BAAS18041/22/00036953

Prepared for

Redeye Constructions Pty Ltd c/o SLR Consulting Australia Pty Ltd

Prepared by

Habitat Environmental Services Pty Ltd

Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).



Signature:

Date: 12/09/2023

BAM Accredited Assessor: Dr. Gilbert Whyte

BAM Assessor Accreditation no: BAAS18041

Document Control

Version	Description	Date
5.0	Final Report	12/09/2023

Contents

1	Introduction	6
1.1	Background	6
1.2	Scope	6
1.3	Site Description	8
1.4	Proposed Development	8
1.5	Information Sources	11
1.6	Legislative Context	11
1.6.1	Biodiversity Conservation Act 2016	12
1.6.2	Biosecurity Act 2015	13
1.6.3	Water Management Act 2000	13
1.6.4	State Environmental Planning Policy (Biodiversity and Conservation) 2021	13
1.6.4.1	Koala Habitat Protection 2021 (Chapter 4)	13
1.6.4.2	Wetlands Protection Area (Part 10.6)	13
1.6.5	State Environmental Planning Policy (Resilience and Hazards) 2021	14
1.6.5.1	Coastal Management (Chapter 2)	14
1.6.6	Environmental Considerations (Chapter 4)	15
1.6.7	Vegetation Management (Chapter 12)	15
1.6.8	Central Coast Local Environmental Plan 2022	15
1.6.9	Central Coast Development Control Plan 2022	15
1.6.10	Environment Protection and Biodiversity Conservation Act 1999	15
2	Landscape Features	17
3	Native Vegetation	21
3.1	Methodology	21
3.1.1	Data Review	21
3.1.2	Vegetation Mapping Surveys	21
3.1.3	Plant Community Type and Determination	21
3.1.4	Vegetation Zones	22
3.1.5	Vegetation Integrity	22
3.1.6	Floristic Identification and Nomenclature	22
3.2	Results	23
3.2.1	Floristic Diversity	23
3.2.2	Exotic Vegetation	23
3.2.3	Plant Community Types	24
3.2.4	Threatened Ecological Communities (BC Act)	30

3.2.5	Threatened Ecological Communities (EPBC Act)	30
3.2.6	Assessment of Patch Size	31
3.2.7	Vegetation Integrity Score.....	31
4	Threatened Species Assessment.....	32
4.1	Habitat Assessment.....	32
4.1.1	Key Habitat Features.....	32
4.1.2	Habitat Assessment – Threatened Flora.....	32
4.1.3	Habitat Assessment – Threatened Fauna	32
4.1.4	Ecosystem Credit Species	33
4.1.5	Species Credit Species	35
4.1.6	Candidate Species – Further Justification	37
4.2	Threatened Species Surveys	37
4.2.1	Threatened Flora Surveys.....	37
4.2.2	Fauna Survey Methods.....	39
4.2.3	Fauna Survey Results	39
4.3	Identified Threatened Species	41
5	Avoiding and Minimising Impacts.....	44
5.1	Native Vegetation	44
5.2	Threatened Species	44
5.3	Impacts on Native Vegetation.....	46
5.4	Impacts on Threatened Species	46
5.5	Indirect Impacts	47
5.6	Prescribed Biodiversity Impacts	47
5.7	Mitigation Measures	48
5.7.2	Further Mitigation Measures.....	49
6	Impact Summary	53
6.1	Serious and Irreversible Impacts	53
6.2	Impacts Not Requiring Offsets	61
6.3	Impacts on Native Vegetation.....	61
6.4	Impacts on Threatened Species	61
7	Legislative Review	66
7.1	Environment Protection and Biodiversity Conservation Act 1999.....	66
7.2	Biosecurity Act	66
7.3	Koala Habitat Protection SEPP 2021.....	67

8	References	69
	Appendix A – Threatened Species Database Search.....	72
	Appendix B – Flora Species List.....	74
	Appendix C – Fauna Species List	75
	Appendix D – Biodiversity Credit Reports.....	76
	Appendix E – BAM Plot Data Sheets	77
	Appendix F – Assessments of Significance (EPBC Act)	78
	Appendix G – Translocation Protocol.....	79
Figure 1	Locality Map	7
Figure 2	Study Area & General Site Features	9
Figure 3	Proposed Development	10
Figure 4	Landscape Assessment (Native Vegetation Extent).....	19
Figure 5	Landscape Assessment (IBRA Bioregion & Mitchells Landscapes)	20
Figure 6	Plant Community Types and Plot Locations	29
Figure 7	Threatened Flora Survey Effort.....	38
Figure 8	Fauna Survey Effort	40
Figure 10	Avoidance and Mitigation.....	45
Figure 12	Species Polygon – Swift Parrot	65
Table 1	Landscape Features.....	17
Table 2	Components of Vegetation Integrity	22
Table 3	Plant Community Type Information – PCT 1718	25
Table 4	Plant Community Type Information – PCT 1737	27
Table 5	Vegetation Integrity	31
Table 6	Ecosystem Credit Species	34
Table 7	Species Credit Species	36
Table 9	Impacts on Native Vegetation	46
Table 11	Impacts to Swift Parrot Important Habitat	47
Table 12	Mitigation Measures.....	50
Table 14	SAIL Assessment – Swift Parrot	57
Table 15	Summary of Ecosystem Credit Requirements	61
Table 17	Summary of Swift Parrot Species Credit Requirements	63
Table 18	Weed species requiring control within the Study Area	67

1 Introduction

1.1 Background

Habitat Environmental Services Pty Ltd (Habitat) have been engaged by Redeye Constructions Pty Ltd c/o SLR Consulting Australia Pty Ltd, to prepare a Biodiversity Development Assessment Report (BDAR) to support the proposed industrial subdivision of lands located at 460 Pacific Highway, Wyong NSW (Lot 1212, DP 818944), hereafter referred to as the Study Area (**Figure 1**).

This assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) (Department of Planning, Infrastructure and Environment [DPIE] 2020a) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Regulation) to support a Development Application (DA) for the Project.

The following terms are used throughout this report:

- **Study Area:** 460 Pacific Highway, Wyong NSW (Lot 1212, DP 818944).
- **Development Site:** The area within the Study Area to be directly impacted by the proposed development.
- **Locality:** Land within a ten-kilometer (km) radius of the Study Area
- **Assessment Area:** Land within a 1,500-meter (m) buffer of the Development Site.

1.2 Scope

This BDAR aims to quantify impacts of the proposed development upon biodiversity values based upon the methods described within the BAM (DPIE 2020a), including threatened biota listed under the BC Act. The assessment includes:

- **Stage 1** – Biodiversity Assessment – Mapping of Plant Community Types (PCTs) including Endangered Ecological Communities (EECs), an assessment of the potential occurrence of threatened species and their habitats, and the potential occurrence of candidate threatened species returned by the BAM Calculator (BAM-C).
- **Stage 2** – Impact Assessment – Identification of potential impacts of the proposed development, avoidance and mitigation measures, and biodiversity offset requirements based upon residual impacts.

The Biodiversity Accredited Assessor System (BAAS) Case number for the Project is BAAS Case Number: 00036952/BAAS18041/22/00036953.



Figure 1 - Locality



Legend

Study Area (Lot 1212, DP 818944)

1.3 Site Description

The Study Area zoned *B6: Enterprise Corridor* under the Central Coast Local Environmental Plan 2022 and is located in North Wyong within the Central Coast Local Government Area (LGA). The Pacific Highway borders the eastern boundary of the site (**Figure 2**). Industrial development occurs to the north and south, and residential development occurs to the east.

The Study Area is approximately 4.70 hectares (ha) in area, rectangular in shape, and has a relatively flat topography. The majority of the site has been historically cleared of native vegetation. Bare areas and stockpiles of soil, gravel, and rock occur in several locations.

No mapped watercourses occur within or adjacent to the Study Area. Constructed drainage channels run north-south along the western boundary and east-west through the centre of the site (**Figure 2**). The central channel meets with the western channel near the western boundary.

Due to previous vegetation clearing activities and bulk earth works within the site, the extent of native vegetation is limited to a small area of regenerating forest and narrow bands of regenerating wetland vegetation (within the constructed channels).

1.4 Proposed Development

A one-into-eight subdivision of the Study Area is proposed via a Development Application (DA) to Central Coast Council (Council). The proposed development layout is shown in **Figure 3**.

In a previous DA for a proposed machinery, product and plant storage depot, site access from the Pacific Highway was proposed; however, this proposal was not accepted by Transport for NSW. Entry to the site for the current DA is proposed via construction of a 10m wide road from Brussels Road to the north and a 20m wide road from the south. These roads will connect to a 20m wide central road that will provide access to each of the proposed lots.



Figure 2 - Study Area & General Site Features



Legend

- Study Area (Lot 1212, DP 818944)
- Lot Boundaries (SixMaps 2023)
- Constructed Channels
- Regenerating Native Forest

Aerial Imagery (nearmap) is dated 11/08/2022



Figure 3 - Proposed Development



Legend

- Study Area (Lot 1212, DP 818944)
- Proposed Subdivision
- Temporary Road Profile (7m Width)

1.5 Information Sources

The following sources of information were used to inform the assessment:

- The NSW DPE, BioNet Atlas (DPE 2023a) for previous records of threatened species, populations and ecological communities within a five km radius of the Study Area.
- The NSW DPE, BioNet Vegetation Classification Database (DPE 2023b) for identification and allocation of Plant Community Types (PCTs) to vegetation zones on site.
- The NSW DPE, BioNet Threatened Biodiversity Data Collection (DPE 2023c), Threatened Species Profiles (DPE 2023d) and Final Determinations (DPIE 2023e) for information on threatened species, populations, and ecological communities.
- The Department of Climate Change, Energy, the Environment and Water - Protected Matters Search Tool (PMST) (DCCEEW 2023a) for Matters of National Environmental Significance (MNES) including predicted threatened species, populations and ecological communities.
- Department of Planning and Environment (DPE). Biodiversity Assessment Method – Important Area Mapping (DPE 2023f).
- The NSW State Vegetation Type Map (DPE 2023g) and the Lower Hunter and Central Coast Vegetation Community Map (Lower Hunter and Central Coast Regional Environment Management Strategy (LHCCREMS 2003)
- Relevant published literature (see **Section 8**).

1.6 Legislative Context

The assessment was undertaken in accordance and consideration of the following Acts and Policies:

State:

- *Biodiversity Conservation Act 2016* (BC Act)
- *Biodiversity Conservation Regulation 2017* (BC Regulation)
- *Biosecurity Act 2015*
- *Coastal Management Act 2016*
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Local Land Services Act 2013* (LLS Act)
- *Water Management Act 2000* (WM Act)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021
- State Environmental Planning Policy (Resilience and Hazards) 2021
- Central Coast Environmental Plan (LEP) 2022
- Central Coast Development Control Plan (DCP) 2022.

Federal:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Information pertaining to the above list is presented in the following subsections.

1.6.1 Biodiversity Conservation Act 2016

The NSW BC Act together with the NSW BC Regulation outlines the framework for addressing impacts on biodiversity from development and clearing. The framework details a pathway to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offset Scheme (BOS).

Entry into the NSW Biodiversity Offset Scheme (BOS) is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act.

Criteria to which the BOS applies include the following:

- Local Development (assessed under Part 4 of the EP&A Act) that triggers the BOS Threshold or is “likely to significantly affect threatened species” (based on a test of significance pursuant to Section 7.3 of the BC Act). The BOS Threshold has two parts, and is triggered by the following:
 - Clearing of vegetation that exceeds an area threshold (based on the minimum lot size), or
 - Impacts are predicted to occur within an area mapped on the NSW Biodiversity Values Map (BV Map) (DPIE 2023f).
- State Significant Development (SSD) and State Significant Infrastructure projects (SSI), unless “the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact.
- Biodiversity certification proposals.
- Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
- Clearing of native vegetation that requires approval by the Native Vegetation Panel under the LLS Act.
- Activities assessed and determined under Part 5 of the EP&A Act (generally, proposals by government entities) if proponents choose to ‘opt in’ to the Scheme.

Conclusion

Review of the NSW Biodiversity Values Map (BV map) on 29/11/22 revealed that a small area near the western boundary of the Study Area is mapped as having high biodiversity value. The Biodiversity Offset Scheme Entry Threshold (BOSET) Class for this area is *Threatened species or communities with potential for serious and irreversible impacts*.

The minimum lot size for the Study Area is 4.72 ha. In accordance with the BAM, the vegetation clearing threshold that triggers entry to the BOS is 0.5 ha. The extent of native vegetation within the Study Area is limited to 0.28 of regenerating swamp forest, 0.17 ha of wetland vegetation, and 0.04 ha of isolated native trees. The vegetation clearing threshold will not be exceeded.

Council determined that the proposed development has the potential to have a significant impact on the [REDACTED] In accordance with the criteria to which the BOS applies a BDAR is required to support the project.

The minimum lot size for the Study Area is 4.72 ha and the maximum clearing limit for the application of the small area development module is 2 ha. Given that less than 2 ha of native vegetation will be impacted by the proposed development, the small area development module is the appropriate assessment method for the project.

1.6.2 Biosecurity Act 2015

Under the *Biosecurity Act 2015* all plants are regulated with a general biosecurity duty “to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.” Under the Act, a biosecurity impact “is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter.” This legislation is addressed in **Section 7.2**.

1.6.3 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the WM Act. ‘Waterfront land’ is defined as the bed of any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high water mark.

No water courses are mapped within the Study Area. The proposed development does not constitute a ‘controlled activity’ as per the WM Act. Approval from the Natural Resources Access Regulator (NRAR) is not required. Consideration of indirect impacts to aquatic and riparian habitat is provided in **Section 5**. Mitigation measures are detailed in **Section 5.7**.

1.6.4 State Environmental Planning Policy (Biodiversity and Conservation) 2021

1.6.4.1 Koala Habitat Protection 2021 (Chapter 4)

Chapter 4 of the SEPP contains provisions aimed to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.

The chapter applies to each LGA listed under Schedule 1 of the SEPP. Central Coast LGA is listed under Schedule 1 of the SEPP, in which it applies to land within the LGA that is not zoned rural, i.e., land not zoned RU1, RU2 or RU3. The Study Area was assessed by a suitably qualified and experienced person to determine if the land contains ‘Core Koala Habitat’ as defined by the SEPP. See **Section 7.3** for a summary of the Koala habitat assessment.

1.6.4.2 Wetlands Protection Area (Part 10.6)

The objectives of Part 10.6 of the SEPP in relation to wetlands are as follows:

- To preserve, protect and encourage the restoration and rehabilitation of wetlands.
- To maintain and restore the health and viability of wetlands.

- To prevent the fragmentation of wetlands.
- To preserve the scenic qualities of wetlands.

To ensure that wetlands continue to perform their natural ecological functions (such as the provision of wetland habitat, the preservation of water quality, the control of flooding and erosion).

The Study Area does not contain or adjoin Wetland Protection Area; therefore, Part 10.6 of the SEPP does not apply.

1.6.5 State Environmental Planning Policy (Resilience and Hazards) 2021

The Resilience and Hazards SEPP consolidates, transfers and repeals the provisions of three SEPPs into a single environmental planning instrument, including: the SEPP (Coastal Management) 2018 (Coastal Management SEPP), SEPP 33 – Hazardous and Offensive Development (SEPP 33), and SEPP 55 – Remediation of Land (SEPP 55). The Resilience and Hazards SEPP aims to promote the protection and improvement of key environmental assets for their intrinsic value and the social and economic benefits they provide. Relevant chapters of the Resilience and Hazards SEPP are considered below:

1.6.5.1 Coastal Management (Chapter 2)

The aim of this Chapter is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the CM Act including the management objectives for each coastal management area by:

- Managing development in the coastal zone and protecting the environmental assets of the coast.
- Establishing a framework for land use planning to guide decision-making in the coastal zone.
- Mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the CM Act.

The Coastal Management Chapter incorporates the provisions of the now repealed Coastal Management SEPP which commenced on 3 April 2018 and consolidated the provisions of: SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection).

The Coastal Management Chapter defines the four coastal management areas in accordance with the Coastal Management Act and details mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas.

The four coastal management areas are:

- Coastal wetlands and littoral rainforests area – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
- Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation.

- Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The Study Area does not contain areas mapped as any of the four coastal management areas above. The CM Act does not apply to this proposed development.

1.6.6 Environmental Considerations (Chapter 4)

The objectives of this chapter are to ensure that development is designed in a manner that avoids, mitigates or offsets negative impacts on biodiversity and the quality and function of the natural environment, and responds to relevant ecological constraints and opportunities.

1.6.7 Vegetation Management (Chapter 12)

The objective of this chapter is to identify vegetation for protection for the purposes of the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 and to provide a trigger for assessment under the Vegetation Management Policy.

This objective is specifically considered in **Section 5** of this report.

1.6.8 Central Coast Local Environmental Plan 2022

The Study Area is located within the Central Coast LGA and is zoned B6: Enterprise Corridor. The Central Coast LEP 2022 controls development within the Study Area through zoning and development controls. These controls are described in greater detail by the supporting Central Coast DCP 2022.

1.6.9 Central Coast Development Control Plan 2022.

The Central Coast Development DCP 2022 supports the Central Coast LEP by providing additional detail and guidance on addressing biodiversity issues associated with development. The purpose of the DCP is to provide Council's requirements for sustainable quality development and environmental outcomes within Central Coast LGA.

1.6.10 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, approval is required for actions that are likely to have a significant impact on MNES. An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action, which they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Environment. The Act identifies the following nine MNES:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance (Ramsar Convention).
- Listed threatened species and communities.
- Migratory species listed under international agreements.
- Great Barrier Reef Marine Park.

- Commonwealth marine areas.
- Nuclear actions.
- Water resources in respect to CSG and large coal mines.

While this BDAR is not required to address MNES, the proponent is required to address the EPBC Act as part of their development application to Council. Items 4 and 5 are relevant to the current proposal. A summary of this assessment is presented in **Section 7.1**.

2 Landscape Features

The landscape features detailed in Section 3 of the BAM (DPIE 2020a), which are applicable to the Study Area are described in **Table 1**. These landscape features are shown on **Figure 4**.

Table 1 Landscape Features

Landscape Features	Information
IBRA Region	Sydney Basin
IBRA Sub Region	Wyong
Local Government Area (LGA)	Central Coast Council
Mitchell Landscape	The Study Area is within the Gosford – Cooranbong Coastal Slopes (DECC, 2002 and Mitchell 2002). This landscape is described as: Coastal fall of the Sydney Basin, rolling hills and sandstone plateau outliers of Triassic Narrabeen sandstones, extensive rock outcrop and low cliffs along ridge margins, general elevation of 0 to 75 m. The extent of each Mitchell Landscape within the locality is presented in Figure 5 .
Rivers, streams and estuaries	No mapped watercourses occur within or adjacent to the Study Area. A constructed channel runs along the western boundary. This channel is connected to a perpendicular constructed channel that traverses the centre of the site (east to west).
Wetlands	No Coastal wetlands mapped on the Coastal Wetlands and Littoral Rainforests Area Map (DPIE 2023) occur within the Study Area.
Connectivity of different areas of habitat	The surrounding land use is predominantly comprised of industrial and residential development. Native vegetation is largely restricted to a small patch of regenerating forest that occurs near the western boundary. This vegetation is fragmented and largely isolated within the landscape. A narrow forest connection occurs to the south where it adjoins a larger area of forest outside the Study Area.
Areas of geological significance and soil hazard features	The Study Area is not located with an area identified as having any particular geological significance. No mapping was identified that would indicate the site contains any soil hazard features.
Areas of outstanding biodiversity value	There are no areas of “outstanding biodiversity value” (in accordance with Section 3.1.3 of the BAM (DPIE 2020a) mapped within the Study Area.
Geology and Soils	Mitchell (2002) described the landscape as containing texture-contrast soils on lithic sandstones and shales, loamy sand alluvium along creeks, and organic sand and mud in lagoons and swamps. Historic land use activities have disturbed the soil profile, a mosaic of clays, gravels and sandy loams were observed throughout the Study Area.

Landscape Features	Information
Native Vegetation Cover	<p>Native Vegetation was assessed as per Section 3.2 of the BAM 2020 (DPIE 2020a) as shown in Figure 4. Native vegetation constitutes 33.72% (206 ha) of the projected 1,500 m site buffer (611 ha) associated with the Development Site. Native Vegetation Cover was classed as >30-70%.</p>



Figure 4 - Landscape Assessment (Native Vegetation Extent)



Legend

- Study Area (Lot 1212, DP 818944)
- Native Vegetation Extent (206 ha - 33.72%)
- 1500m Buffer (611 ha)
- Mapped Watercourses (Six Maps 2022)

IBRA Bioregion - Sydney Basin
IBRA Sub Region - Wyong

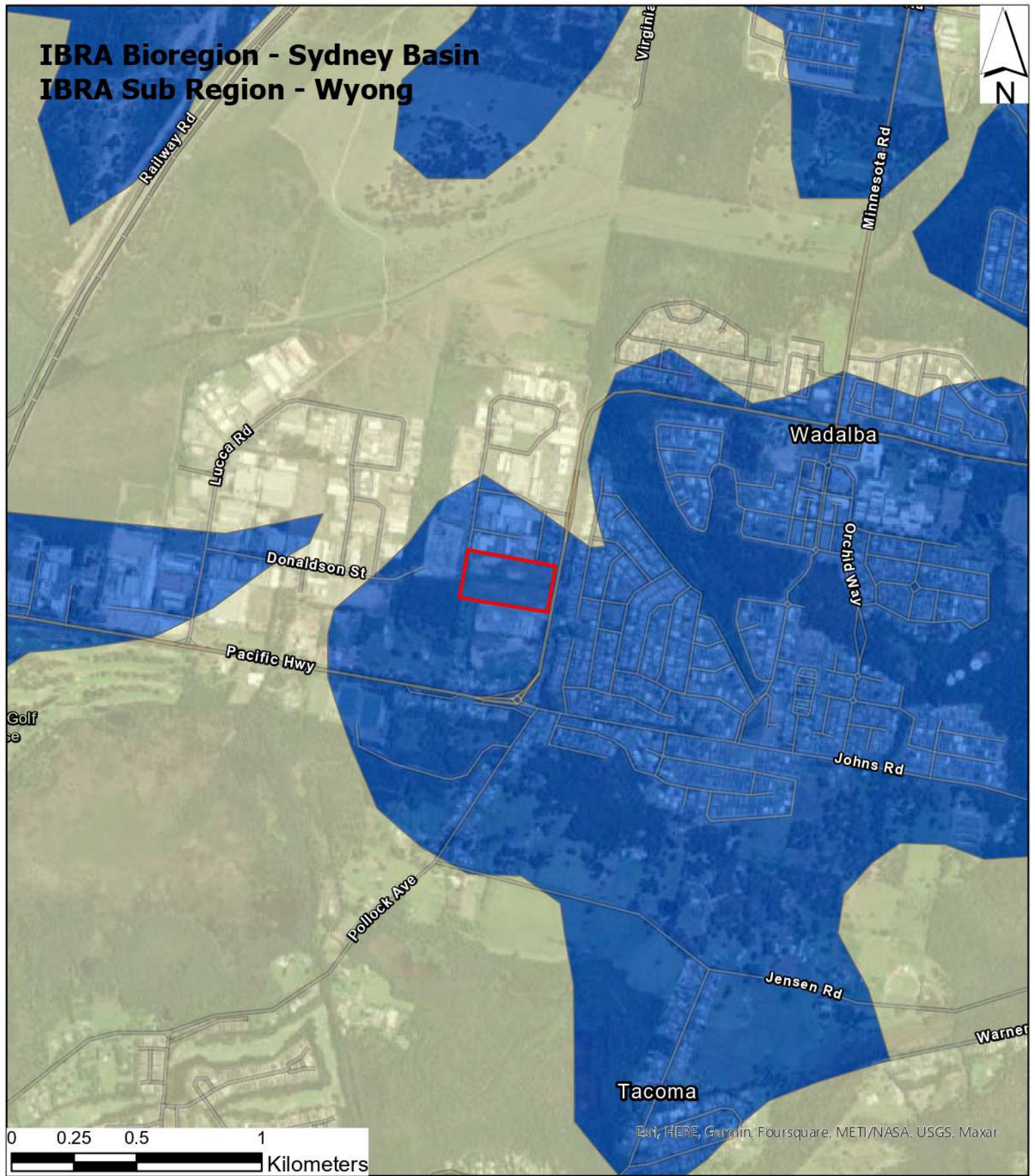





Figure 5 - Landscape Assessment (IBRA Bioregion & Mitchells Landscapes)



Legend

-  Study Area (Lot 1212, DP 818944)
- Mitchells landscapes**
-  Gosford - Cooranbong Coastal Slopes
-  Sydney - Newcastle Coastal Alluvial Plains

3 Native Vegetation

3.1 Methodology

Native vegetation was assessed in accordance with Section 4 of the BAM (DPIE 2020a).

3.1.1 Data Review

Vegetation mapping completed as part of the *Lower Hunter and Central Coast Vegetation Community Map (Lower Hunter and Central Coast Regional Environment Management Strategy (LHCCREMS 2003))* was reviewed to assist with the determination of PCTs within the Study Area. Regional vegetation mapping indicates that the dominant vegetation types within and adjacent to the Study Area are comprised of Wyong Paperbark Swamp Forest.

3.1.2 Vegetation Mapping Surveys

Detailed vegetation surveys were conducted across the Study Area on 10/05/22 and 28/11/22. Areas of vegetation to be impacted by the proposed development, as well as areas to be retained, were mapped during this period. The boundaries of each of the identified vegetation communities within the Study Area were mapped using a combination of rapid data points (RDP) and walking transects, using the polygons produced through aerial photo interpretation (API) to assist in targeting survey effort.

The RDPs involved collecting waypoints over the Study Area using a handheld GPS unit and recording dominant species, structure, and condition. Walking transects involved verifying polygons where homogenous in floristic composition and condition, as well as walking vegetation ecotones and using the recorded tracks to define vegetation community boundaries. The RDPs and survey tracks were then overlaid on an aerial photograph and used to delineate and/or clarify vegetation boundaries. The RDPs and plots were classified and tagged with a PCT by field surveyors. Polygons produced from the API work adopted the PCT of the sample point that they intersected.

3.1.3 Plant Community Type and Determination

Each vegetation community identified within the Study Area was assigned to the closest equivalent PCT from those listed in the BioNet Vegetation Classification database (DPE 2023b). The closest equivalent PCT for each vegetation community was determined through a comparison of the floristic descriptions of PCTs in the database with the plot / transect data collected. In addition to floristic and structural similarity, the landscape position, soil type and other diagnostic features of the vegetation communities on the site were compared to the descriptions in the database to determine the most suitable PCT. Threatened ecological communities (TECs) as defined in NSW and Commonwealth legislation were also identified if present.

3.1.4 Vegetation Zones

Vegetation zones were identified and delineated in accordance with Section 4.3 of the BAM (DPIE 2020a). A vegetation zone is defined in the BAM as a relatively homogenous area that is the same vegetation type and broad condition.

3.1.5 Vegetation Integrity

Following stratification of the Study Area into vegetation zones, plots/transects were undertaken to collect site condition data for the composition, structure and function attributes listed in **Table 2** in accordance with Section 4.3 of the BAM (DPIE 2020a). The location of the plots/transects were selected through stratified random sampling to provide a representative sample of the variation in vegetation composition and condition within each vegetation zone.

Table 2 Components of Vegetation Integrity

Growth form groups	Function attributes
<ul style="list-style-type: none"> • Tree (TG) • Shrub (SG) • Grass and grass-like (GG) • Forb (FG) • Fern (EG) • Other (OG) 	<ul style="list-style-type: none"> • Number of large trees • Tree regeneration (presence/absence) • Tree stem size class (presence/absence) • Total length of fallen logs • Litter cover • High threat exotic vegetation cover (HTE) • Hollow-bearing trees (HBT)

The number of plots/transects undertaken across the site meets the minimum number of transects required for each vegetation zone area as detailed in Section 4.3.4, Table 3 of the BAM (DPIE 2020a). A total of four vegetation plots were sampled across the Study Area (**Figure 6**).

3.1.6 Floristic Identification and Nomenclature

Floristic identification and nomenclature were based on Harden (1992, 1993, 2000 and 2002) with subsequent revisions as published on NSW PlantNet (<http://plantnet.rbgsyd.nsw.gov.au>)

3.2 Results

3.2.1 Floristic Diversity

A total of 91 flora species were identified during field surveys, 60 of these species are exotic species, of which 14 are considered ‘High Threat Exotics’ and three are listed Priority Weeds for the Central Coast LGA (discussed further in **Section 7.2**). A list of the flora species identified within the Study Area is provided in **Appendix B**.

3.2.2 Exotic Vegetation

Exotic Grassland is the dominant vegetation type within the Study Area. This vegetation occupies approximately 4.20 ha of the site and is dominated by exotic perennial grasses such as *Paspalum urvillei* (Kikuyu), *Paspalum dilatatum* (Paspalum) and *Cenchrus clandestinus* (Kikuyu). Several exotic herbs also occur including *Senecio madagascariensis* (Fireweed), *Hydrocotyle bonariensis* (Pennywort) *Trifolium repens* (White Clover) and *Medicago polymorpha* (Burr Medic).

A representative photograph of this vegetation is shown in **Plate 1**.



Plate 1 Exotic Grassland within the Study Area

3.2.3 Plant Community Types

Two Plant Community Types (PCTs) were identified within the Study Area:

- *PCT 1718 Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast*: 0.33 ha total (0.28 ha area of regenerating forest in the western portion of the Study Area and 0.05 ha of isolated trees near the eastern boundaries).
- *PCT 1737 Typha Rushland*: 0.17 ha area of aquatic emergent vegetation was identified within the constructed drainage channel and low-lying areas of the site.

The vegetation within the Study Area was assigned to three vegetation zones based on broad condition state. Note that for the purposes of calculating Vegetation Integrity (VI), areas of Exotic Grassland were identified as a cleared form of PCT 1716. Detailed descriptions of PCT 1716 and PCT 1737 are presented respectively in **Table 3** and **Table 4**. The extent of each PCT and Vegetation Zones are shown in **Figure 6**.

Table 3 Plant Community Type Information – PCT 1718

Criteria	PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Vegetation Formation and Class	Forested Wetlands Coastal Swamp Forest
Scientific Name	Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Area within the Study Area	Vegetation Zone 02 (0.33 ha: 0.28 ha (Regenerating Forest), 0.05 ha (Isolated Trees))
Survey Effort	Required: 1 plot/transect. Conducted: 3 plot/transects.
Floristic description	The canopy is dominated by regenerating <i>Eucalyptus robusta</i> (Swamp Mahogany). The shrub layer is also regenerating and dominated by <i>Glochidion ferdinandi</i> (Cheese Tree), <i>Melaleuca ericifolia</i> (Swamp Paperbark), <i>Melaleuca nodosa</i> (Prickly-leaved Paperbark) and <i>Acacia longifolia</i> (Sydney Golden Wattle). The ground layer contains a mix of native and exotic species. Native species include <i>Ranunculus plebeius</i> (Forest Buttercup), <i>Hypolepis muelleri</i> (Harsh Ground Fern) and <i>Machaerina juncea</i> (Bare Twig-rush). Wetter areas also contain <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Several weed species occur including <i>Cortaderia selloana</i> (Pampas Grass), <i>Cenchrus clandestinus</i> (Kikuyu), <i>Ipomoea cairica</i> (Coastal Morning Glory) and <i>Ageratina adenophora</i> (Crofton Weed). Representative photographs of the vegetation are provided in Plate 2 and Plate 3 .
Condition within Development Site	The vegetation is fragmented and isolated within the landscape; however, an intact canopy, shrub and groundcover is present. A large number of exotic plant species occur, including several High Threat Weeds (see previous). Due to the levels of fragmentation and encroachment of weeds the vegetation is in a moderate condition state.
Justification for PCT selection	The vegetation within this zone is modified, although the presence of Swamp Mahogany as the canopy dominant indicates that Swamp Sclerophyll Forest would have occurred within the site prior to development. Swamp Mahogany is listed as one of the key diagnostic canopy species within PCT 1718. Additionally, key diagnostic shrub species such as Cheese Tree and Flax-leaved Paperbark also occur. Key diagnostic groundcover species that were detected within the vegetation zone include Blady Grass and Bracken.
Status	BC Act: The vegetation represents a low condition form of <i>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> , which is listed as an EEC under the BC Act. EPBC Act: The vegetation represents a low condition form of <i>Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</i> , which is listed as an EEC under the EPBC Act. Further information regarding the above determinations is provided in Section 3.2.3 .
SAII	No
PCT % Cleared	74%



Plate 2 Regenerating PCT 1716 - Prickly-leaved Paperbark Forest in the western portion of the Study Area



Plate 3 Regenerating PCT 1716 - Prickly-leaved Paperbark Forest in the western portion of the Study Area

Table 4 Plant Community Type Information – PCT 1737

Criteria	PCT 1737 – Typha Rushland
Vegetation Formation and Class	Freshwater Wetlands Coastal Freshwater Lagoons
Scientific Name	Typha Rushland
Area within the Study Area	Vegetation Zone 02 (0.17 ha - Wetland)
Survey Effort	Required: 1 plot/transect. Conducted: 1 plot/transect
Floristic description	The canopy is absent. The shrub layer is sparse to absent with occasional occurrences of <i>Melaleuca ericifolia</i> (Swamp Paperbark), <i>Melaleuca nodosa</i> (Prickly-leaved Paperbark) and <i>Acacia longifolia</i> (Sydney Golden Wattle). A dense cover of emergent rush species occurs. The dominant species are <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Other native species that occur to a lesser extent include <i>Ranunculus plebeius</i> (Forest Buttercup), <i>Hypolepis muelleri</i> (Harsh Ground Fern) and <i>Machaerina juncea</i> (Bare Twig-rush). Several weed species occur. The dominant weeds are <i>Cortaderia selloana</i> (Pampas Grass) and <i>Ageratina adenophora</i> (Crofton Weed). Representative photographs of the wetland vegetation are provided in Plate 4 and Plate 5 . These photographs show that most of the wetland vegetation has regenerated in the past six months following heavy rainfall within the locality.
Condition within Development Site	The vegetation restricted to constructed drainage channels and low-lying areas containing pooling water within the Study Area. A large number of exotic plant species occur, including several High Threat Weeds (see previous). Due to the dense coverage of native emergent vegetation, the vegetation is in a moderate condition state.
Justification for PCT selection	The vegetation is dominated by aquatic wetland species including <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Broad-leaved Cumbungi is a key diagnostic species within PCT.
Status	BC Act: Not listed. EPBC Act: Not listed. Further information regarding the above determinations is provided in Section 3.2.3
SAIL	No
PCT % Cleared	70%



Plate 4 PCT 1737 – Typha Rushland within the central drainage channel within the Study Area (May 2022)



Plate 5 PCT 1737 – Typha Rushland within the central drainage channel within the Study Area (November 2022)



Figure 6 - Plant Community Types and Plot Locations



Legend

- Study Area (Lot 1212, DP 818944)
- BAM Plots

Plant Community Types and Vegetation Zones

- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

3.2.4 Threatened Ecological Communities (BC Act)

Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

One threatened ecological community (TEC) was identified within the Study Area. Areas of vegetation identified as PCT 1718 are also commensurate with *Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions*, which is an EEC listed under the BC Act. Justifications for the EEC determination include the following:

- The Study Area occurs within the Sydney Basin Bioregion where the EEC is known to occur.
- The vegetation is associated with waterlogged soils within periodically inundated drainage channels (constructed).
- The structure of the vegetation is an open forest, although partial clearing has reduced the canopy to scattered trees.
- Key diagnostic canopy species occur such as Swamp Mahogany, Sydney Golden Wattle, and Cheese Tree.
- Key diagnostic shrub species occur such as Swamp Paperbark and Prickly-leaved Paperbark.

Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

Wetland vegetation is restricted to drainage channels within the site that have been specifically constructed for the purposes of stormwater management. The Final Determination for the EEC states:

“Artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of this community, although they may provide habitat for threatened species.”

The vegetation identified as PCT 1737 within the Study Area does not meet the criteria of the EEC.

3.2.5 Threatened Ecological Communities (EPBC Act)

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland

The *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland* ecological community was listed in the Endangered category of the threatened ecological communities list under the EPBC Act on 08 December 2021. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification under the EPBC listing as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the Study Area is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.

- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the vegetation is commensurate with the EEC and is classified as Class C2: A small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.

3.2.6 Assessment of Patch Size

The patch size for all vegetation zones was assessed as >100 ha as this vegetation is connected to larger intact areas of native forest vegetation extending to the south. Spatial analysis showed that the largest gap between smaller vegetation patches is less than 100 m (appropriate for woody vegetation).

3.2.7 Vegetation Integrity Score

The current vegetation integrity score of the vegetation zones within the Study Area are presented in **Table 5**. Note that for the purposes of providing information on the vegetation integrity of the Exotic Grassland, this vegetation was allocated to Vegetation Zone 1 (PCT 1718). Based on the topography of the site, it is likely that areas of Exotic Grassland were previously vegetated with PCT 1718 or another PCT within the Swamp Forests Class.

Table 5 **Vegetation Integrity**

Zone	PCT	Condition class	Area (ha)	Condition scores (Current Score)			Vegetation integrity score
				Composition	Structure	Function	
1	1718	Cleared	4.20	6.4	49.3	0	2.4
2	1718	Moderate	0.33	26.2	62.2	24.2	34.0
3	1737	Moderate	0.17	41.3	5.9	-	15.7

4 Threatened Species Assessment

4.1 Habitat Assessment

To inform the assessment of suitable habitat for threatened species and populations within the Study Area, a database search was conducted using the NSW DPE BioNet Atlas (DPE 2023a). Results of the database search and ‘likelihood of occurrence’ assessment are provided in **Appendix A**.

4.1.1 Key Habitat Features

The Study Area has been subjected to historical disturbance such as vegetation clearing and earthworks. No key habitat features such as hollow-bearing trees, large water bodies or dense vegetation containing a complex structure occur within the site.

4.1.2 Habitat Assessment – Threatened Flora

Vegetation Zone 1: This vegetation zone is cleared and comprised mainly of a groundcover that is dominated by exotic grasses and forbs. A low diversity of native flora species is present, and the habitat is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality. A total of [REDACTED] were detected within this vegetation zone during the surveys (further discussed in **Section 4.3**).

Vegetation Zone 2: This vegetation zone is comprised of a small area of regenerating Swamp Sclerophyll Forest. The canopy and shrub layers are in the early stages of regeneration and the groundcover contains a mix of native and exotic species. Due to the disturbance history of the site, this habitat is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality.

Vegetation Zone 3: This vegetation zone is comprised of aquatic emergent vegetation that is restricted to the constructed drainage channels. Site photographs shown previously demonstrate that most of the native vegetation present has regenerated in the past six months. Due to the artificial nature of the wetland habitat, this area is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality.

4.1.3 Habitat Assessment – Threatened Fauna

Fauna habitat within the Study Area is characterised by a mosaic of cleared areas, small areas of regenerating forest and ephemeral wetlands (constructed). No trees containing hollows occur within the site.

A summary of threatened fauna habitat suitability is presented below:

Vegetation Zone 1: Due to historical management, the vegetation within this vegetation zone lacks a complex vegetation structure. Refugia for terrestrial fauna species is limited to dense exotic

groundcover and are areas containing thickets of weeds such as Pampas Grass. Mature trees are generally absent.

Vegetation Zone 2: This vegetation zone is fragmented and generally lacks a complex vegetation structure. Foraging habitat is also limited by the small area of forest present. It is likely that fauna species such as birds and mammals would forage within the area as part of larger network of habitat within the locality.

Vegetation Zone 3: The aquatic habitat within the drainage channels is ephemeral and may provide suitable breeding habitat for common amphibian species and aquatic insect species. Larger fauna species may also utilise the habitat periodically as a water source.

In summary, the habitats present within the Study Area do not represent important habitat for any threatened fauna species. Such species are likely to utilise the habitats present as part of a broader network of habitats within the locality.

4.1.4 Ecosystem Credit Species

The following assessment of habitat suitability for ecosystem credit species was conducted in accordance with Section 6.2 of the BAM. Ecosystem credits represent threatened species that can be reliably predicted to occur based on the type and condition of vegetation within the Development Site. Targeted surveys are not required for Ecosystem Credit species.

Step 1: Identify threatened species for assessment.

A list of Predicted Ecosystem Credit species for the Study Area was reviewed in the BAM calculator, according to PCTs present on the subject land. Predicted Species Report is within **Appendix D**.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land.

The potential for Ecosystem Credit species to occur on the Study Area was assessed according to species-specific habitat requirements, as detailed in **Table 6**. Where habitat features were not present due to the degraded condition of the site vegetation, Ecosystem Credit species were determined to not be predicted species and no further assessment was required within these vegetation zones.

Table 6 Ecosystem Credit Species

Scientific name	Common name	Confirmed Predicted Species
<i>Anseranas semipalmata</i>	Magpie Goose	Yes
<i>Anthochaera phrygia</i>	Regent Honeyeater (Foraging)	Yes
<i>Botaurus poiciloptilus</i>	Australian Bittern	Yes
<i>Calidris tenuirostris</i>	Great Knot (Foraging)	Yes
<i>Circus assimilis</i>	Spotted Harrier	Yes
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Yes
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Yes
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Yes
<i>Epthianura albifrons</i>	White-fronted Chat	Yes
<i>Falco subniger</i>	Black Falcon	Yes
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Yes
<i>Glossopsitta pusilla</i>	Little Lorikeet	Yes
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Foraging)	Yes
<i>Hieraaetus morphnoides</i>	Little Eagle (Foraging)	Yes
<i>Hirundapus caudacutus</i>	White-throated Needletail	Yes
<i>Irediparra gallinacea</i>	Comb-crested Jacana	Yes
<i>Ixobrychus flavicollis</i>	Black Bittern	Yes
<i>Lathamus discolor</i>	Swift Parrot (Foraging)	Yes
<i>Limicola falcinellus</i>	Broad-billed Sandpiper (Foraging)	Yes
<i>Limosa limosa</i>	Black-tailed Godwit (Foraging)	Yes
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Yes
<i>Miniopterus australis</i>	Little Bent-winged Bat (Foraging)	Yes
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Foraging)	Yes
<i>Neophema pulchella</i>	Turquoise Parrot	Yes
<i>Ninox connivens</i>	Barking Owl (Foraging)	Yes
<i>Oxyura australis</i>	Blue-billed Duck	Yes
<i>Pandion cristatus</i>	Eastern Osprey (Foraging)	Yes
<i>Phoniscus papuensis</i>	Golden-tipped Bat	Yes
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	Yes
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox (Foraging)	Yes
<i>Rostratula australis</i>	Australian Painted Snipe	Yes
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Yes
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Yes

Scientific name	Common name	Confirmed Predicted Species
<i>Stictonetta naevosa</i>	Freckled Duck	Yes
<i>Xenus cinereus</i>	Terek Sandpiper (Foraging)	Yes

4.1.5 Species Credit Species

Step 1: Identify threatened species for assessment.

A preliminary list of Candidate Species Credit species for the Development Site was reviewed in the BAM calculator. Species Credits pertain to threatened species that cannot be reliably predicted by the vegetation type present. A Candidate Species Report is presented within **Appendix E**.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land

The potential for Candidate Species Credit species to occur on the Development Site was assessed according to species-specific habitat requirements as detailed in **Table 7**.

Step 3: Identify candidate species credit species for further assessment.

A number of Species Credit species were excluded as Candidate species due to their geographic or habitat constraints not being met by the Study Area, and no further assessment of these species was required (**Table 7**). The Swift Parrot was retained as a candidate species due to the presence of mapped important habitat in the western portion of the Study Area. The [REDACTED] was added as a Candidate Species due to the known occurrence of a population of the species within the Study Area.

Table 7 Species Credit Species

Scientific name	Common name	Confirmed Candidate Species	Justification
<i>Anthochaera phrygia</i>	Regent Honeyeater	No	Not mapped as Important Area
<i>Calidris ferruginea</i>	Curlew Sandpiper	No	Not mapped as Migratory Shorebird Habitat
<i>Calidris tenuirostris</i>	Great Knot (Foraging)	No	Not mapped as Migratory Shorebird Habitat
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	No	Absence of Cliffs within the Study Area The Study Area is not within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels.
<i>Corunastylis sp. Charmhaven (NSW896673)</i>	Corunastylis sp. Charmhaven (NSW896673)	No	Habitat Degraded
<i>Genoplesium insigne</i>	Variable Midge Orchid	No	Habitat Degraded
<i>Lathamus discolor</i>	Swift Parrot	Yes	Mapped as Important Habitat
<i>Miniopterus australis</i>	Little Bent-winged Bat	No	Habitat constraints – no potential breeding habitat within 200m of the Study Area
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	No	Habitat constraints – no potential breeding habitat within 200m of the Study Area
<i>Petalura gigantea</i>	Giant Dragonfly	No	Habitat Degraded

4.1.6 Candidate Species – Further Justification

In accordance with Section 5.2.3 of the BAM (DPIE 2020a) a candidate species credit species is considered unlikely to occur on the subject land (or specific vegetation zones) if one of the following applies:

(a) *After carrying out a field assessment:*

- a. *the assessor determines that microhabitats required by a species are absent from the subject land (or specific vegetation zone). The assessor must include a description of the microhabitats assessed as being required by the species in the BAR. This must be based on evidence such as published literature, or*
- b. *the assessor determines that the habitat constraints or microhabitats are degraded to the point that the species is unlikely to use the subject land (or specific vegetation zones).*

(b) *An expert report (prepared as per Box 3) states that the species is unlikely to be present on the subject land or specific vegetation zones.*

A candidate species credit species that does not have suitable habitat as per (2.a.) [point 'a' above] or (2.b.) [point 'b' above] does not require further assessment (BAM 2020a).

4.2 Threatened Species Surveys

Step 4: Determine presence or absence of candidate species credit species.

4.2.1 Threatened Flora Surveys

In accordance with Section 3.3 of the *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020h), surveys targeted the most suitable habitat within the Study Area for candidate threatened flora and fauna species, using information collected from the TBDC (DPE, 2023c), the DPE threatened species profile website (DPE, 2023d) and knowledge other threatened species within the site's locality.

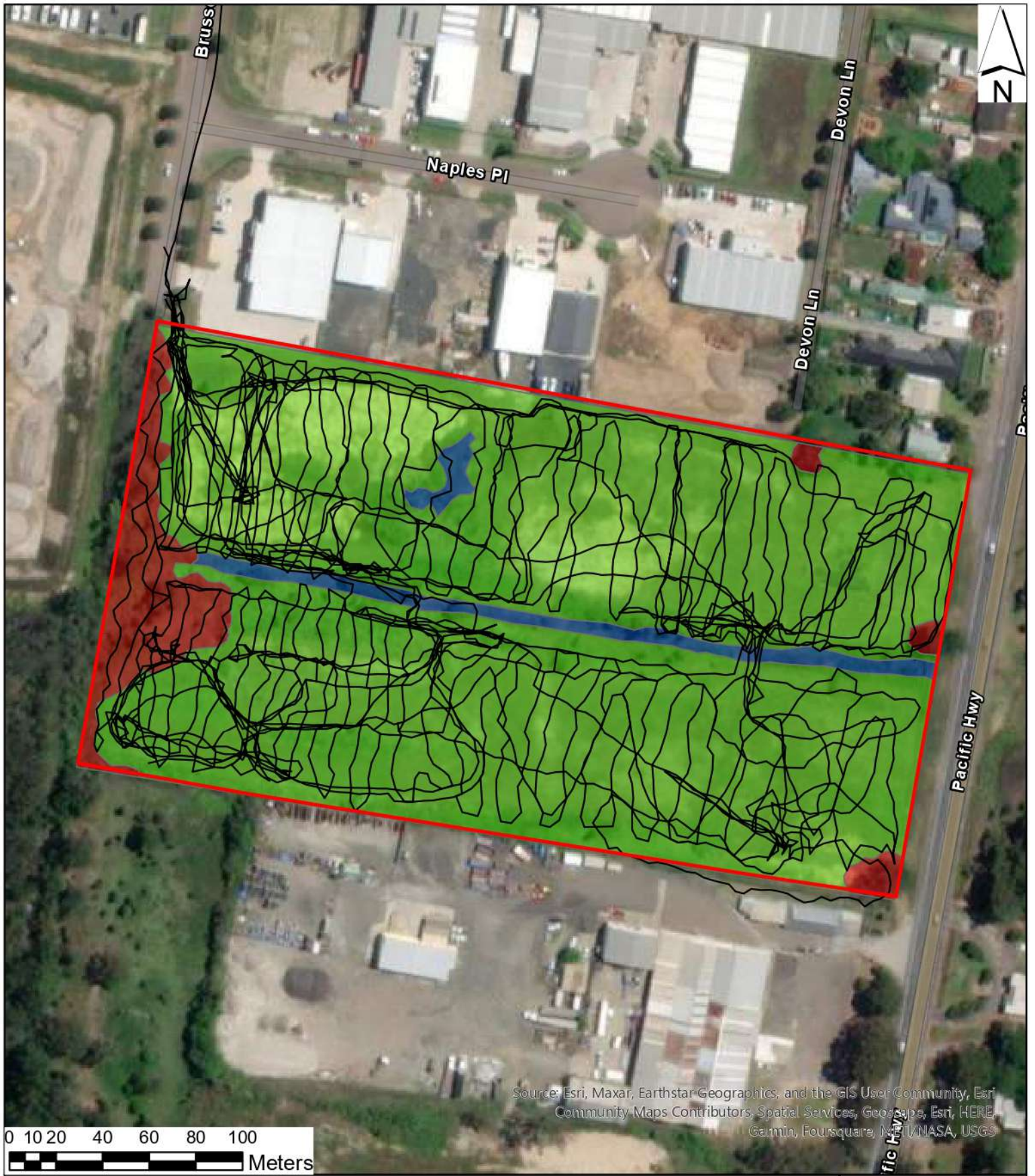


Figure 7 - Threatened Flora Survey Effort



Legend

- Study Area (Lot 1212, DP 818944)
- Threatened Flora Survey Tracks (September - October 2022)

Plant Community Types and Vegetation Zones

- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

4.2.2 Fauna Survey Methods

Diurnal Fauna Surveys

Diurnal Fauna Surveys were conducted within the Study Area on 14/11/22 and 15/11/22. All fauna species, including birds, mammals and reptiles were recorded opportunistically. Due to a general lack of native vegetation within the site, and a lack of key habitat features such as hollow-bearing trees or habitat logs, targeted surveys for diurnal fauna species were not conducted.

Arboreal Mammals

Spotlighting surveys were conducted within the Study Area on 14/11/22 and 15/11/22 (**Figure 8**). Call playback surveys were completed during spotlighting through the broadcast of recorded calls through a megaphone to attract individuals or to incite a response. After an initial listening period of 15 minutes calls were broadcast for 5 minutes. Directly after the final broadcast, a quiet listening period of 5 minutes was conducted followed by 1-2 minutes of stationary spotlighting.

One Koala scat survey (Spot Assessment Technique – SAT) (as per Phillips and Callaghan, 2011) was undertaken in an area of the site containing listed Swamp Mahogany (*Eucalyptus robusta*), which is a Koala feed tree, listed under the Biodiversity & Conservation SEPP 2021 – Chapter 4, Schedule 3. An assessment discussing impacts to the Koala and Koala habitat is presented in **Section 7.3**.

Amphibians and Reptiles

Targeted nocturnal amphibian surveys were carried out within suitable locations within the Study Area on 14/11/22 and 15/11/22 following as per the methods described in the *NSW Survey Guide for Threatened Frogs* (DPIE 2020g). Targeted amphibian surveys involved the completion of nocturnal aural-visual surveys along a transect through available breeding habitat. Surveys involved active searches inspecting of emergent vegetation with a spotlight or head torch, with listening points positioned within suitable habitat. Adult frogs encountered were identified by visual confirmation or by their distinct advertisement calls.

4.2.3 Fauna Survey Results

A total of 15 fauna species were detected within the Study Area during field surveys (**Appendix C**). This includes nine (9) bird species and six (6) amphibian species. All of the fauna species detected were common species that are known to be well represented within the locality. No threatened fauna species were detected.

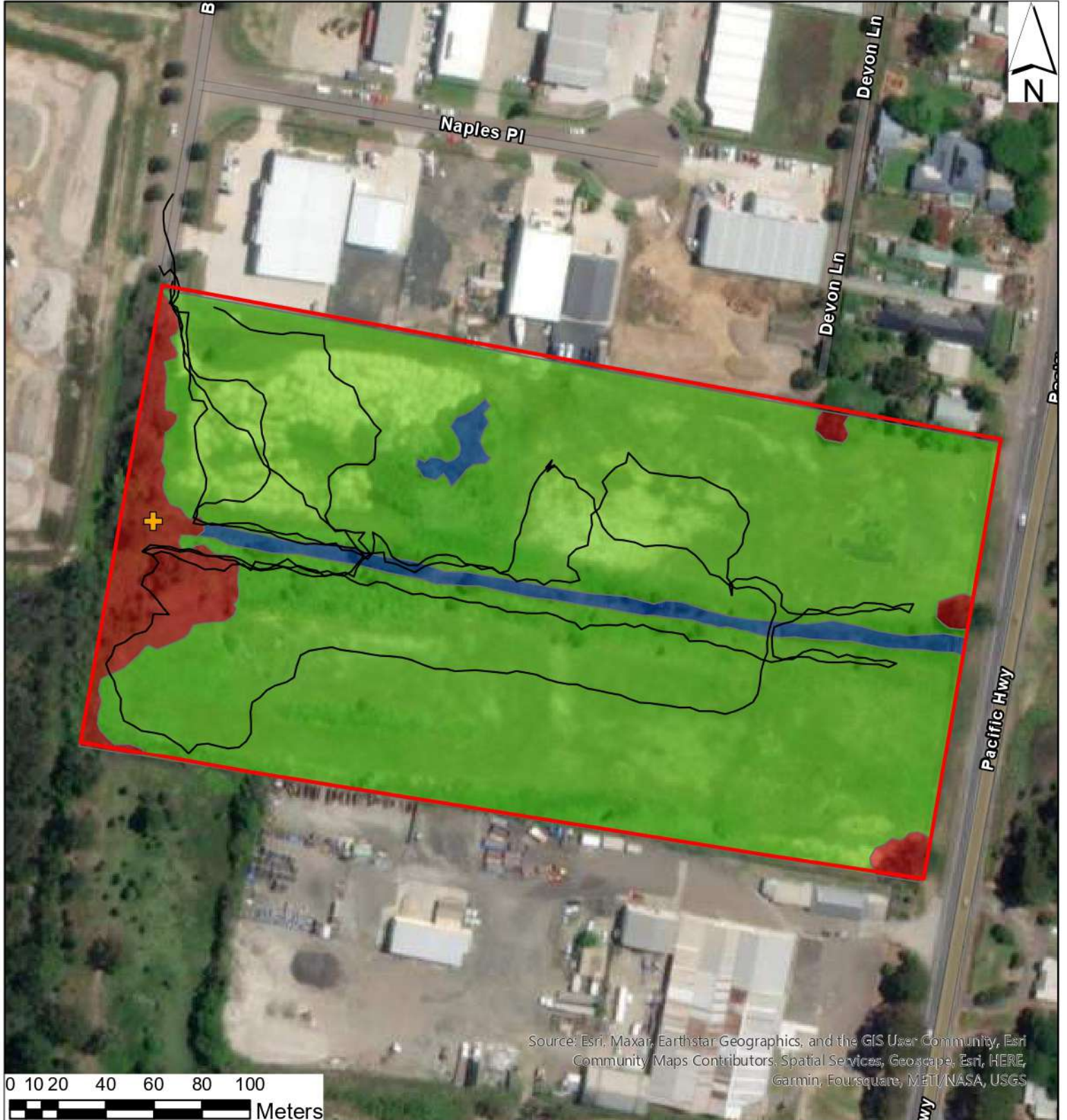


Figure 8 - Threatened Fauna Survey Effort



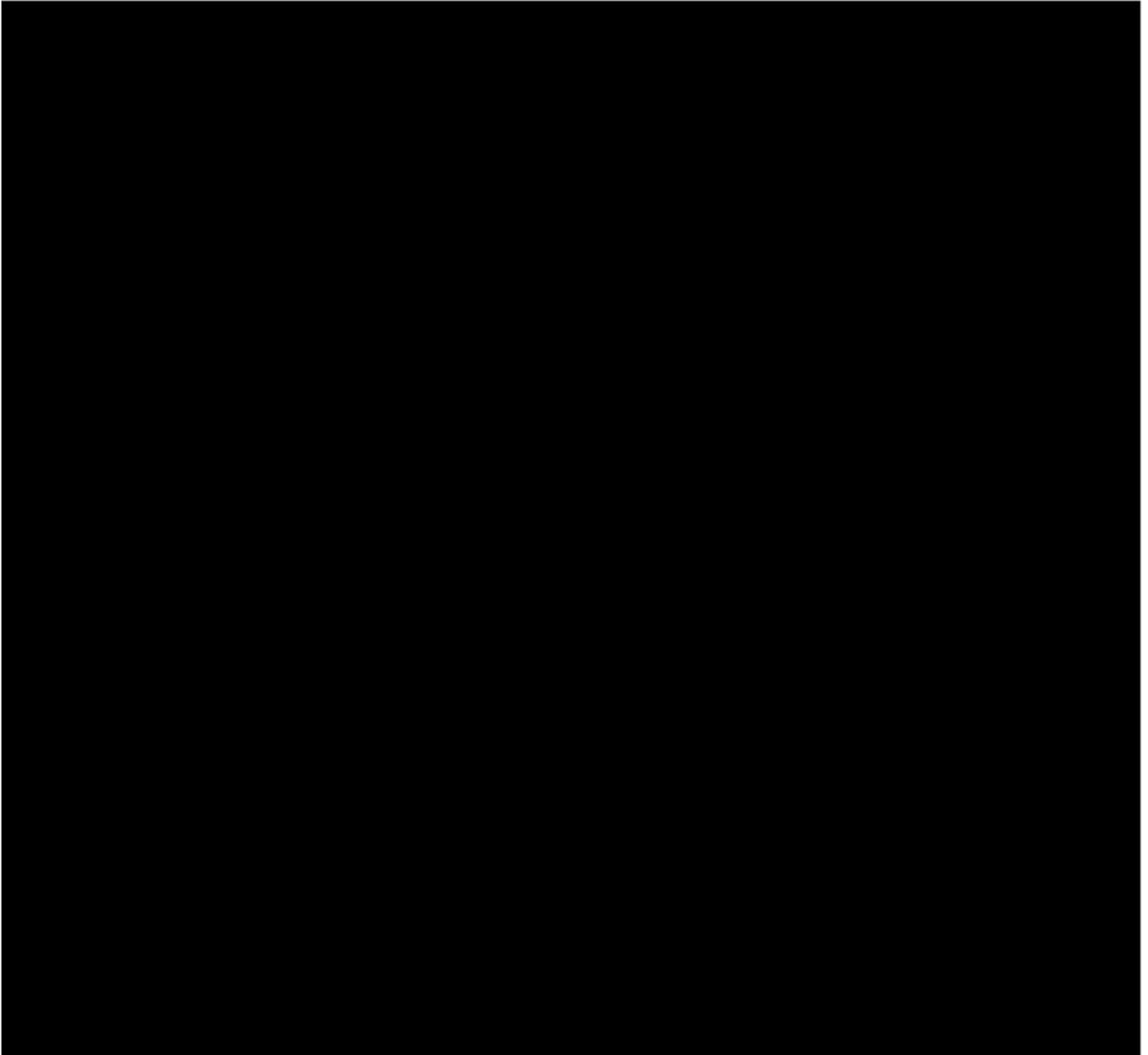
Legend

- Study Area (Lot 1212, DP 818944)
 - Nocturnal Fauna Survey Tracks (14-15/11/22)
 - + Koala SAT
- Plant Community Types and Vegetation Zones**
- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
 - PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
 - PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

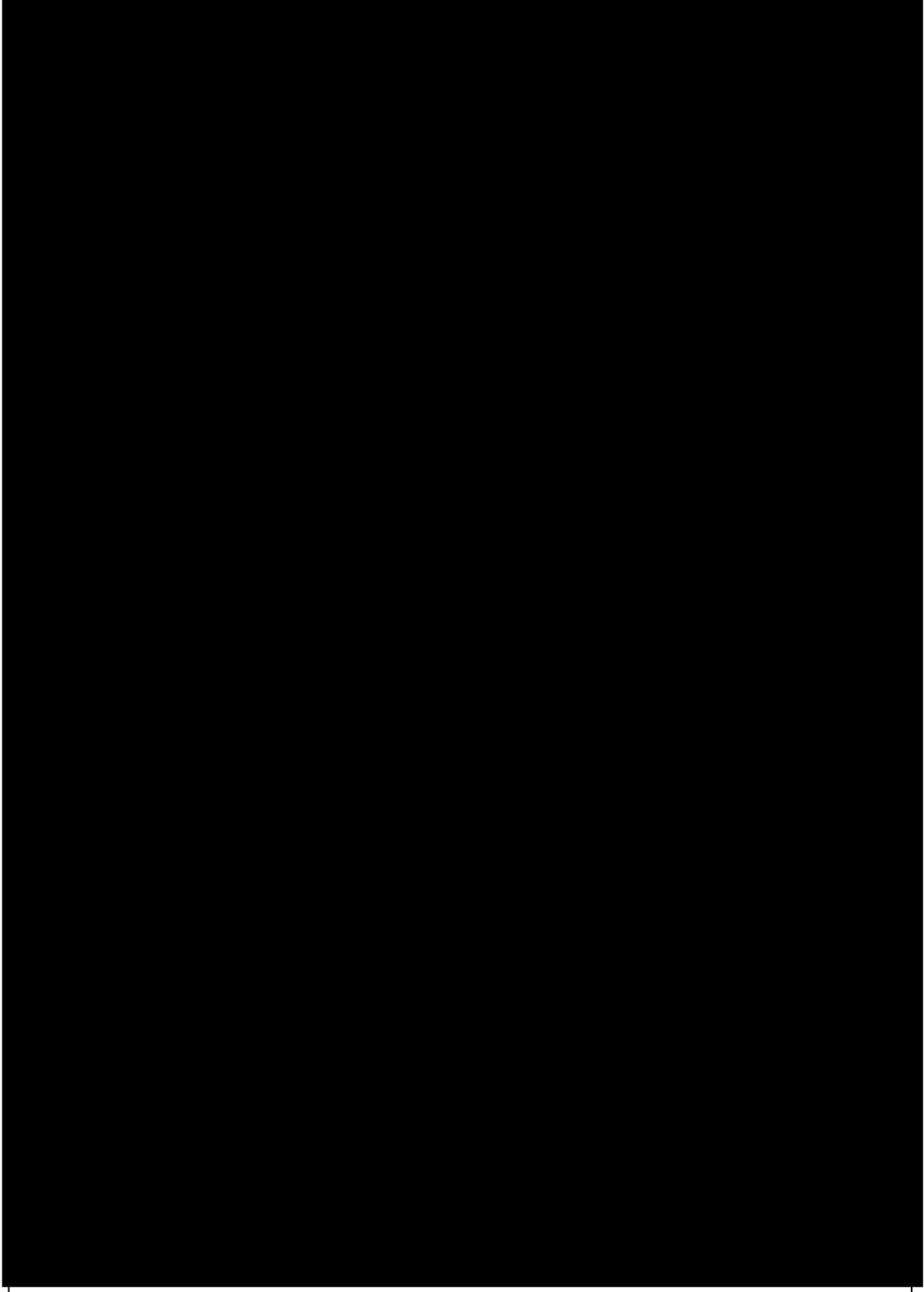
4.3 Identified Threatened Species

Step 5: Determine the area or count, and location of suitable habitat for Species Credit species and

Step 6: Determine the habitat condition within the species polygon for species assessed by area.





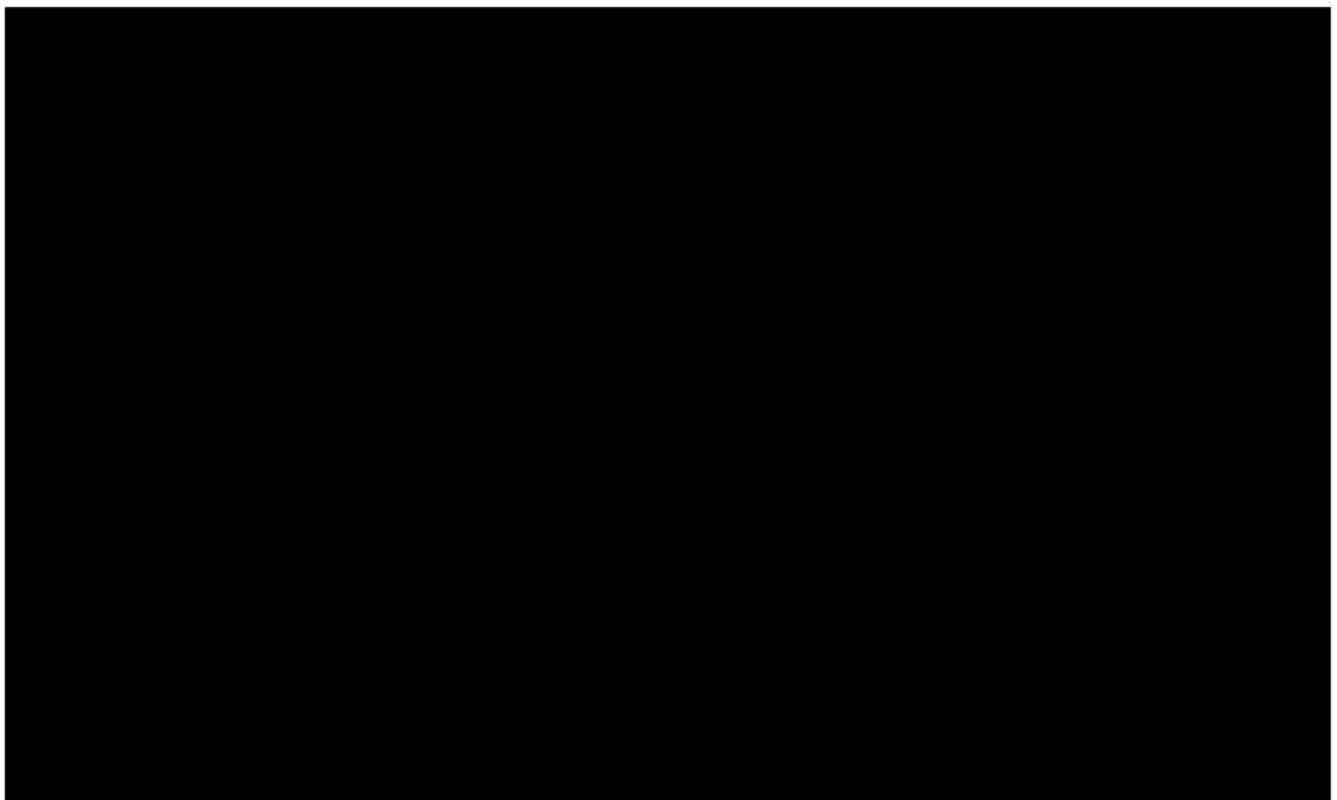


5 Avoiding and Minimising Impacts

5.1 Native Vegetation

All areas of native vegetation within the Study Area are proposed to be removed. Due to the limited extent of native vegetation, its low condition and lack of key habitat features such as hollow-bearing trees or habitat logs, removal of the vegetation is likely to have a negligible impact.

5.2 Threatened Species



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income. The document provides a detailed list of items that should be tracked, such as inventory levels, employee salaries, and utility bills. It also outlines the proper procedures for recording these transactions, including the use of double-entry bookkeeping to ensure that the books are balanced.

The second part of the document focuses on the analysis of the recorded data. It explains how to calculate key financial ratios and metrics, such as the gross profit margin and the current ratio. These calculations are essential for understanding the company's financial health and identifying areas for improvement. The document also discusses the importance of comparing the company's performance against industry benchmarks and providing a clear explanation of the reasons for any variances.

The final part of the document covers the preparation of financial statements. It provides a step-by-step guide to creating the income statement, balance sheet, and cash flow statement. Each statement is explained in detail, including the components that make up each one and how they are derived from the underlying data. The document also includes a checklist of items to verify before finalizing the statements to ensure that they are accurate and complete.

5.3 Impacts on Native Vegetation

All areas of native vegetation within the Study Area will be impacted by the proposed development. A summary of these impacts is presented in **Table 9**.

Table 9 Impacts on Native Vegetation

Veg Zone	PCT	Condition class	Study Area (ha)	Current VI Score	Future VI Score	Impact (ha)
1	1718	Cleared	4.20	2.4	0	4.20
2	1718	Moderate	0.32	34.0	0	0.33
3	1737	Moderate	0.17	15.7	0	0.17
Total						4.70

5.4 Impacts on Threatened Species

The [REDACTED]. Despite the low condition of the habitat in areas where the species was detected, all areas of the Study Area are assumed to represent suitable habitat for the species. The [REDACTED] is an area-based Species Credit species, therefore, impacts to the habitat are commensurate with impacts to native vegetation (**Table 10**).

Impacts to areas mapped as important habitat for the Swift Parrot are shown in **Table 11**.

Table 10 Impacts on [REDACTED]

Veg Zone	PCT	Condition class	Study Area (ha)	Habitat Score	Impacts (ha)
1	1718	Cleared	4.20	2.4	4.20
2	1718	Moderate	0.28	34.0	0.33
3	1737	Moderate	0.17	15.7	0.17
Total					4.70

Table 11 Impacts to Swift Parrot Important Habitat

Veg Zone	PCT	Condition class	Study Area	Habitat Score	Impact
1	1718	Cleared	4.20	2.4	0.03
2	1718	Moderate	0.28	34.0	0.12
3	1737	Moderate	0.17	15.7	-
Total					0.15

5.5 Indirect Impacts

Potential indirect impacts associated with the project include:

- Increased weed invasion and potential spread or introduction of pathogens from the site to adjacent vegetation
- Reduced viability of adjoining habitats due to increased noise, vibration, dust or light spill during the construction phase
- Runoff causing erosion, sedimentation, and the pollution of adjacent and retained habitats.

Mitigation measures to reduce the potential for these impacts are detailed in **Section 5.7**.

5.6 Prescribed Biodiversity Impacts

The following are prescribed impacts which need to be considered as per Section 8.3 of the BAM (DPIE 2020a).

Impacts of the development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation.

The proposed development will not result in impacts to human-made structures. Areas of non-native vegetation constitute habitat for the [REDACTED]. Mitigation measures to reduce the potential for impacts to this species (including proposed translocation) are presented in **Section 5.7**.

Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species.

The vegetation within the Study Area is highly fragmented and is unlikely to form part of a locally important habitat corridor. Habitat connectivity through the Study Area will be largely unaffected by the proposed development.

Impact of the development on movement of threatened species that maintains their life cycle.

As discussed above, the proposed development would have limited impacts on the movement of threatened species in the local area. While areas of native vegetation would be removed, movement corridors and higher quality vegetation (retained vegetation) within the locality will be unaffected.

Impacts of the development on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

No mapped watercourses occur within or adjacent to the Study Area. Mitigation measures have been provided to reduce the potential for indirect impacts to downstream aquatic habitats.

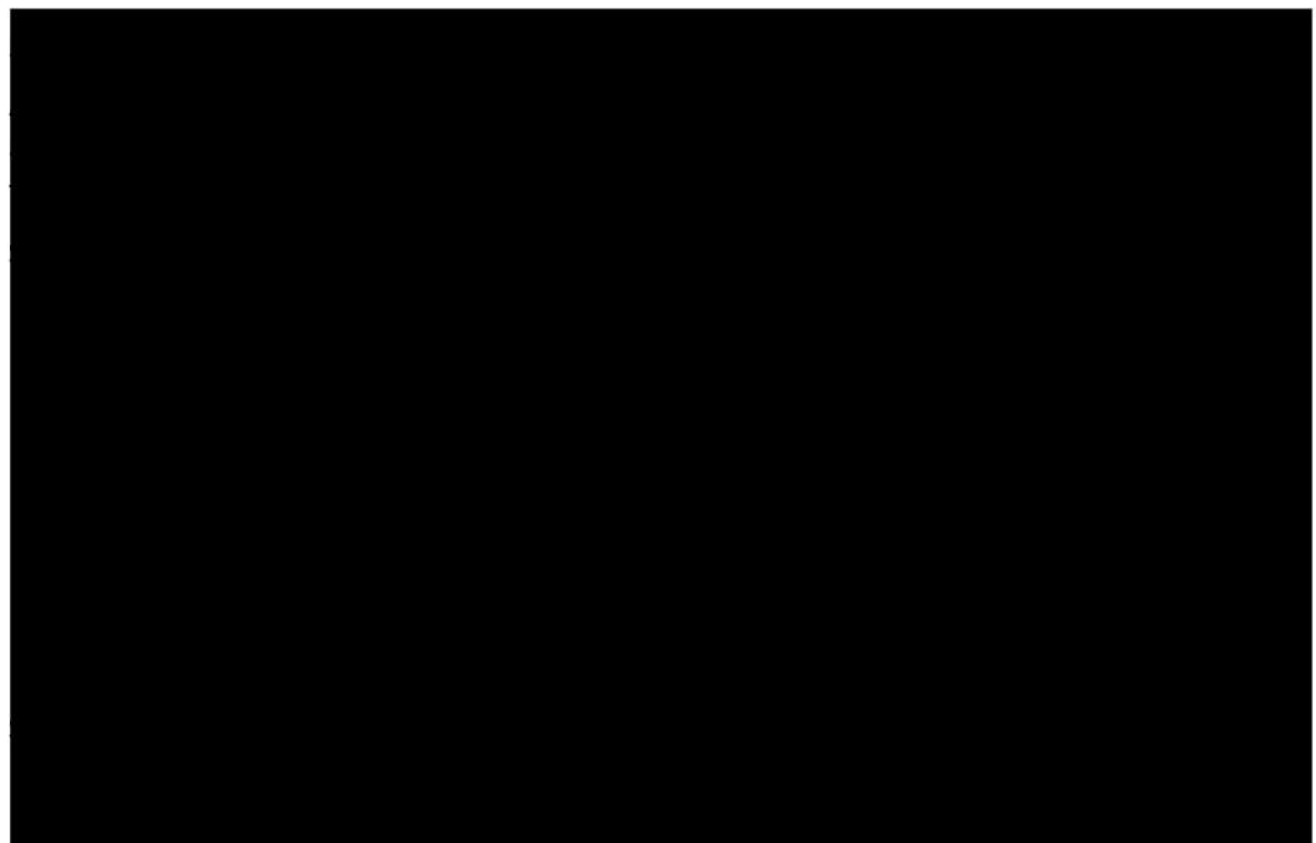
Impact of wind turbine strikes on protected animals.

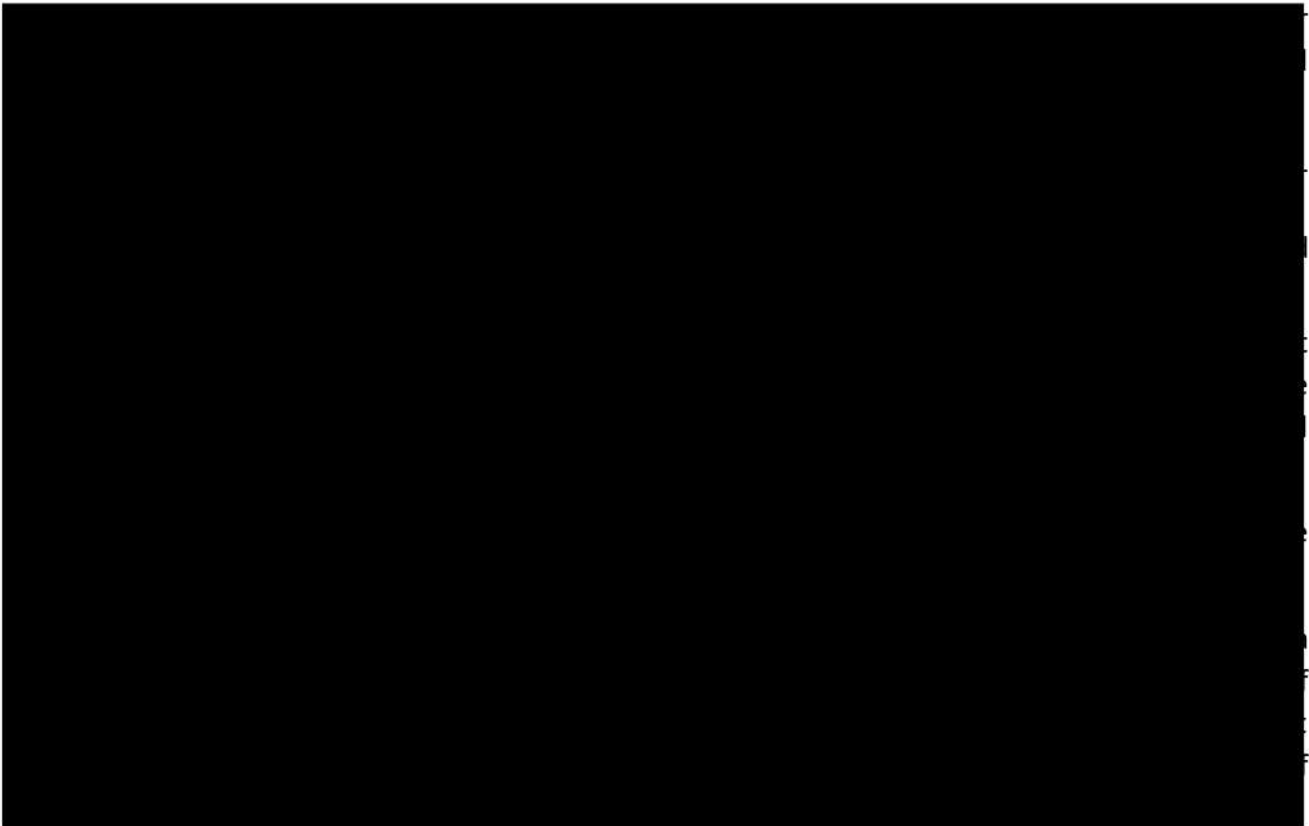
Not applicable to the current application.

Impacts of vehicle strikes on threatened species or on animals that are part of a TEC.

Given the nature of the proposed development (construction of a subdivision) it is likely that there will be an increase in vehicle movement within proximity to the Study Area. However, separation of the proposed development and areas of vegetation to be retained will ensure impacts (such as vehicle strikes) during operation will be minimised. Measures to minimise impacts of vehicle movements during the construction phase are outlined in **Section 5.7**.

5.7 Mitigation Measures





5.7.2 Further Mitigation Measures

The mitigation measures outlined in **Table 12** are proposed to minimise potential environmental impacts associated with the proposed development.

Table 12 Mitigation Measures.

Impact	Action and Outcome	Responsibility	Timing
Direct impacts			
Clearing of native vegetation	<ul style="list-style-type: none"> Avoid and minimise clearing impacts to native vegetation where possible. Clearly delineate the boundaries of the Development Site and exclusion areas to prevent any unnecessary clearing beyond its extent. This includes the installation of appropriate fencing along the eastern extent of the Development Site. Fencing should prohibit entry into the retained vegetation area and minimise indirect impacts during construction such as the movement of dust and rubbish into adjacent habitat. Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in close proximity (five m) to, areas of native vegetation retained under the proposed development. Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed surrounding the area of retained vegetation. Clearly identify and communicate the location of any 'no go zones' in site inductions. Tree protection measures will be implemented to protect retained trees surrounding the Development Site. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009). 	Construction site manager	Prior to and during vegetation clearing
Impacts to surface and groundwater quality and quantity due to sediment run-	<ul style="list-style-type: none"> Source controls such as sediment fences, mulching and jute matting will be used where appropriate. Site-based vehicles will carry spill kits. 	Construction site manager	During vegetation clearing, construction and operation

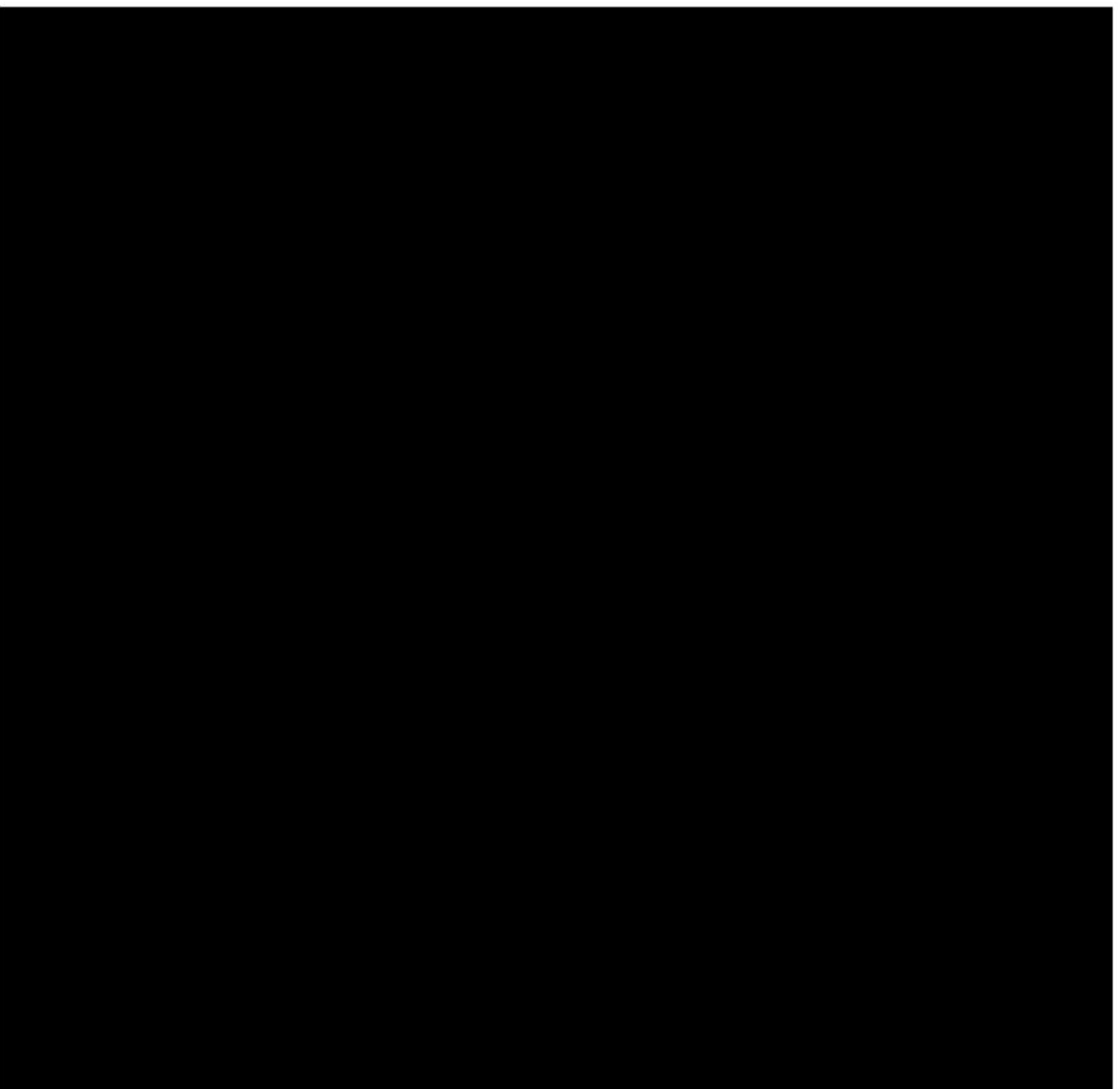
Impact	Action and Outcome	Responsibility	Timing
off and/or contaminant runoff	<ul style="list-style-type: none"> Erosion and sediment control will be required for the development in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction. Limit the use of pesticides in the Development Site to reduce the potential risk of contamination. 		
Vehicle collision with fauna	<ul style="list-style-type: none"> Speed limits within the Development Site should be limited to 40 km/hr. This limit should be clearly signed at all entry points to site. The Development Site should be separated from vegetated areas throughout the construction and operational phase. This separation should be achieved through physical barriers including fencing and appropriate signage. 	Construction site manager	During construction and operation
Indirect Impacts			
Transfer of weeds and pathogens to and from site	<ul style="list-style-type: none"> The fungal pathogens <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>) can have devastating impacts on native plant communities and inhabiting fauna if not properly managed. Appropriate wash down facilities will be available to clean vehicles and equipment prior to arrival on-site and prior to departure. Ensure soil and seed material are not transferred by vehicles or machinery. 	Construction site manager	During vegetation clearing, construction, and operation
Noise, vibration, lighting, waste, and air pollution impacts to adjacent sensitive habitat areas	<ul style="list-style-type: none"> Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. Impacts from construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on-site during construction. 	Construction site manager	During construction and operation

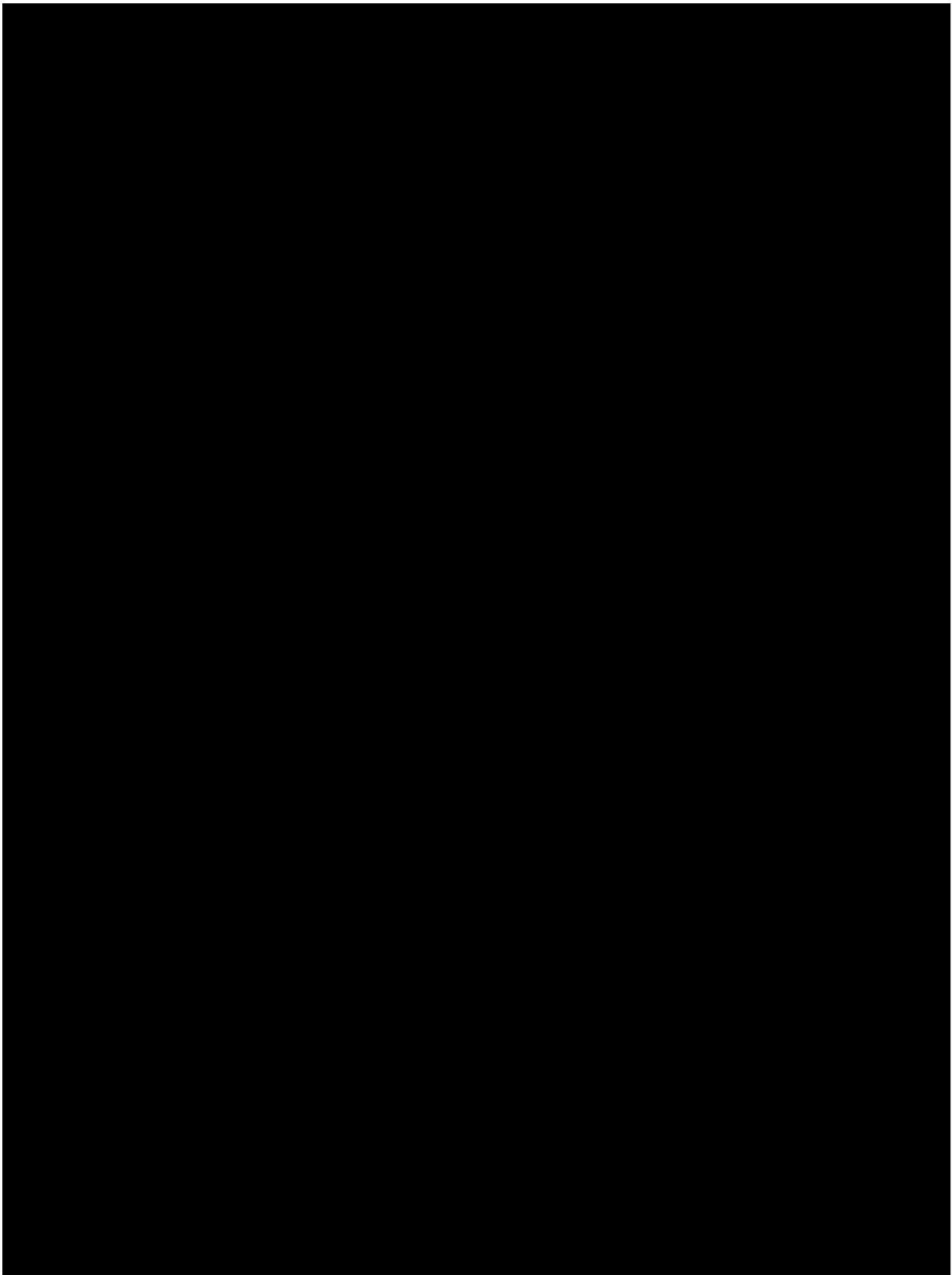
Impact	Action and Outcome	Responsibility	Timing
	<ul style="list-style-type: none"> • Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation pre, during and post construction • Fence sensitive areas to delineate 'no go' zones. • Levels of lighting during construction will be reduced to a minimal level and directed away from retained vegetation areas to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. • Lighting design should be in accordance with Appendix A of the National Light Pollution Guidelines for Wildlife (DEE 2020) and the Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting. • Noise minimization practices. • Dust control measures - covering loads, amending operations under excessive wind conditions, use of water tankers to control dust, rehabilitation of surfaces with vegetation and washing of truck wheels when entering the site. 		

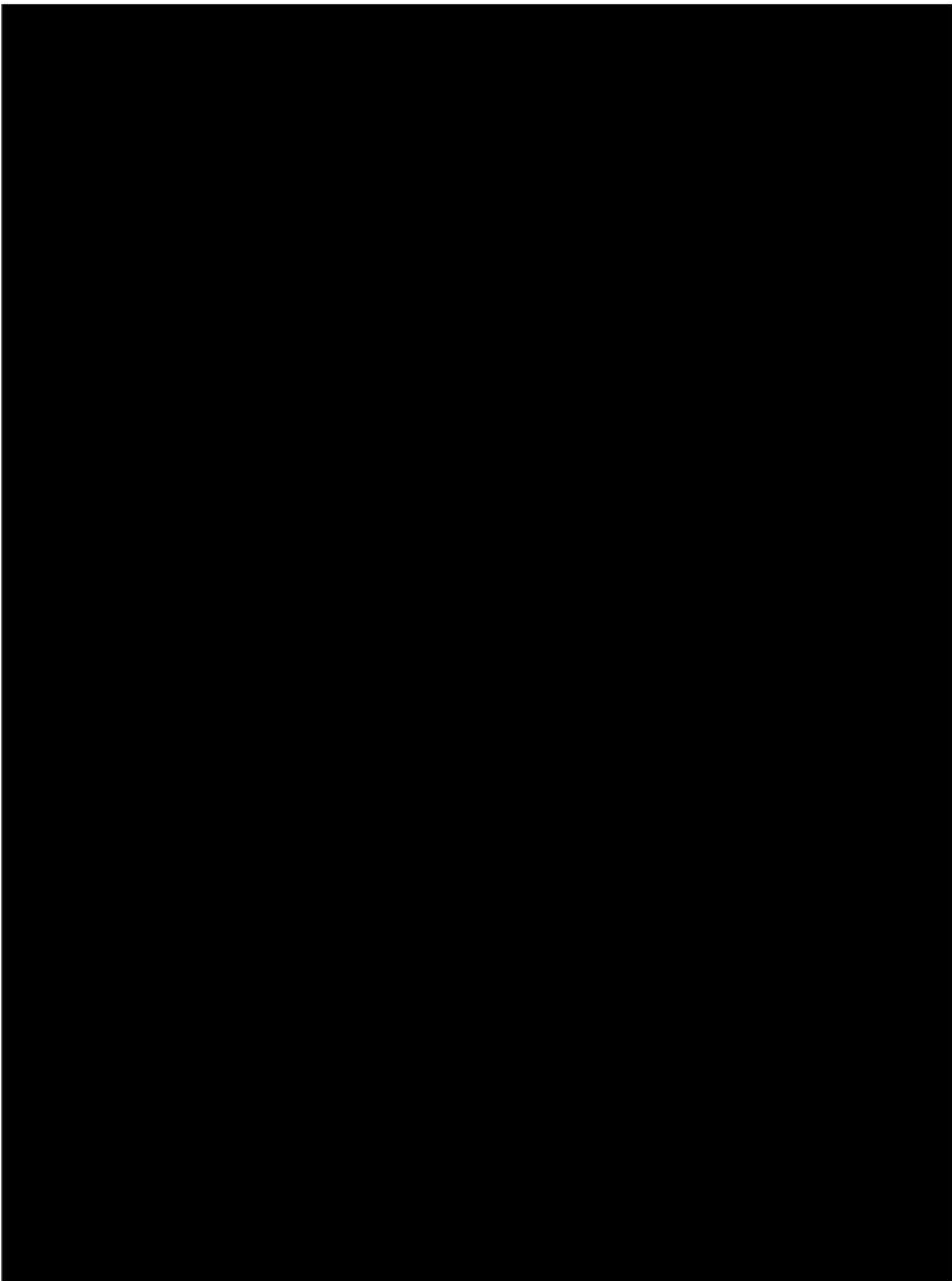
6 Impact Summary

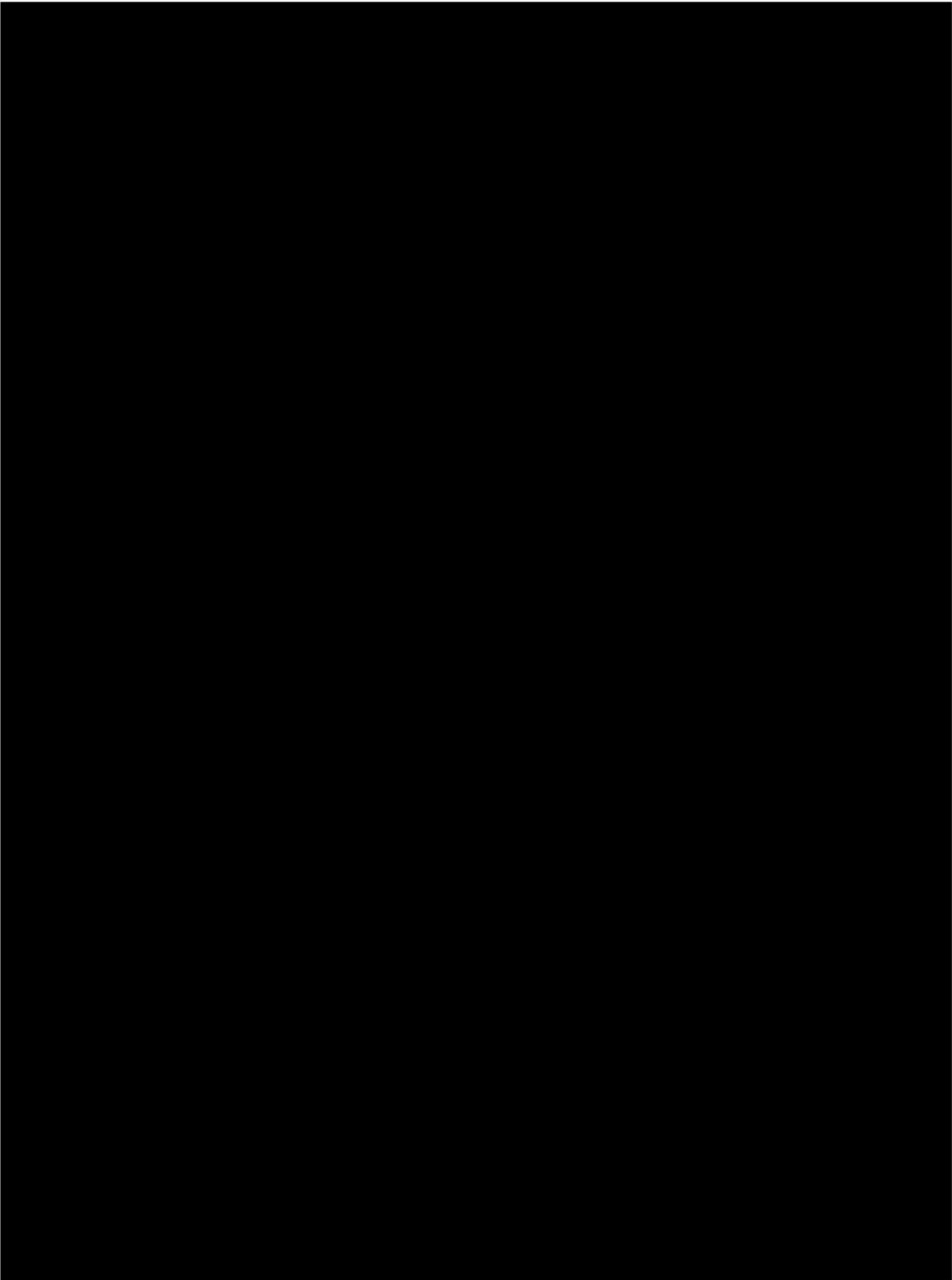
6.1 Serious and Irreversible Impacts

Two threatened species at risk of Serious and Irreversible Impact (SAII) are relevant to the assessment. The [REDACTED] site and important habitat for the Swift Parrot occurs near the western boundary. SAII assessments for these species are presented respectively in **Table 13** and **Table 14**.









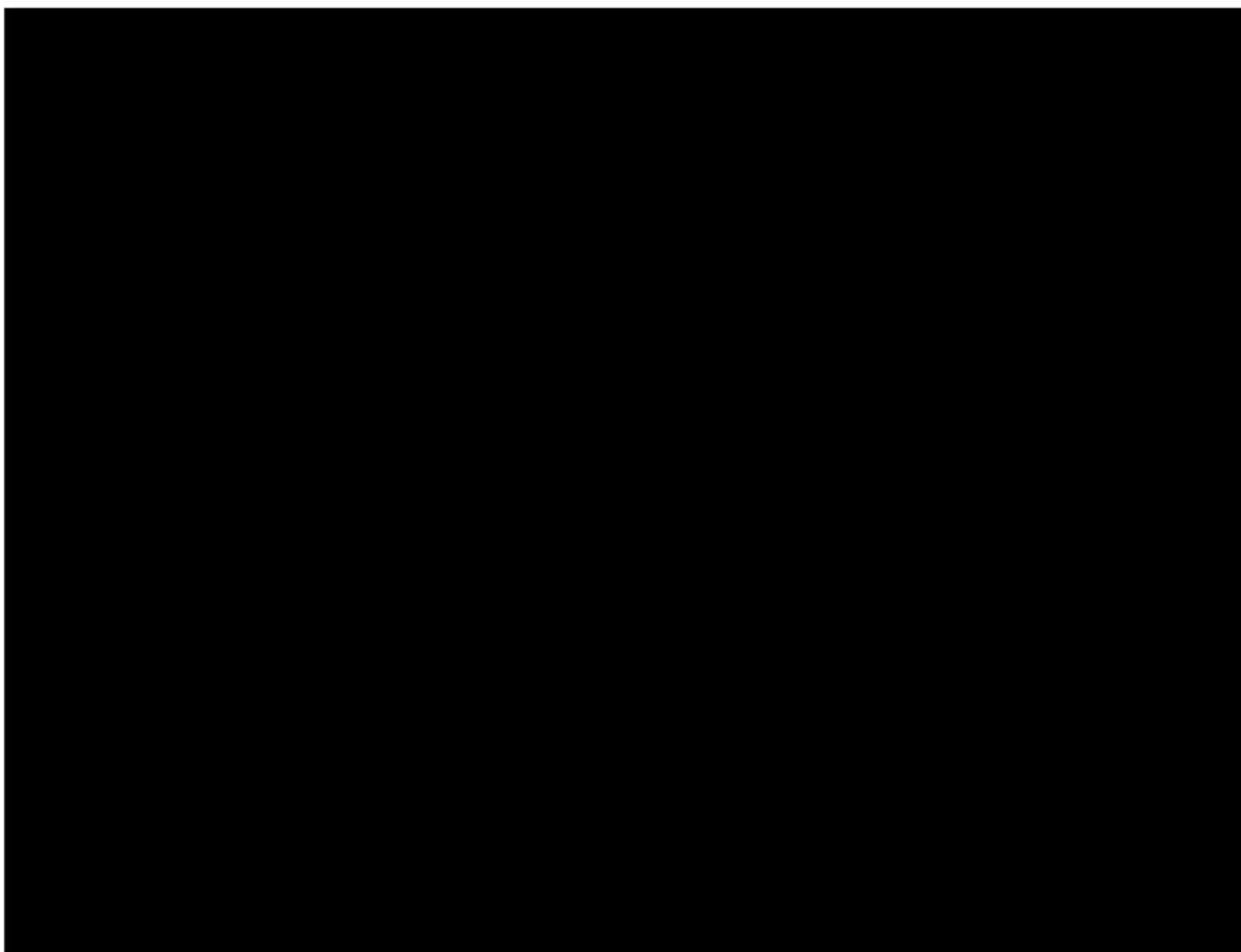


Table 14 **SAII Assessment – Swift Parrot**

Criteria	Comments
1. Impact Avoidance	
<i>What actions and measures were taken to avoid direct and indirect impacts on the species at risk of an SAII?</i>	<p>The area of Swift Parrot habitat to be impacted by the proposed development is comprised of a small area of low condition vegetation with few regenerating eucalypts (Swamp Mahogany). Areas of mapped habitat reflect the BAM Important Habitat Mapping for the species. The habitat is likely to be of low importance as foraging habitat to the Swift Parrot; therefore, avoidance is not proposed. While not necessarily avoided, large area of BAM Important Habitat Mapping exists to the north-west (Watanobbi) and the south (in proximity to Wyong Golf Course). These areas are concentrated around or in proximity to low-lying swampy areas with remnant vegetation (likely swamp sclerophyll forest) which provide abundant foraging resources for the species. BAM Important Habitat Mapping is buffered off areas where Swift Parrots have been detected in multiple years or in significant numbers. The Study Area is on the outer</p>

Criteria	Comments
	<p>extremity of this buffered area and is unlikely to be an important resource for the species.</p> <p>Mitigation measures will be implemented to ensure that indirect impacts to the species do not occur during the construction and operational phases of the project. These would include but are not limited to the following:</p> <ul style="list-style-type: none"> • Delineation of the Development Site to ensure that areas of native vegetation occurring outside the site are not impacted during the construction phase. • Best practice erosion and sediment control measures.
2. Current Population	
<i>Evidence of rapid decline</i>	<p>The Swift Parrot is a migratory species that breeds in Tasmania during the Australian summer. The species then migrates north to mainland Australia for the winter. It is estimated that the population contains around 2,000 mature individuals. Population analysis by Heinsohn et al. (2015) predicts that due to various threats, the population will decline by an average of 87% (79-95%) over three generations (12-18 years). Various threats to the population have been identified:</p> <ul style="list-style-type: none"> • Nest predation by Sugar Gliders (<i>Petaurus breviceps</i>) introduced to Tasmania poses a severe threat (Stojakovic et al. 2014) and is estimated to cause severe declines over the next three generations (Heinsohn et al. 2015). On mainland Tasmania almost 79% Swift Parrot nests were predated and 65% of adult females were killed by Sugar Gliders. • Habitat loss and alteration within breeding and drought refuge habitats remains a key threat. • Furthermore, Climate Change threatens to alter habitat phenology and climatic conditions such that habitat availability may be significantly reduced.
<i>Evidence of small population size</i>	<p>Significant declines in the Swift Parrot population were observed in the late 1980s to mid-1990s. The estimated population size of the Swift Parrot ranges from 1000 – 2499 individuals (Heinsohn et al. 2015).</p>
<i>Evidence of limited geographic range</i>	<p>On the mainland of Australia, the Swift Parrot forages in eucalypt forest and woodlands, mainly box-ironbark habitats on the inland slopes of the Great Dividing Range and in coastal forests. Critical food resources occur within this habitat, principally nectar from prolific flowering species. The extent of occurrence, including breeding and resident areas, is approximately 57 000 kilometres square (TSSC 2016).</p> <p>The estimated area of occupancy for the Swift Parrot ranges from 18.5 to 355 kilometres square. Models predict warmer drier conditions in south-east Tasmania which will increase the frequency of fire in the breeding habitat. Over 50% of the original grassy <i>E. globulus</i> forest in Tasmania has</p>

Criteria	Comments
	<p>been cleared (Brereton et al. 2004). Selective logging has resulted in the removal of larger trees from the remaining forest patches.</p>
<p><i>Evidence that the species is unlikely to respond to management</i></p>	<p>The availability and flowering of the feed trees can severely affect the availability of breeding habitat for the Swift Parrot (Tzaros et al. 2009). Most breeding birds are found in remnant forest patches of less than 0.01 square kilometers. Recovery efforts have focused on habitat improvement and attempts to reduce the impacts of Sugar Gliders, these are beneficial but will need to be amplified to reverse negative population trends.</p> <p>Furthermore, the species appears to be very susceptible to Allee effects, where survival and reproductive success decline with decreasing population density. The Swift Parrot nests in hollows of both live and dead eucalypt trees. The Swift Parrot is threatened by disturbance, Psittacine beak and feather disease and also illegal bird capture and trade (Saunders 2007).</p> <p>Based on the number of threats to the Swift Parrot, the species is unlikely to respond to management.</p>
<p>3. Impacts of the proposal on the SAI species</p>	
<p><i>Impact on the species' population</i></p> <p><i>i) Estimate of the number of individuals present in the subpopulation on the subject land and as a percentage of the total NSW population</i></p> <p><i>ii) an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or</i></p> <p><i>iii) if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.</i></p>	<p>No individuals of the Swift Parrot were recorded within the Study Area during opportunistic fauna species. An estimate of the number of individuals within the Project area as a percentage of the total NSW population is not proposed. Very few records exist of the species with the locality. The closest records are approx. 700m to the south-east (behind Wyong Hockey Complex). Tuggerawong Public School and Wadalba Water Tower are the next closest locations where the species has been recorded. As such, it can be concluded that the species sporadically forages (according to flowering trees) as they move up the NSW coast.</p> <p>As the Swift Parrot breeds in Tasmania, the proposed development will not impact breeding habitat. A total of 0.33 hectares of suitable foraging habitat for the species occurs within the Project area. All of this vegetation will require removal for the proposed development.</p>
<p><i>Impact on geographic range</i></p> <p><i>i) the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW</i></p> <p><i>ii) the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but</i></p>	<p>The Project would affect some suitable habitat, but no individuals of the species would be directly impacted. Movement corridors within the locality would remain intact, where the Project would not contribute further to fragmentation.</p> <p>The Swift Parrot is a highly mobile species, which migrates annually from Tasmania. During construction, the Project would remove 0.33 hectares of suitable foraging habitat. The species demonstrate high site fidelity and</p>

Criteria	Comments
<p><i>no individuals of the species will be directly impacted.</i></p> <p><i>ii) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species</i></p> <p><i>iv) to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.</i></p>	<p>are known to regularly return to the same sites, however, they often move in repose to feeding resources.</p> <p>Due to the low condition and isolated location of the foraging habitat within the Development Site, the proposed development is unlikely to contribute greatly to fragmentation of habitat.</p>

4. New Information

<p><i>The assessor may also provide new information that can be used to demonstrate that the principle identifying the species as at risk of an SAll, is inaccurate.</i></p>	Not applicable.
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Summary

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that the habitat to be removed is important to the long-term survival of the Swift Parrot.

6.2 Impacts Not Requiring Offsets

The proposed development will impact 4.2 ha of cleared land (PCT 1718) and 0.17 ha of wetland vegetation (PCT 1737). Due to the low vegetation integrity of this vegetation, Ecosystem Credits are not required. Note that species credits will be required for impacts to the Wyong Sun Orchid for removal of habitat from these vegetation zones.

Mitigation measures have been presented to reduce the potential for indirect impacts to areas of retained native vegetation. No offsets have been generated for indirect impacts.

6.3 Impacts on Native Vegetation

This section provides an assessment of the direct impacts to native vegetation requiring offsetting, and those not requiring offsets in accordance with Section 10.1 of the BAM (DPIE 2020a).

In accordance with the BAM (Section 9.2.1 [DPIE 2020a]) assessors must determine the offset obligation for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity (VI) score of:

- ≥ 15 , where the PCT is representative of an EEC or a CEEC
- ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.
- ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

All areas within the Study Area have been included in the current offset calculations. A summary of the impacts on native vegetation and the required ecosystem credits is provided in **Table 15**.

Table 15 Summary of Ecosystem Credit Requirements

Veg Zone	PCT	Condition class	Study Area (ha)	Current VI Score	Future VI Score	Credit Requirements
1	1718	Cleared	4.20	2.4	0	0
2	1718	Moderate	0.33	34.0	0	6
3	1737	Moderate	0.17	15.7	0	0

6.4 Impacts on Threatened Species

This section provides an assessment of the direct impacts to threatened species requiring offsetting, and those not requiring offsets in accordance with BAM.



An area of important habitat for the Swift Parrot in the western portion of the Study Area will be impacted by the proposed development. A summary of the species credits required to offset residual impacts is provided in **Table 17**. The species polygon for the Swift Parrot is presented on **Figure 12**.

Table 17 Summary of Swift Parrot Species Credit Requirements

Veg Zone	PCT	Condition class	Unit of Measure Area (ha)	Habitat Score	Biodiversity Risk Weighting	Credit Requirements
1	1718	Cleared	0.03	2.4	3	1
2	1718	Moderate	0.12	34.0	3	3

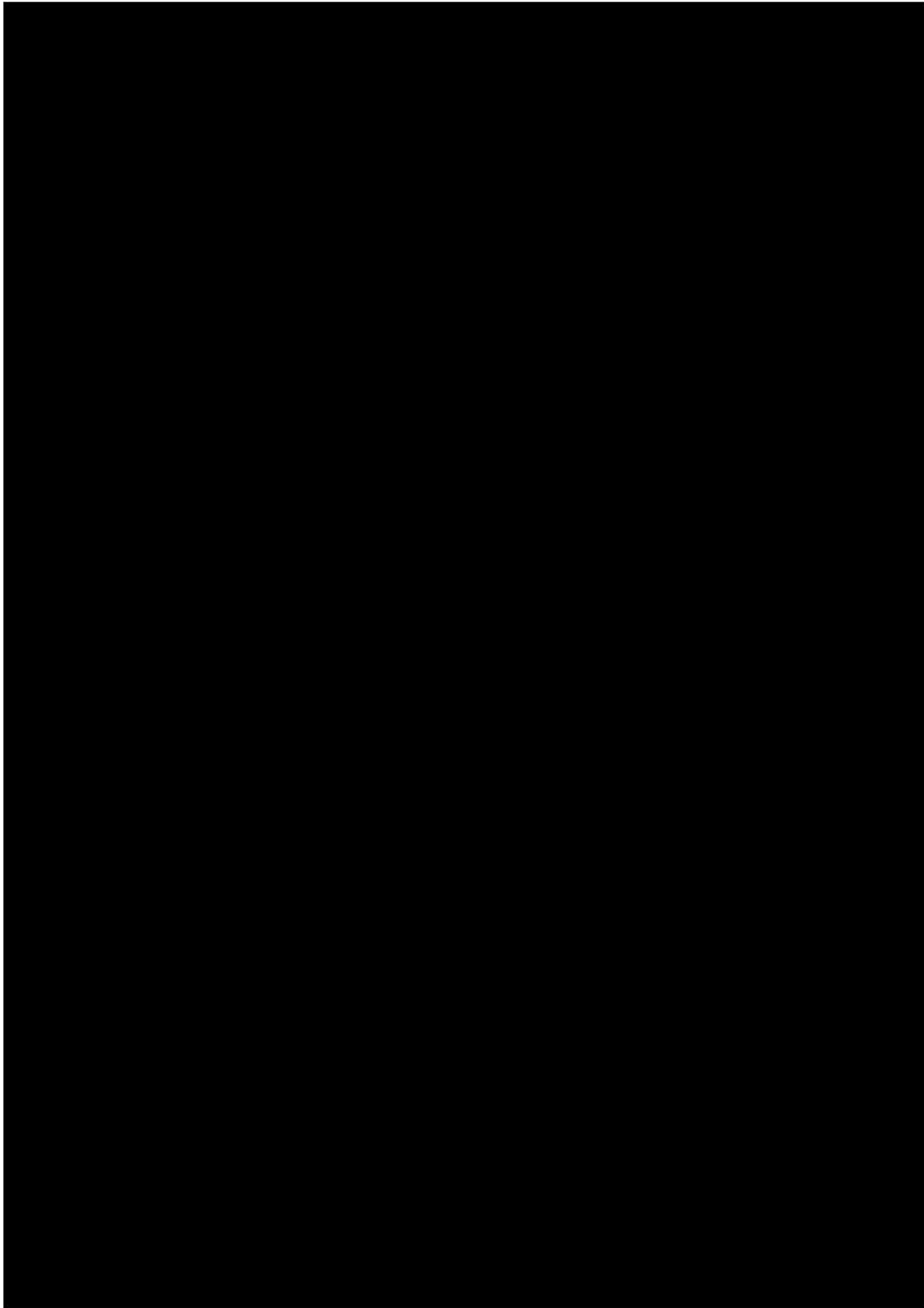




Figure 12 - Species Polygon - Swift Parrot



Legend

Study Area (Lot 1212, DP 818944)

Species Polygon - Swift Parrot

Plant Community Type (PCT)

Exotic Grassland / Cleared (VZ01 - 4.20 ha)

PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast (VZ02 - Regenerating - 0.28 ha)

PCT 1737 - Typha Rushland (VZ03 - Wetland - 0.17)

Isolated Native Trees (0.04 ha)

7 Legislative Review

7.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act requires that developments or undertakings that are likely to have a significant impact on MNES be referred for a determination as to whether they are a controlled action which requires approval under the EPBC Act (Section 1.5.1). Of the nine MNES listed under the Act, the following are considered relevant to the Project:

- [REDACTED]
- Swift Parrot (*Lathamus discolor*)
 - Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.

Assessments of significance have been undertaken in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) in **Appendix F**.

Given the high conservation status of the [REDACTED] and the uncertainty of adequately addressing each of the significant impact criteria, an EPBC referral to the Commonwealth Minister for the Environment is recommended.

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that the habitat to be removed is important to the long-term survival of the Swift Parrot.

Although the extent of the *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* within the site will be removed as part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

7.2 Biosecurity Act

Species which require control prior to and post construction of the Project to ensure they are not spread due to construction and clearing works, include the high threat species listed in **Table 18**.

Table 18 Weed species requiring control within the Study Area.

Family	Scientific Name	Common Name	Weeds of National Significance (WONS)	Priority weeds (Biosecurity Act)	High Threat Weeds (BAM)
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	Yes	Yes	Yes
Poaceae	<i>Cortaderia selloana</i>	Pampas Grass	-	Yes	Yes
Oleaceae	<i>Ligustrum lucidum</i>	Large-leaved Privet	Yes	Yes	Yes
Rosaceae	<i>Rubus anglocandicans</i>	Blackberry	Yes	Yes	Yes
Verbenaceae	<i>Lantana camara</i>	Lantana	Yes	Yes	Yes

7.3 Koala Habitat Protection SEPP 2021

The Study Area is located within the Central Coast LGA, which is listed within Schedule 1 of Chapter 4 of the Biodiversity and Conservation SEPP (Koala Habitat Protection 2021). Chapter 4 of the Biodiversity and Conservation SEPP was therefore deemed applicable to the proposal. As such, an assessment of Koala habitat suitability was conducted in accordance with the SEPP including the determination of 'Highly Suitable Koala Habitat' and 'Core Koala Habitat' within the Study Area. These are defined as the following:

- **Highly Suitable Koala Habitat** – Where 15% or greater of the total number of trees within any PCT are the regionally relevant species of those listed in Schedule 2 of the Koala SEPP 2021, the site meets the definition of highly suitable Koala habitat.
- **Core Koala Habitat** – is defined as:
 - a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
 - b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years. Historical koala occupation of the site area is determined by considering koala records within the last 18 years, within the following maximum distances from the external boundary of the site area:
 - i. 2.5 km of the site (for North Coast, Central Coast, Central Southern Tablelands, South Coast KMAs)
 - ii. Five km of the site (for Darling Riverine Plains, Far West, North West Slopes, Riverina, Northern Tablelands KMAs).

An assessment of the presence of 'Highly Suitable Koala Habitat' and 'Core Koala Habitat' within the Study Area in accordance with Chapter 4 of the SEPP is presented below.

Presence of Highly Suitable Koala Habitat

Koala use tree species listed under Schedule 3 of the SEPP (Central Coast Koala Management Area) were identified within the Study Area, including *Eucalyptus robusta* (Swamp Mahogany). This species constitutes more than 15% of the total number of trees within the regenerating areas of the site (Vegetation Zone 2 – PCT 1718). As such, this vegetation zones represents "highly suitable habitat" under the SEPP.

Presence of Core Koala Habitat

No evidence of a Koala population within the Study Area was found during the assessment. The nearest record of Koalas to the site was recorded to the west at Watanobbi in 1994. No records of Koalas within the past 18 years occur within 2.5 km of the Study Area. Therefore, the habitats within the Study Area do not meet the definition of 'Core Koala Habitat' under the SEPP.

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Appendix A – Threatened Species Database Search

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Angophora inopina</i>				This species is endemic to the central coast region of NSW and is known to occur in four main vegetation communities: <ul style="list-style-type: none"> <i>Eucalyptus haemastoma</i> / <i>Corymbia gummifera</i> / <i>Angophora inopina</i> woodland / forest. <i>Hakea teretifolia</i> / <i>Banksia oblongifolia</i> wet heath <i>Eucalyptus resinifera</i> / <i>Melaleuca sieberi</i> / <i>Angophora inopina</i> sedge / woodland. <i>Eucalyptus capitellata</i> / <i>Corymbia gummifera</i> / <i>Angophora inopina</i> woodland / forest. Flowering generally poor and sporadic.		Habitat is considered to be too degraded.
Charmhaven Apple	V	V	2569		Nil	Not recorded during site assessment.
<i>Caladenia tessellata</i>	E1,P,2	V	2	Occurs from Central Coast NSW to southern VIC. Mostly coastal but extends inland to Braidwood in southern NSW. In NSW grows in grassy dry sclerophyll woodland on clay loam or sandy soils, and less commonly in heathland on sandy loam soils.	Low	Habitat is considered to be too degraded. Few records within locality. Not recorded during site assessment.
Thick Lip Spider Orchid						
<i>Callistemon linearifolius</i>	V,3	-	5	This shrub grows up to 3-4 m tall, with red flowers that are clustered into the typical "bottlebrushes". The species grows in dry sclerophyll forest on the coast and adjacent ranges.	Low	Habitat is considered to be too degraded. Few records within locality. Not recorded during site assessment.
Netted Bottle Brush						
<i>Corunastylis</i> sp. Charmhaven (NSW896673)	E1, P,2	CE	28	<i>Corunastylis</i> sp. Charmhaven (NSW896673) is currently only known from the Wyong Shire of NSW where it is restricted to a few locations in the Charmhaven, Warnervale and Tooheys Road (Bushells Ridge) areas. It occurs within low woodland to heathland with a shrubby understorey and ground layer. Dominants include Black She-oak (<i>Allocasuarina littoralis</i>), Prickly Tea-tree (<i>Leptospermum juniperinum</i>), Prickly-leaved Paperbark (<i>Melaleuca nodosa</i>), Narrow-leaved Bottlebrush (<i>Callistemon linearis</i>) and Zig-zag Bog-rush (<i>Schoenus brevifolius</i>).	Low	Habitat is considered to be too degraded. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Cryptostylis hunteriana</i>	V,P,2	V	3	The species occurs in coastal areas from East Gippsland to southern Queensland. Habitat preferences for this species are not well defined, however it is known to grow in coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest. Prefers open areas in the understorey and is often found in association with <i>Cryptostylis subulata</i> and <i>Cryptostylis erecta</i> .	Low	Habitat is considered to be too degraded.
Leafless Tongue Orchid						Not recorded during site assessment.
<i>Eucalyptus camfieldii</i>						Habitat is considered to be too degraded.
Camfield's Stringybark	V	V	10	Occurs from Raymond Terrace to Waterfall, with populations known from Norah Head (Tuggerah Lakes), Peats Ridge, Mt Colah, Elvina Bay Trail (West Head), Terrey Hills, Killara, North Head, Menai and the Royal NP. Occurs in exposed situations on sandstone plateaus, ridges and slopes near the coast, often on the boundary of tall coastal heaths or low open woodland. It grows in shallow sandy soils overlying Hawkesbury sandstone.	Nil	Not recorded during site assessment.
<i>Eucalyptus parramattensis subsp. decadens</i>	V	V	112	Generally occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant.	Nil	Habitat is considered to be too degraded.
-						Not recorded during site assessment.
<i>Genoplesium insigne</i>						Habitat is considered to be too degraded.
Variable Midge Orchid	E4A, P	CE	24	Appears to be associated with PCT 1636 Scribbly Gum – Red Bloodwood – <i>Angophora inopina</i> (not always present) heathy woodland on lowlands of the Central Coast and variations containing <i>Angophora costata</i> (Smooth-barked Apple). Grows in patches of <i>Themeda triandra</i> (Kangaroo Grass), which can be ephemeral. Other associated species include, but are not limited to, <i>Mirbelia speciosa</i> , <i>Ptilothrix deusta</i> , <i>Leptospermum trinervium</i> and <i>Leptospermum juniperinum</i> in wet (seasonal) heath settings, <i>Banksia spinulosa</i> and <i>Xanthorrhoea latifolia</i> , and <i>Xanthorrhoea media</i> .	Low	Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Grevillea parviflora subsp. parviflora</i> Small-flower Grevillea	V	V	114	The species distribution is between Moss Vale/Bargo and the lower Hunter Valley, with most occurrences in Appin, Wedderburn, Picton and Bargo. The habitat for the species is broad including heath, shrubby woodland and open forest on light clay or sandy soils, and often in disturbed areas such as on the fringes of tracks.	Nil	Habitat is considered to be too degraded. Not recorded during site assessment.
<i>Maundia triglochinoidea</i>	V	-	17	Restricted to coastal NSW and extending into southern Queensland. The current southern limit is Wyong; former sites around Sydney are now extinct. Grows in swamps, lagoons, dams, channels, creeks or shallow freshwater 30 - 60 cm deep on heavy clay, low nutrients.	Moderate	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
<i>Melaleuca biconvexa</i> Biconvex Paperbark	V	V	444	Scattered, disjunct populations in coastal areas from Jervis Bay to Port Macquarie, with most populations in the Gosford-Wyong areas. Grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Nil	Habitat is considered to be too degraded. Not recorded during site assessment.
<i>Prostanthera askania</i> Tranquility Mint-bush	E1	E	1	Occurs over a very restricted geographic range (of less than 12 km) in the upper reaches of creeks that flow into Tuggerah Lake or Brisbane Water within the Wyong and Gosford local government areas. Eight populations are known from the catchments of Ourimbah Creek, Narara Creek, Dog Trap Gully, Chittaway Creek and Berkeley Creek. A further two populations are known from the Erina Creek-Fires Creek catchment. The species may also have occurred in West Gosford. Occurs adjacent to, but not immediately in, drainage lines on flat to moderately steep slopes formed on Narrabeen sandstone and alluvial soils derived from it. Occurs in moist sclerophyll forest and warm temperate rainforest communities, and the ecotone between them. These communities are generally tall forests with a mesic understorey; Sydney Blue Gum <i>Eucalyptus saligna</i> and Turpentine <i>Syncarpia glomulifera</i> are usually present, though canopy species present can be highly variable.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Rhodamnia rubescens</i> Scrub Turpentine	E4A	-	4	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
<i>Rhodomyrtus psidioides</i> Native Guava	E4A	-	2	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
<i>Rutidosia heterogama</i> Heath Wrinklewort	V	V	274	Small perennial herb of the daisy family to 30cm. Grows in heath on sandy soils and moist areas in open forest, and has been recorded along disturbed roadsides. The species has a scattered distribution in coastal locations between Wyong and Evans Head and on the New England Tablelands from Torrington and Ashford south to Wandsworth south-west of Glen Innes.	Low	Habitat is considered to be too degraded. Not recorded during site assessment.
<i>Syzygium paniculatum</i>	E1	V	5	The species occurs in a narrow coastal strip from Bulahdelah to Conjola State Forest. Rainforest on sandy soils or stabilised Quaternary sand dunes at low altitudes in coastal areas, often in remnant littoral or gallery	Nil	No suitable habitat within the Subject Site. Few records within the locality.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Magenta Lilly Pilly				rainforests Plants produce white flower-clusters at the end of each branch is the preferred habitat for this species. The petals are small accompanied by prominent long stamens.		Not recorded during site assessment.
<i>Tetratheca juncea</i>	V	V	77	Regarded as extinct within the Sydney area, current range from Wyong north to Bulahdelah and inland 50km to edge of Sugarloaf Range. Occurs predominately in areas of over 1000 mm annual rainfall, within dry sclerophyll forest, and sometimes heath and moist forest, with a preference for Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland.	Low	Habitat is considered to be too degraded.
Black-eyed Susan						Not recorded during site assessment.
<i>Anthochaera phrygia</i>	E4A,P	CE	12	In NSW the species is confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Non-breeding flocks are seen occasionally in coastal areas foraging in flowering Spotted Gum and Swamp Mahogany forests. Habitat for the species includes dry open forest	Low	Foraging habitat only. Not mapped as important habitat

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Regent Honeyeater				and woodlands, particularly Box-Ironbark woodland and riparian forests of River Sheoak, with an abundance of mature trees, high canopy cover and abundance of mistletoes.		Not recorded during site assessment.
<i>Anseranas semipalmata</i>	V,P		1	The Magpie Goose is still relatively common in the Australian northern tropics, but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes.	Low	Foraging habitat only. Not mapped as important habitat. One record in the locality
Magpie Goose						Not recorded during site assessment.
<i>Artamus cyanopterus cyanopterus</i>	V,P	-	3	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Low	Foraging habitat only.
Dusky Woodswallow						Not recorded during site assessment.
<i>Burhinus grallarius</i>	E1,P		13	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	Nil	No suitable habitat within the Subject Site. Lack of woody debris.
Bush Stone-curlew						Not recorded during site assessment.
<i>Botaurus poiciloptilus</i>	E1,P	E	5	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours	Low	Broadly suitable habitat within the Subject Site.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Australasian Bittern				permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.).		Not recorded during site assessment.
<i>Calidris ferruginea</i>	E1,P	CE,C,J,K	14	The species occurs along the entire coast of NSW, particularly in the Hunter Estuary, and freshwater wetlands in the Murray-Darling Basin. Breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales can be found mainly in intertidal mudflats of sheltered coasts.	Nil	No suitable habitat within the Subject Site. Records within the locality.
Curlew Sandpiper						Not recorded during site assessment.
<i>Calidris tenuirostris</i>	V,P	CE,C,J,K	1	In NSW, occurs in scattered sites along the coast to Narooma – it has been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.	Nil	No suitable habitat within the Subject Site. No records within the locality.
Great Knot						Not recorded during site assessment.
<i>Callocephalon fimbriatum</i>	E2,V,P,3	-	2	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests.	Low	Foraging habitat only. No breeding habitat.
Gang-gang Cockatoo						Not recorded during site assessment.
<i>Galyptorhynchus lathami</i>	V,P,2	-	28	Widespread but uncommon from coast to southern tablelands and central western plains. Feeds almost exclusively on the seeds of Allocasuarina species. Prefers	Low	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Glossy Black-Cockatoo				woodland and open forests, rarely away from Allocasuarina. Roost in leafy canopy trees, preferably eucalypts, usually <1 km from feeding site. Nests in large (approx. 20 cm) hollows in trees, stumps or limbs, usually in Eucalypts.		Not recorded during site assessment.
<i>Chthonicola sagittata</i>	V,P	-	1	Within NSW most frequently reported from the hills and tablelands of the Great Dividing Range, rarely from the coast. The species inhabits a wide range of Eucalypt-dominated communities with a grassy understorey, a sparse shrub layer, often on rocky ridges or in gullies. Sedentary and requires large, relatively undisturbed remnants to persist in an area. Forages on the ground for seeds and insects, and nests in a slight hollow in the ground or at the base of low dense plants.	Low	Marginally suitable aerial foraging habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
Speckled Warbler						
<i>Circus assimilis</i>	V,P	-	14	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Low	Marginally suitable aerial foraging habitat within the Subject Site. Not recorded during site assessment.
Spotted Harrier						
<i>Daphoenositta chrysoptera</i>	V,P	-	40	Sedentary, occurs across NSW from the coast to the far west. Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Sensitive to habitat isolation and loss of structural complexity, and adversely affected by dominance of Noisy Miners. Cleared agricultural land is potentially a barrier to movement. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
Varied Sittella						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Ephippiorhynchus asiaticus</i>	E1,P	-	47	Primarily inhabits permanent freshwater wetlands and surrounding vegetation including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters. Will also forage in inter-tidal shorelines, mangrove margins and estuaries. Feeds in shallow, still water. This species breeds during summer, nesting in or near a freshwater swamp.	Nil	Broadly suitable foraging habitat within the Subject Site. Not recorded during site assessment.
Black-necked Stork						
<i>Epthianura albifrons</i>	V,P	-	2	Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
White-fronted Chat						
<i>Glossopsitta pusilla</i>	V,P	-	53	The species occurs from the coast to western slopes of the Great Dividing Range and inhabits dry, open eucalypt forests and woodlands. Occurrence is positively associated with patch size, and with components of habitat complexity including canopy cover, shrub cover, ground cover, logs, fallen branches and litter. Feed primarily on profusely-flowering eucalypts and a variety of other species including melaleucas and mistletoes. On the western slopes and tablelands <i>Eucalyptus albens</i> and <i>E. melliodora</i> are particularly important food sources for pollen and nectar respectively. Mostly nests in small (opening approx. 3cm) hollows in living, smooth-barked eucalypts, especially <i>Eucalyptus viminalis</i> , <i>E. blakelyi</i> and <i>E. dealbata</i> . Most breeding records are from the western slopes.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
Little Lorikeet						
<i>Grantiella picta</i>	V,P	V	3	The species is nomadic, occurring in low densities across most of NSW. Highest concentrations and almost all breeding occur on inland slopes of the Great Dividing Range. Habitat for the species includes Boree, Brigalow and Box Gum woodlands and Box-Ironbark forests.	Nil	No suitable habitat within the Subject Site. No records within the locality. Not recorded during site assessment.
Painted Honeyeater						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Haematopus longirostris</i> Pied Oystercatcher	E1,P	-	2	Scattered along NSW coast. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide. Nests mostly on coastal or estuarine beaches; occasionally saltmarsh or grassy areas.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	V,P	-	337	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.	Low	No suitable foraging or nesting habitat within the Subject Site. Not recorded during site assessment.
<i>Hieraaetus morphnoides</i> Little Eagle	V,P	-	20	Occurs throughout NSW except most densely forested parts of the Dividing Range escarpment. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring.	Nil	No suitable nesting habitat within the Subject Site. Not recorded during site assessment.
<i>Irediparra gallinacea</i> Comb-crested Jacana	V,P	-	2	Occurs on freshwater wetlands in northern and eastern Australia, mainly in coastal and subcoastal regions, from the north-eastern Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW. Inhabit permanent freshwater wetlands, either still or slow-flowing, with a good surface cover of floating vegetation, especially water-lilies, or fringing and aquatic vegetation.	Nil	No suitable habitat within the Subject Site. Two records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Limosa limosa</i>	V,P	C,J,K	2	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the north and south coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. It is usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. It has also been found around muddy lakes and swamps, wet fields and sewerage treatment works.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
Black-tailed Godwit						
<i>Lophoictinia isura</i>	V,P,3	-	33	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Breeding is from July to February.	Nil	No suitable habitat within the Subject Site. Not recorded during site assessment.
Square-tailed Kite						
<i>Ninox connivens</i>	V,P,3	-	3	Occurs from coast to inland slopes and plains, though is rare in dense, wet forests east of the Great Dividing Range and sparse in higher parts of the tablelands and in the arid zone. Inhabits eucalypt woodlands, open forest, swamp woodlands, and, especially in inland areas, timber along watercourses. Roosts along creek lines in dense, tall understorey foliage (e.g. in Acacia and Casuarina), or dense eucalypt canopy. Nests in hollows of large, old eucalypts including <i>Eucalyptus camaldulensis</i> , <i>Eucalyptus albens</i> , <i>Eucalyptus polyanthemus</i> and <i>Eucalyptus blakelyi</i> . Birds and mammals important prey during breeding. Territories range from 30 to 200 hectares.	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat. Few records within the locality. Not recorded during site assessment.
Barking Owl						
<i>Ninox strenua</i>	V,P,3	-	54	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Powerful Owl				hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i> , Black She-oak <i>Allocasuarina littoralis</i> , Blackwood <i>Acacia melanoxylon</i> , Rough-barked Apple <i>Angophora floribunda</i> , Cherry Ballart <i>Exocarpus cupressiformis</i> and a number of eucalypt species.		Not recorded during site assessment.
<i>Oxyura australis</i>	V,P		3	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
Blue-billed Duck						
<i>Pandion cristatus</i>	V,P,3	-	16	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Low	No suitable nesting habitat within the Subject Site. Not recorded during site assessment.
Eastern Osprey						
<i>Ptilinopus regina</i>	V,P	-	1	Occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest. Some populations are migratory in response to food availability.	Nil	No suitable habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
Rose-crowned Fruit-Dove						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Ptilinopus superbus</i>	V,P	-	1	Occurs mainly north from NE NSW, much less common further south and largely confined to pockets of habitat south to Moruya. Vagrants occur south to VIC and TAS. Inhabits rainforest and closed forests, may also forage in eucalypt or acacia woodland with fruit-bearing trees. Nests 5-30 m above ground in rainforest/rainforest edge tree and shrub species. Part of the population migratory/nomadic.	Nil	No suitable habitat within the Subject Site. Only one record within the locality.
Superb Fruit-Dove						Not recorded during site assessment.
<i>Rostratula australis</i>	E1,P	E	6	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. The species nests on the ground amongst tall reed-like vegetation near water. Habitat for the species includes the fringes of swamps, dams and nearby marshy areas with cover of grasses, lignum, low scrub or open timber.	Nil	No suitable habitat within the Subject Site.
Australian Painted Snipe						Not recorded during site assessment.
<i>Sternula albifrons</i>	E1,P	C,J,K	1	Migrating from eastern Asia, the Little Tern is found on the north, east and south-east Australian coasts, from Shark Bay in Western Australia to the Gulf of St Vincent in South Australia. In NSW, it arrives from September to November, occurring mainly north of Sydney, with smaller numbers found south to Victoria. It breeds in spring and summer along the entire east coast from Tasmania to northern Queensland, and is seen until May, with only occasional birds seen in winter months. Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records).	Nil	No suitable habitat within the Subject Site. No records within the locality.
Little Tern						Not recorded during site assessment.
<i>Stictonetta naevosa</i>	V,P		97	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling	Nil	No suitable habitat within the Subject Site. No records within the locality.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Freckled Duck				system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.		Not recorded during site assessment.
<i>Tyto novaehollandiae</i>	V,P,3	-	21	Occurs across NSW except NW corner. Most common on the coast. Inhabits dry eucalypt woodlands from sea level to 1100 m. Roosts and breeds in large (>40cm) hollows and sometime caves in moist eucalypt forested gullies. Hunts along the edges of forests and roadsides. Home range between 500 ha and 1000 ha. Prey mostly terrestrial mammals but arboreal species may also be taken.	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat. Not recorded during site assessment.
Masked Owl						
<i>Chalinolobus dwyeri</i>	V,P	V	5	The species occurs from the coast to the western slopes of the divide. The largest numbers of records are from sandstone escarpment country in the Sydney Basin and Hunter Valley. The species roosts in caves and mines and most commonly recorded from dry sclerophyll forests and woodlands. In southern Sydney appears to be largely restricted to the interface between sandstone escarpments and fertile valleys.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Large-eared Pied Bat						
<i>Dasyurus maculatus</i>	V,P	E	4	Found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania the species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline	Low	Broadly suitable habitat within the Subject Site, albeit highly degraded. Few records within the locality. Not recorded during site assessment.
Spotted-tailed Quoll						
<i>Falsistrellus tasmaniensis</i>	V,P	-	24	The species occurs on southeast coast and ranges. Prefers tall (>20m) and wet forest with dense understorey. Absent from small remnants, preferring continuous forest	Moderate	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Eastern False Pipistrelle				but can move through cleared landscapes and may forage in open areas. Roosts include hollow trunks of Eucalypts, underneath bark or in buildings. Forages in gaps and spaces within forest, with large foraging range (12km foraging movements recorded).		Not recorded during site assessment.
<i>Micronomus norfolkensis</i>	V,P	-	46	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Eastern Coastal Free-tailed Bat						
<i>Miniopterus australis</i>	V,P	-	41	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Little Bent-winged Bat						
<i>Miniopterus orianae oceanensis</i>	V,P	-	63	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Large Bent-winged Bat						
<i>Myotis macropus</i>	V,P	-	20	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Southern Myotis						
<i>Petaurus australis</i>	V,P	V	4	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature	Low	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Yellow-bellied Glider				eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.		Not recorded during site assessment.
<i>Petaurus norfolcensis</i>	V,P		81	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
<i>Phascolarctos cinereus</i>	E2,P	E	11	Fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests feeding on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
<i>Pteropus poliocephalus</i>	V,P	V	69	Generally this species is found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. Inhabit subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Moderate	Broadly suitable foraging habitat within the Subject Site. No roosts present. Not recorded during site assessment.
<i>Saccolaimus flaviventris</i>	V,P	-	10	Migrates from tropics to SE Aus in summer. Forages across a range of habitats including those with and without trees, from wet and dry sclerophyll forest, open woodland,	Moderate	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Yellow-bellied Sheath-tail-bat				Acacia shrubland, mallee, grasslands and desert. Seasonal movements are unknown.		Not recorded during site assessment.
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	V,P	-	47	The species is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. Inhabits a variety of habitats from woodland to wet and dry sclerophyll forests and rainforest, also remnant paddock trees and timber-lined creeks.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
<i>Vespadelus troughtoni</i> Eastern Cave Bat	V,P	-	3	Very little is known about the biology of this uncommon species. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Occasionally found along cliff-lines in wet eucalypt forest and rainforest.	Low	Broadly suitable foraging habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
<i>Crinia tinnula</i> Wallum Froglet	V,P	-	36	Found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgeland and wet heathlands under leaf litter, vegetation and other debris. In NSW the species extends from north of the Queensland border south to Kurnell. Breeding occurs in colder months.	Nil	Habitat degraded and generally unsuitable. Not recorded during site assessment.
<i>Litoria aurea</i> Green and Golden Bell Frog	E1,P	V	7	Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available.	Low	Marginally suitable habitat present. Few records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Litoria brevipalmata</i>						Marginally suitable habitat present. One record within the locality.
Green-thighed Frog	V, P		1	Green-thighed Frogs occur in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. It prefers wetter forests in the south of its range, but extends into drier forests in northern NSW and southern Queensland. Breeding occurs following heavy rainfall from spring to autumn, with larger temporary pools and flooded areas preferred. Frogs may aggregate around breeding sites and eggs are laid in loose clumps among waterplants, including water weeds. The larvae are free swimming. The frogs are thought to forage in leaf-litter.	Low	Not recorded during site assessment.

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Study Area was obtained from the following databases:

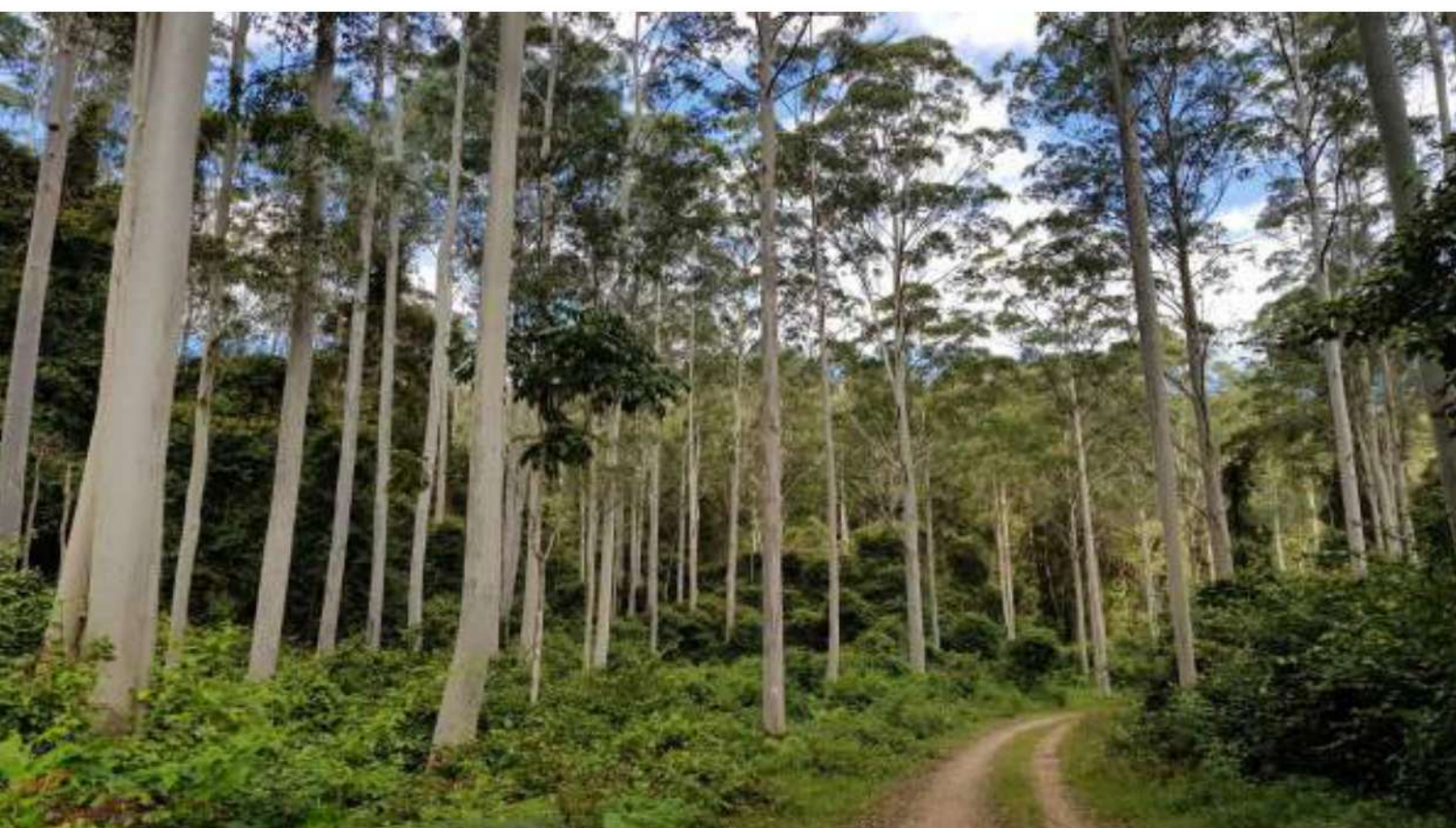
- NSW DPE BioNet Atlas: (<http://www.bionet.nsw.gov.au/>)
- Commonwealth DAWE Protected Matters search tool: (<https://www.environment.gov.au/epbc/protected-matters-search-tool>).

An assessment was then made of the likelihood of the threatened species, populations, and ecological communities reported or modelled to occur in the locality occurring within the Development Site or using the habitat within the Development Site as an essential part of a foraging range.

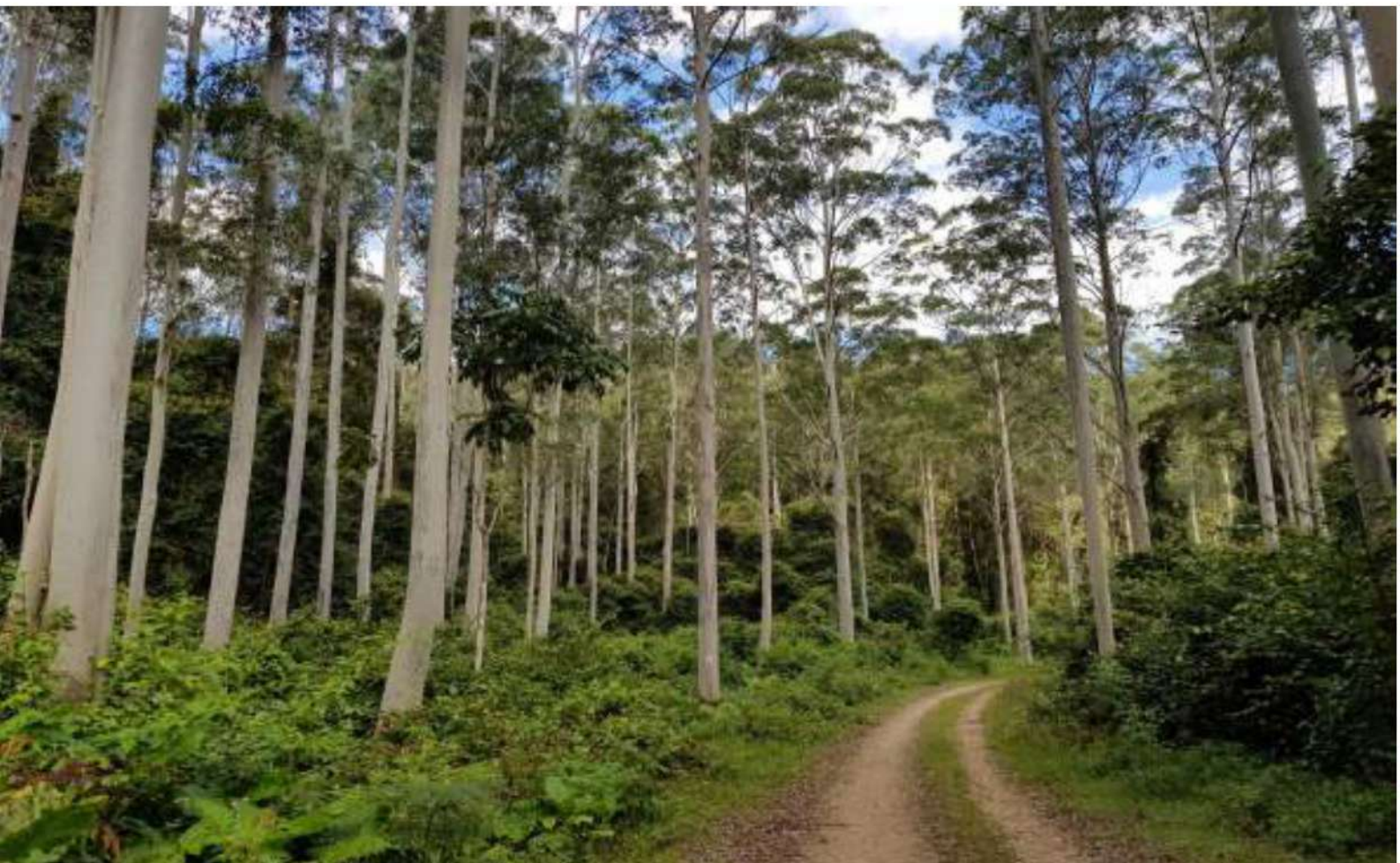
The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Development Site based on the habitat requirements of each species.

A brief definition of the likelihood of occurrence criteria is provided below:

- **Known** – species identified within the site during surveys
- **High** – species known from the area (DPIE BioNet Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site
- **Moderate** – species may be known from the area, potential habitat is present within the site
- **Low** – species not known from the area and/or marginal habitat is present within the site
- **Nil** – habitat requirements not met for this species within the site.



Appendix B – Flora Species List

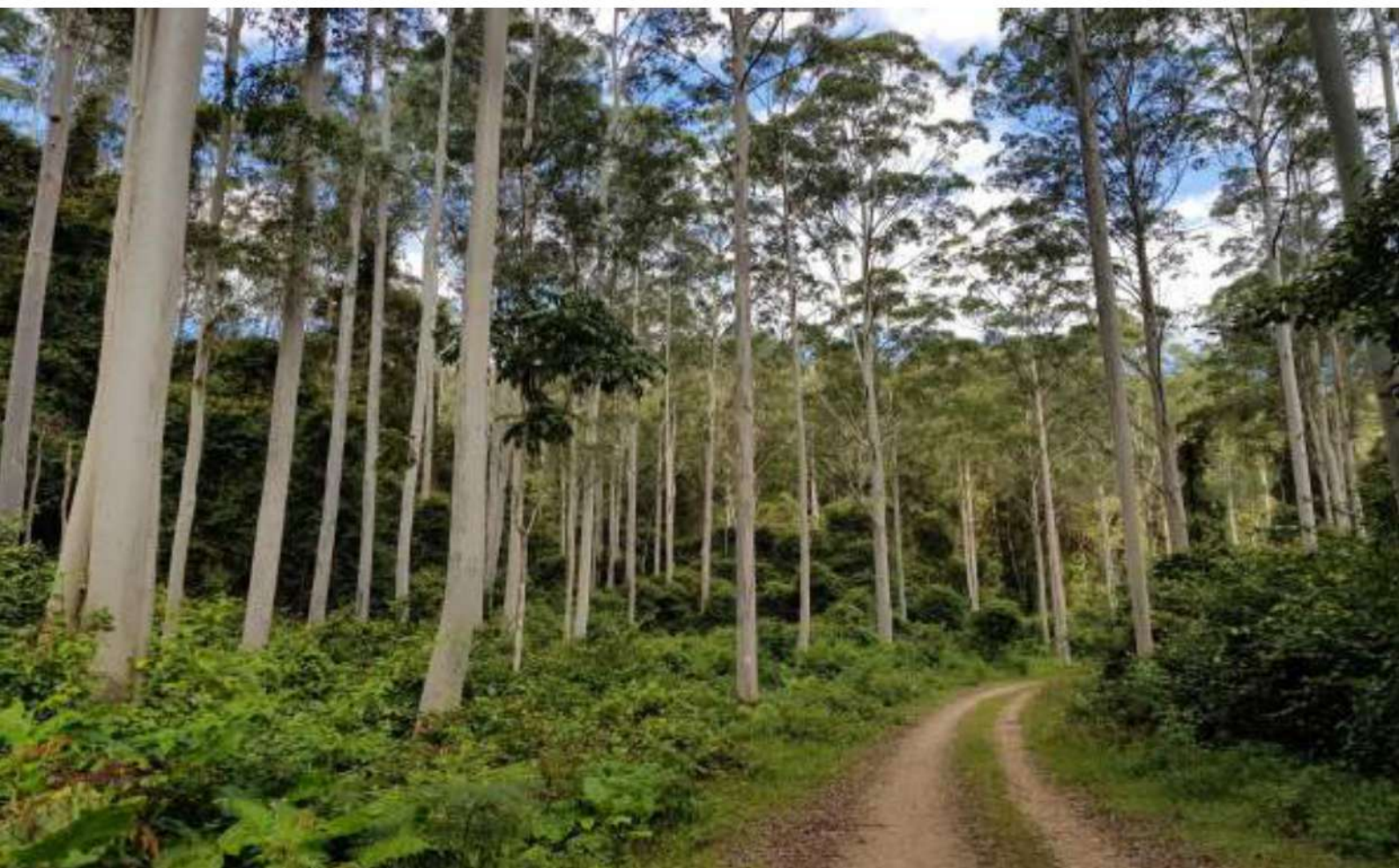


Form	Name	Q01	Q02	Q03	Q04
Exotic - Environmental Weed	<i>Ambrosia tenuifolia</i>	0.5			
Exotic - Environmental Weed	<i>Conyza sumatriensis</i>			0.2	
Exotic - Environmental Weed	<i>Cyperus brevifolius</i>			0.5	
Exotic - Environmental Weed	<i>Cyperus eragrostis</i>		0.2		0.1
Exotic - Environmental Weed	<i>Gamochaeta americana</i>		0.5		
Exotic - Environmental Weed	<i>Hydrocotyle bonariensis</i>	5	0.2	20	
Exotic - Environmental Weed	<i>Hypochaeris radicata</i>	2			
Exotic - Environmental Weed	<i>Juncus cognatus</i>			1	
Exotic - Environmental Weed	<i>Juncus effusus</i>				2
Exotic - Environmental Weed	<i>Lupinus sp.</i>		0.1		
Exotic - Environmental Weed	<i>Medicago sativa</i>			0.5	
Exotic - Environmental Weed	<i>Paspalum urvillei</i>	5	20	0.5	5
Exotic - Environmental Weed	<i>Phytolacca octandra</i>	0.1			
Exotic - Environmental Weed	<i>Pinus radiata</i>		0.2		
Exotic - Environmental Weed	<i>Plantago lanceolata</i>	2	0.5		
Exotic - Environmental Weed	<i>Rumex conglomeratus</i>			0.1	
Exotic - Environmental Weed	<i>Setaria parviflora</i>	0.5			
Exotic - Environmental Weed	<i>Sida rhombifolia</i>		1		
Exotic - Environmental Weed	<i>Sporobolus africanus</i>	0.1			
Exotic - Environmental Weed	<i>Trifolium repens</i>	0.5	0.5		
Exotic - Environmental Weed	<i>Verbena bonariensis</i>	0.5	5		
Exotic - Environmental Weed	<i>Watsonia meriana</i>	1			
Exotic - Environmental Weed	<i>Cirsium vulgare</i>				
Exotic - Environmental Weed	<i>Medicago polymorpha</i>				
Exotic - Environmental Weed	<i>Gladiolus angustus</i>				
Exotic - Environmental Weed	<i>Lactuca serriola</i>				
Exotic - Environmental Weed	<i>Vicia sativa</i>				
Exotic - Environmental Weed	<i>Lachnagrostis filiformis</i>				
Exotic - Environmental Weed	<i>Lolium perenne</i>				
Exotic - Environmental Weed	<i>Conyza bonariensis</i>				
Exotic - Environmental Weed	<i>Centaurium erythraea</i>				
Exotic - Environmental Weed	<i>Erythrina crista-galli</i>				
Exotic - Environmental Weed	<i>Tagetes minuta</i>				
Exotic - Environmental Weed	<i>Phoeniculum vulgare</i>				
Exotic - Environmental Weed	<i>Stachys arvensis</i>				
Exotic - Environmental Weed	<i>Cyclosporum leptophyllum</i>				
Exotic - Environmental Weed	<i>Briza minor</i>				
Exotic - Environmental Weed	<i>Briza maxima</i>				
Exotic - Environmental Weed	<i>Trifolium arvense</i>				
Exotic - Environmental Weed	<i>Hedychium gardnerianum</i>				

Form	Name	Q01	Q02	Q03	Q04
Exotic - Environmental Weed	<i>Oenothera mollissima</i>				
Exotic - Environmental Weed	<i>Ricinus communis</i>				
Exotic - Environmental Weed	<i>Gomphocarpus fruticosus</i>				
Exotic - Environmental Weed	<i>Stenotaphrum secundatum</i>				
Exotic - Environmental Weed	<i>Citrus x taitensis</i> Risso				
Exotic - Environmental Weed	<i>Avena barbata</i>				
Exotic - High Threat Weed (HTW)	<i>Ageratina adenophora</i>		0.5	2	
Exotic - High Threat Weed (HTW)	<i>Bidens pilosa</i>				0.1
Exotic - High Threat Weed (HTW)	<i>Bidens subalternans</i>				0.1
Exotic - High Threat Weed (HTW)	<i>Cenchrus clandestinus</i>	30		2	30
Exotic - High Threat Weed (HTW)	<i>Chloris gayana</i>	0.5			2
Exotic - High Threat Weed (HTW)	<i>Cortaderia selloana</i>		2	5	5
Exotic - High Threat Weed (HTW)	<i>Ipomoea cairica</i>	1	1	2	2
Exotic - High Threat Weed (HTW)	<i>Paspalum dilatatum</i>	2			
Exotic - High Threat Weed (HTW)	<i>Polygala myrtifolia</i>			0.1	
Exotic - High Threat Weed (HTW)	<i>Rubus anglocandicans</i>	5		1	1
Exotic - High Threat Weed (HTW)	<i>Senecio madagascariensis</i>	1			1
Exotic - High Threat Weed (HTW)	<i>Lantana camara</i>				
Exotic - High Threat Weed (HTW)	<i>Ligustrum lucidum</i>				
Exotic - High Threat Weed (HTW)	<i>Hyparrhenia hirta</i>				
Fern	<i>Hypolepis muelleri</i>				10
Forb	<i>Centella asiatica</i>		1		
Forb	<i>Dichondra repens</i>		0.2		
Forb	<i>Hydrocotyle tripartita</i>			0.2	
Forb	<i>Ranunculus plebeius</i>	1		5	5
Forb	<i>Persicaria lapathifolia</i>				
Forb	<i>Persicaria decipiens</i>				
Forb	<i>Rumex brownii</i>				
Grass (Grass Like)	<i>Cynodon dactylon</i>	30	60	5	20
Grass (Grass Like)	<i>Machaerina juncea</i>				2
Grass (Grass Like)	<i>Schoenoplectus validus</i>			5	2
Grass (Grass Like)	<i>Typha orientalis</i>			5	5
Grass (Grass Like)	<i>Schoenus apogon</i>				
Grass (Grass Like)	<i>Phragmites australis</i>				
Grass (Grass Like)	<i>Imperata cylindrica</i>				
Other	<i>Cassythia pubescens</i>			1	
Shrub	<i>Acacia longifolia</i> subsp. <i>longifolia</i>		1		
Shrub	<i>Acacia prominens</i>		0.1		
Shrub	<i>Melaleuca sieberi</i>				2

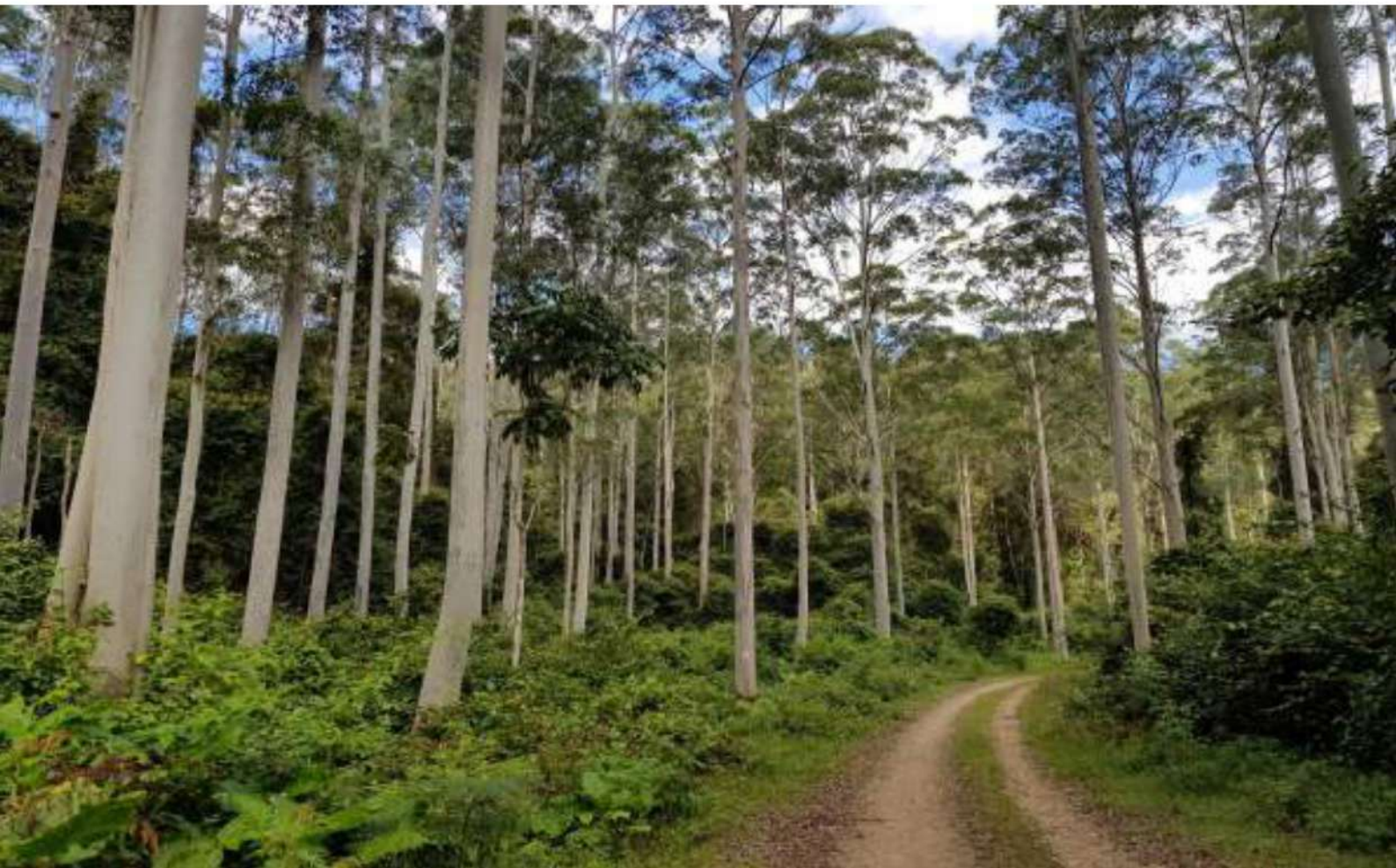
Form	Name	Q01	Q02	Q03	Q04
Shrub	<i>Ozothamnus diosmifolius</i>		0.2		
Shrub	<i>Melaleuca nodosa</i>				
Shrub	<i>Melaleuca linariifolia</i>				
Shrub	<i>Acacia longifolia subsp. sophorae</i>				
Shrub	<i>Daviesia ulicifolia</i>				
Shrub	<i>Acacia irrorata</i>				
Tree	<i>Casuarina glauca</i>		0.5		
Tree	<i>Eucalyptus resinifera</i>				1
Tree	<i>Eucalyptus robusta</i>		0.2		20
Tree	<i>Glochidion ferdinandi</i>				5
Tree	<i>Angophora costata</i>				

Appendix C – Fauna Species List



Scientific Name	Common Name	Status	
		BC	EPBC
Birds			
Australian Magpie	<i>Gymnorhina tibicen</i>	P	
Australian Raven	<i>Corvus coronoides</i>	P	
Australian Wood Duck	<i>Chenonetta jubata</i>	P	
Eastern Rosella	<i>Platycercus eximius</i>	P	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	P	
Noisy Miner	<i>Manorina melanocephala</i>	P	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	P	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	P	
Superb Fairy-wren	<i>Malurus cyaneus</i>	P	
Amphibians			
Common Eastern Froglet	<i>Crinia signifera</i>	P	
Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	P	
Peron's Tree Frog	<i>Litoria peronii</i>	P	
Eastern Dwarf Tree Frog	<i>Litoria fallax</i>	P	
Tyler's Tree Frog	<i>Litoria tyleri</i>	P	
Broad-palmed Frog	<i>Litoria latopalmata</i>	P	

Appendix D – Biodiversity Credit Reports



Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Report Created	BAM Data version *
Gilbert Whyte	12/09/2023	61
Assessor Number	Assessment Type	BAM Case Status
BAAS18041	Part 4 Developments (Small Area)	Finalised
Assessment Revision	Date Finalised	BOS entry trigger
4	12/09/2023	Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
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BAM Vegetation Zones Report

1	1718_Cleared	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Cleared	4.2	2	
2	1737_Wetland	1737-Typha rushland	Wetland	0.17	1	
3	1718_Regenerating	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Regenerating	0.33	1	

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Report Created	BAM Data version *
Gilbert Whyte	12/09/2023	61
Assessor Number	Assessment Type	BAM Case Status
BAAS18041	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
4	Test of significance	12/09/2023

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	1737-Typha rushland
Australian Painted Snipe	Rostratula australis	1737-Typha rushland
Barking Owl	Ninox connivens	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Black Bittern	Ixobrychus flavicollis	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Black Falcon	Falco subniger	1737-Typha rushland
Black-necked Stork	Ephippiorhynchus asiaticus	1737-Typha rushland
Black-tailed Godwit	Limosa limosa	1737-Typha rushland
Blue-billed Duck	Oxyura australis	1737-Typha rushland
Broad-billed Sandpiper	Limicola falcinellus	1737-Typha rushland
Comb-crested Jacana	Irediparra gallinacea	1737-Typha rushland
Curlew Sandpiper	Calidris ferruginea	1737-Typha rushland

BAM Predicted Species Report

Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern Osprey	<i>Pandion cristatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Freckled Duck	<i>Stictonetta naevosa</i>	1737-Typha rushland
Golden-tipped Bat	<i>Phoniscus papuensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Great Knot	<i>Calidris tenuirostris</i>	1737-Typha rushland
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Little Bent-winged Bat	<i>Miniopterus australis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Little Eagle	<i>Hieraetus morphnoides</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Little Lorikeet	<i>Glossopsitta pusilla</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Magpie Goose	<i>Anseranas semipalmata</i>	1737-Typha rushland
Regent Honeyeater	<i>Anthochaera phrygia</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Spotted Harrier	<i>Circus assimilis</i>	1737-Typha rushland
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Swift Parrot	<i>Lathamus discolor</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Terek Sandpiper	<i>Xenus cinereus</i>	1737-Typha rushland
Varied Sittella	<i>Daphoenositta chrysoptera</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

BAM Predicted Species Report

White-bellied Sea-Eagle	Haliaeetus leucogaster	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
		1737-Typha rushland
White-fronted Chat	Epthianura albifrons	1737-Typha rushland
White-throated Needle-tail	Hirundapus caudacutus	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
		1737-Typha rushland
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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Proposal Details

Assessment Id 00036952/BAAS18041/22/00036953	Proposal Name 460 Pacific Highway Wyong	BAM data last updated * 22/06/2023
Assessor Name Gilbert Whyte	Report Created 12/09/2023	BAM Data version * 61
Assessor Number BAAS18041	Assessment Type Part 4 Developments (Small Area)	BAM Case Status Finalised
Assessment Revision 4	Date Finalised 12/09/2023	BOS entry trigger Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Lathamus discolor</i> Swift Parrot	Yes (surveyed)	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
		<input type="checkbox"/> Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

BAM Candidate Species Report

Common name	Scientific name	Justification in the BAM-C
Corunastylis sp. Charmhaven (NSW896673)	Corunastylis sp. Charmhaven (NSW896673)	Habitat degraded
Curlew Sandpiper	Calidris ferruginea	Habitat constraints
Giant Dragonfly	Petalura gigantea	Habitat degraded
Great Knot	Calidris tenuirostris	Habitat constraints Geographic limitations
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Little Bent-winged Bat	Miniopterus australis	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Variable Midge Orchid	Genoplesium insigne	Habitat degraded



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Assessor Number	BAM Data version *
Gilbert Whyte	BAAS18041	61
Proponent Names	Report Created	BAM Case Status
Yannis Comino	12/09/2023	Finalised
Assessment Revision	Assessment Type	Date Finalised
4	Part 4 Developments (Small Area)	12/09/2023
BOS entry trigger	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
Test of significance		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Lathamus discolor / Swift Parrot		

Additional Information for Approval

Assessment Id	Proposal Name
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong

BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	4.5	0	6	6
1737-Typha rushland	Not a TEC	0.2	0	0	0



BAM Biodiversity Credit Report (Like for like)

1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-	1718_Cleared	No	0	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-	1718_Regeneration	No		6 Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1737-Typha rushland	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Like for like)

	Coastal Freshwater Lagoons This includes PCT's: 781, 783, 1071, 1735, 1736, 1737, 1740, 1741, 1742, 3962, 3963, 3964, 3965, 3966, 3967, 3971, 3972, 3975, 3976	Coastal Freshwater Lagoons $\geq 70\%$ and $< 90\%$	1737_Wetland	No	0 Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
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Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lathamus discolor / Swift Parrot	1718_Cleared, 1718_Regenerating	0.2	4.00
[REDACTED]	1718_Cleared, 1737_Wetland, 1718_Regenerating	4.7	18.00

Credit Retirement Options

Like-for-like credit retirement options

Species	Spp	IBRA subregion
Lathamus discolor / Swift Parrot	Lathamus discolor / Swift Parrot	Any in NSW



BAM Biodiversity Credit Report (Like for like)

	Spp	IBRA subregion
		Any in NSW

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Report Created	BAM Data version *
Gilbert Whyte	12/09/2023	61
Assessor Number	BAM Case Status	Date Finalised
BAAS18041	Finalised	12/09/2023
Assessment Revision	Assessment Type	BOS entry trigger
4	Part 4 Developments (Small Area)	Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits
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Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

1	1718_Cleared	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	2.4	2.4	4.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		0
3	1718_Regenerating	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	34	34.0	0.33	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		6
											Subtotal	6

Typha rushland											
2	1737_Wetland	Not a TEC	15.7	15.7	0.17	PCT Cleared - 70%	High Sensitivity to Gain			2.00	0
										Subtotal	0
										Total	6

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits	
<i>Lathamus discolor / Swift Parrot (Fauna)</i>										
1718_Cleared	2.4	2.4	0.03	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1	
1718_Regenerating	34.0	34.0	0.12	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3	
									Subtotal	4

[REDACTED]										
1718_Cleared	2.4	2.4	4.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True		8
1737_Wetland	15.7	15.7	0.17	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True		2
1718_Regenerating	34.0	34.0	0.33	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True		8
								Subtotal		18

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Assessor Number	BAM Data version *
Gilbert Whyte	BAAS18041	61
Proponent Name(s)	Report Created	BAM Case Status
Yannis Comino	12/09/2023	Finalised
Assessment Revision	Assessment Type	Date Finalised
4	Part 4 Developments (Small Area)	12/09/2023
BOS entry trigger	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
Test of significance		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Lathamus discolor / Swift Parrot		
[REDACTED]		

Additional Information for Approval

PCT Outside Ibra Added
None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	4.5	0	6	6.00
1737-Typha rushland	Not a TEC	0.2	0	0	0.00

1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Variations)

	<p>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057</p>	-	1718_Cleared	No	0	<p>Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.</p>
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BAM Biodiversity Credit Report (Variations)

<p>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057</p>	-		1718_Rege nerating	No		6 Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Variation options						
Formation	Trading group	Zone	HBT	Credits	IBRA region	
Forested Wetlands	Tier 3 or higher threat status	1718_Clear ed	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	

BAM Biodiversity Credit Report (Variations)

	Forested Wetlands	Tier 3 or higher threat status	1718_Regenerating	No	6	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1737-Typha rushland	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Freshwater Lagoons This includes PCT's: 781, 783, 1071, 1735, 1736, 1737, 1740, 1741, 1742, 3962, 3963, 3964, 3965, 3966, 3967, 3971, 3972, 3975, 3976	Coastal Freshwater Lagoons >=70% and <90%	1737_Wetland	No	0	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
Freshwater Wetlands	Tier 2 or higher threat status	1737_Wetland	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lathamus discolor / Swift Parrot	1718_Cleared, 1718_Regenerating	0.2	4.00

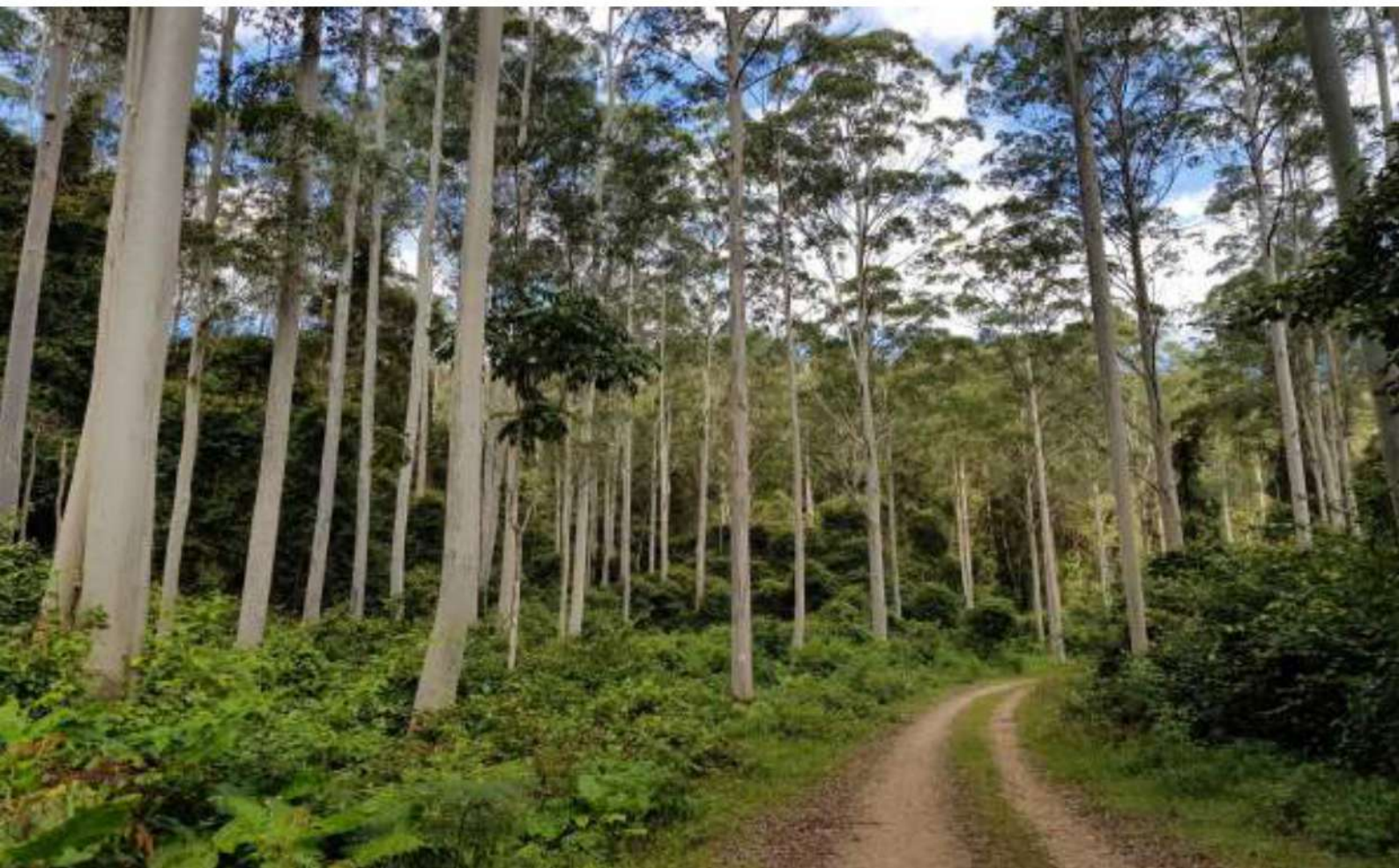
BAM Biodiversity Credit Report (Variations)

	1718_Cleared, 1737_Wetland, 1718_Regenerating	4.7	18.00
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Credit Retirement Options Like-for-like options

Lathamus discolor/ Swift Parrot	Spp		IBRA region
	Lathamus discolor/ Swift Parrot		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
Fauna	Endangered	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	
	Spp		IBRA region
		Any in NSW	
<i>Note: Variation rules do not apply for Critically Endangered species and impacts on Commonwealth listed entities that are a controlled action.</i>			

Appendix E – BAM Plot Data Sheets



Project: PACIFIC HWY WYONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q01
Bearing: 232	Datum: GDA94
East: 356028	North: 6317993

HABITAT
ENVIRONMENTAL SERVICES



Aspect: FLAT	Weeds: HIGH (EXOTIC GRASSES)
Soil/Geology: CLAY	Condition: LOW
Veg Structure: GRASSLAND (EXOTIC)	

PCT: EXOTIC (PCT 171B)	EEC: NO.
GRASSLAND	Veg Zone: N/A (V201)

Litter Cover	
P1	5
P2	2
P3	2
P4	2
P5	5
Average:	3.2

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0	0	0
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)
2
Total: 2

GF Code	Species	Cover	Abundance
EX	1 PASPALUM URVILLEI	5	500
HTW	2 SEMECIO MADAGASCARIENSIS	1	50
HTW	3 RUBUS ANGLOCARDICANS	5	100
EX	4 HYDROCOTYLE BONARIENSIS	5	200
G	5 CYNODON DACTYLON	30	10,000
F	6 RANUNCULUS PLEBEIUS	1	50
HTW	7 CENCHRUS CLANDESTINUS	30	10,000
EX	8 AMBROSIA TENUIFOLIA	0.5	50
EX	9 TRIFOLIUM REPENS	0.5	50
HTW	10 IPOMOEA CAURICA	1	20
EX	11 WATSONIA MERIANA	1	50
EX	12 PILOTULACCA OCTANDRA	0.1	2
EX	13 VERBENA BONARIENSIS	0.5	20
HTW	14 PASPALUM DILATATUM	2	500
EX	15 HYPOCHAERIS RADICATA	2	500
EX	16 PLANTAGO LANCEOLATA	2	500
HTW	17 CHLORIS GAYANA	0.5	100
EX	18 SETARIA PARVIFLORA	0.5	100
EX	19 SPOROBOLUS AFRICANUS	0.1	20
	20		
	21		
	22		
	23		

Project: PACIFIC HWY - HWONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q02
Bearing: 117	Datum: GDA94
East: 355960	North: 6317942

HABITAT

ENVIRONMENTAL SERVICES



Aspect: FLAT	Weeds: MGLL - EXOTIC GRASSES
Soil/Geology: CLAY	Condition: LOW
Veg Structure: GRASSLAND	

PCT: N/A (PCT 1718)	EEC: NO
EXOTIC GRASSLAND	Veg Zone: V201

Litter Cover	
P1	1
P2	1
P3	1
P4	1
P5	1
Average:	1

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0		
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)	
	0
Total:	0

GF Code	Species	Cover	Abundance
T	1 CASUARINA GLAUCA	0.5	1
Ex	2 CHORTALISIA SELCOANNA	2	50
Ex	3 PASTINUM URVILLEI	20	10,000
Ex	4 VERBENA BONARIENSIS	5	1000
HTW	5 IPOMOEA CAIRICA	1	50
S	6 CYNEODON DACTYLOX	60	100,000
F	7 CENTELLA ASIATICA	1	500
Ex	8 CIDA RHOMBOIFOLIA	1	500
Ex	9 CIPERUS BRUCIARTII	0.2	50
Ex	10 LUPINUS SP.	0.1	10
S	11 ACAEIA LONGIFOLIA	1	1
HTW	12 ALGERATINA ADENOPHORUA	0.5	1
Ex	13 PINUS RADIATA	0.2	1 (SW)
F	14 DICTONDA REPTENS	0.2	1000
Ex	15 GAMBICHTATA AMERICANA	0.5	20,000
Ex	16 PLANTAGO LANCEOLATA	0.5	500
Ex	17 TRIFOLIUM REPENS	0.5	500
Ex	18 HYDROCOYLE BONARIENSIS	2	500
S	19 OZOTHANNUS DIOSMIFOLUS	0.2	1
T	20 EUC ROBUSTA	0.2	1 (SW)
S	21 ACROIA PROPINENS	0.1	1
	22		
	23		

Project: WYONG PRIFC HWY	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q03
Bearing: 091	Datum: GDA94
East: 355850	North: 6317999

HABITAT
ENVIRONMENTAL SERVICES



Aspect: CHANNEL	Weeds: HIGH. (PAMPAS GRASS)
Soil/Geology: CLAY	Condition: LOW
Veg Structure: WETLAND (REGENERATING)	

PCT: PCT 1737	EEC: N ^o
TYAHA RUSHLAND	Veg Zone: V202

Litter Cover	
P1	1
P2	1
P3	1
P4	1
P5	1
Average:	1

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0		
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)	
	0
Total:	0

GF Code	Species	Cover	Abundance
G	1. SCHOENOPLECTUS UMIDUS	5	100,000
G	2. TYPHA LATIFLOLA	5	10,000
EX	3. HYDROCOYLE RONARIENSIS	20	100,000
F	4. RANUNCULUS PECTIN	5	1000
O	5. CASSYTHA PUBESCENS	1	50
HTW	6. CHORTADARIA SELLOANA	5	1000
HTW	7. RUBEUS ANGILOCAUDICUS	1	20
EX	8. JUNCUS COGNATUS	1	100
HTW	9. POLYGALA MYRTILLA	0.1	1
HTW	10. CIENCHRUS CLANDESTINUS	2	500
HTW	11. IPOMOEA CAIRICA	2	100
EX	12. PASPALUM URVILLEI	0.5	100
EX	13. CONYZA SUMATRANENSIS	0.2	50
G	14. CYNODON DACTYLON	5	1000
EX	15. RUMEX CONGLOMERATUS	0.1	5
EX	16. CYPRAIS BREVIIFOLUS	0.5	100
EX	17. MEDICAGO SATIVATA	0.5	100
F	18. HYDROCOYLE TRIPARTITA	0.2	50
	19.		
	20.		
	21.		
	22.		
	23.		

Project: PACIFIC HIGHWAY WYONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q04
Bearing: 358	Datum: GDA94
East: 355776	North: 6317994

HABITAT
ENVIRONMENTAL SERVICES



Aspect: DRAINAGE CHANNEL	Weeds: HIGH
Soil/Geology: ALLUVIAL (HUMIC)	Condition: MODERATE - REGEN FOREST
Veg Structure: OPEN FOREST	

PCT: SWAMP SCLEROPHYLL FOREST	EEC: 1/ES
Veg Zone: PCT 178-02	

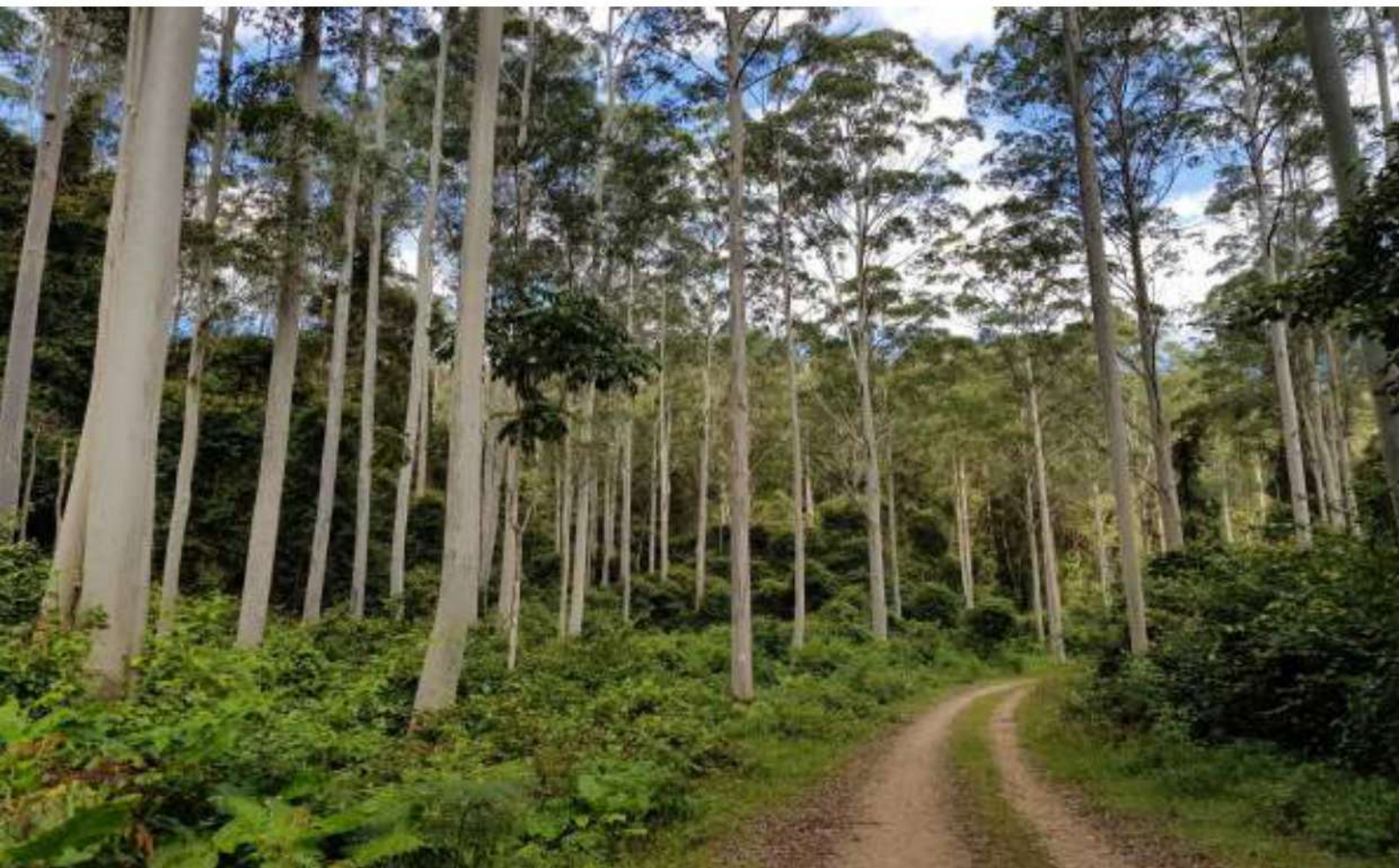
Litter Cover	
P1	5
P2	5
P3	5
P4	5
P5	5
Average:	5

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm		0	0
50-79cm		0	0
30-49cm			
20-29cm			
10-19cm	✓		
5-9cm	✓		
<5cm	✓		

Length Logs (m)	
0	Total:

GF Code	Species	Cover	Abundance
T	1 EUCALYPTUS ROBURATA	20	20
S	2 MELALEUCA STUBBET ERICIFOLIA	2	5
T	3 GLOCHIDION FERDINANDI	5	50
S	4 TYPIA ORIENTALIS	5	200
HTW	5 CORSAOCCIA SELLOANA	5	200
HTW	6 ALBERTINA ADENOPHYLLA	2	100
T	7 EUCALYPTUS RESINIFERA	1	1
HTW	8 IPOMOEIA CARRA	2	50
F	9 RANANCHUS PLURIBL	5	1000
G	10 CYNODON DACTYLON	20	10,000
HTW	11 CENCIUS CLAUDEANUS	30	100,000
Ex	12 PASPALUM URVILLEI	5	1000
HTW	13 CURRUS GAYANA	2	50
HTW	14 RUBUS ANGILO-CANDICANS	1	20
Fe	15 HYPOLEPIS MURMURER	10	1000
Ex	16 JUNCUS EFFENSUS	2	50
HTW	17 BIDIENS SUBALTERNANS	0.1	10
Fe	18 CYDREUS FUSCIGRASS	0.1	50
HTW	19 BIDIENS SUBALTERNANS PILOSA	0.1	20
S	20 SCHRUBERECTUS VALIDUS	2	50
G	21 MACHAERINA JUNCEA	2	1000
HTW	22 SENECIO MADAGASCARIENSIS	1	
	23		

Appendix F – Assessments of Significance (EPBC Act)



Species Assessed under the EPBC Act Significant Impact Guidelines

The following pertains to Assessments of Significance for direct or indirect impacts to EPBC Act listed threatened species, populations and communities.

The following species have been assessed under the EPBC Act *Matters of National Environmental Significance Significant impact guidelines 1.1* (Department of the Environment [DotE], 2013) (Significant Impact Guidelines):

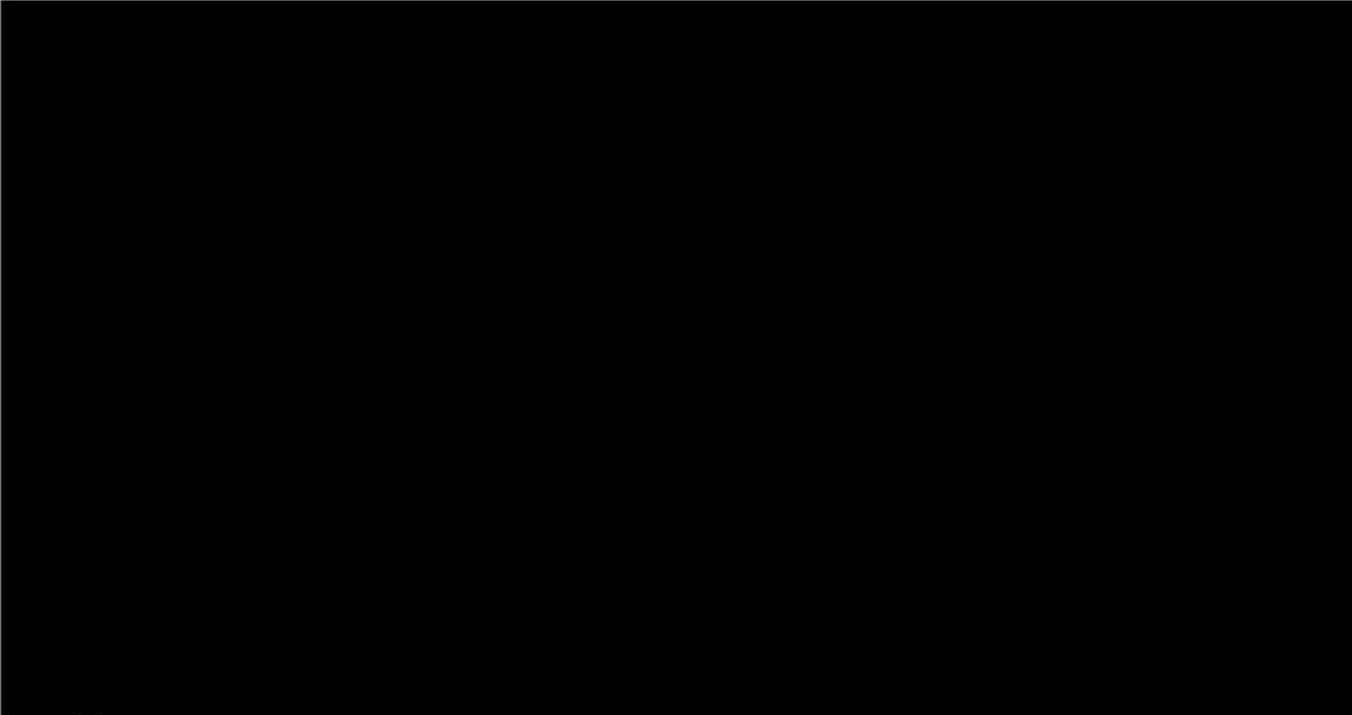
- Critically Endangered Species
 - [REDACTED]
 - Swift Parrot (*Lathamus discolor*)
- Endangered Species
 - N/A
- Vulnerable Species
 - N/A
- Critically endangered and endangered ecological communities
 - *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.*
- Migratory Species
 - N/A

Critically Endangered and Endangered Species – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DOE 2013) state:

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population.
- Reduce the area of occupancy of the species.
- Fragment an existing population into two or more populations.
- Adversely affect habitat critical to the survival of a species.
- Disrupt the breeding cycle of a population.
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.
- Introduce disease that may cause the species to decline, or interfere with the recovery of the species.



Assessment of Significance

- 1. Will the action lead to a long-term decrease in the size of a population?***

Uncertain.



Yes.



- 3. Will the action fragment an existing population into two or more populations?***

No.



- 4. Will the action adversely affect habitat critical to the survival of a species?***

No.

The habitat within the Study Area is highly degraded and does not represent habitat that is critical to the survival of the species in the locality.

5. Will the action disrupt the breeding cycle of a population?

Uncertain.

Little information exists on the breeding cycle of the species and no research on the fecundity



6. Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

No.

The habitat within the Study Area is highly degraded and is not considered to represent habitat that is critical to the survival of the species in the locality. The removal of the habitat is unlikely to contribute greatly to a reduction in the extent of habitat for the species.

7. Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?

No.

The Study Area contains large infestations of exotic plant species that currently threaten the occurrence of the [REDACTED]. If successful, translocation of the population to better quality habitat (recipient site) may reduce this risk.

8. Will the action introduce disease that may cause the species to decline, or interfere with the recovery of the species?

Uncertain.

A translocation protocol is yet to be developed for the project. Management of risks such as potential disease introductions to the recipient site will require careful consideration during development of the protocol by an experienced translocation specialist.

Conclusion

Given the high conservation status of the [REDACTED], and the uncertainty of adequately addressing each of the significant impact criteria, an EPBC referral to the Commonwealth Minister for the Environment is recommended.

Swift Parrot (*Lathamus discolor*)

The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes.

An area in the western portion of the Study Area is mapped as Important habitat for the Swift Parrot.

Assessment of Significance

1. Will the action lead to a long-term decrease in the size of a population?

No.

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that removal of the habitat would lead to a long-term decrease in the size of the population.

2. Will the action reduce the area of occupancy of the species?

No.

The Swift Parrot is a migratory species; therefore, the habitat present within the Study Area represents foraging habitat only. The proposed development will not reduce the area of occupancy of the species.

3. Will the action fragment an existing population into two or more populations?

No.

The Swift Parrot population in Australia is considered to represent one population. Due to the low level of proposed impact, fragmentation of an existing population into two or more populations is highly unlikely.

4. Will the action adversely affect habitat critical to the survival of a species?

No.

The habitat within the Study Area is highly degraded and does not represent habitat that is critical to the survival of the species in the locality.

5. Will the action disrupt the breeding cycle of a population?

No.

The Swift Parrot is a migratory species; therefore, the habitat present within the Study Area represents foraging habitat only. The proposed development will not disrupt the breeding cycle of a population.

6. Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

No.

The habitat within the Study Area is highly degraded and is not considered to represent habitat that is critical to the survival of the species in the locality. The removal of the habitat is unlikely to contribute greatly to a reduction in the extent of habitat for the species.

7. Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?

No.

The Study Area contains large infestations of exotic plant species; however, the action is unlikely to result in an introduction of invasive species that are harmful to the Swift Parrot or its habitat,

8. Will the action introduce disease that may cause the species to decline, or interfere with the recovery of the species?

No.

The action is unlikely to result in the introduction of diseases that are harmful to the Swift Parrot or its habitat.

Conclusion

Given the low potential for impact to the Swift Parrot or its habitat, an EPBC referral to the Commonwealth Minister for the Environment is not recommended.

Critically Endangered and Endangered Ecological Communities – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DOE 2013) state:

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- Reduce the extent of an ecological community.
- Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.
- Adversely affect habitat critical to the survival of an ecological community.
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.
- Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
 - Assisting invasive species, that are harmful to the listed ecological community, to become established, or
 - Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.
- Interfere with the recovery of an ecological community.

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community

The *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* was listed in the Endangered category of the threatened ecological communities list under the EPBC Act on 08 December 2021.

A 0.33 ha area of vegetation within the Study Area is comprised of regenerating Swamp Sclerophyll Forest. The canopy and shrub layers are in the early stages of regeneration and the groundcover contains a mix of native and exotic species. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the Study Area is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.
- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the vegetation is commensurate with *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community*. The condition class as Class C2, which is defined as “a small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.”

Assessment of Significance

1. Will the action reduce the extent of an ecological community?

Yes.

The patch of vegetation within the site dominated by *Eucalyptus robusta* (Swamp Mahogany) and contains a native groundcover that meets the key diagnostic criteria and condition class for Category C2. The proposed development will result in the clearing of 0.33 ha of the ecological community within the site. No areas of this ecological community will be retained as part of the proposed development.

In a local and regional context, larger areas of this community remain and will not be impacted by the project. The removal is not likely to significantly reduce the extent of this community within the locality.

2. Will the action reduce fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines?

Yes.

The proposed development will remove the ecological community within the development site, which will likely cause a minor increase in fragmentation of this community within the locality.

3. Will the action adversely affect habitat critical to the survival of an ecological community?

No.

The vegetation occurs in a low condition state in a landscape where it has little potential to increase in extent due to surrounding development pressure. The habitat is not considered to be critical to the survival of the ecological community.

4. Will the action modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns?

Yes.

The proposed development will alter surface water drainage patterns, i.e., removal or vegetation and replacement with hard structures and the alteration of local topography within the site.

5. Will the action cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting?

The proposed development will remove the extent of the EEC within the site, therefore removing its functionality for locally occurring species which may utilise the vegetation. However, given the ecological communities' location within a surrounding landscape predominantly cleared of vegetation, only a small number of flora and fauna species will be affected.

6. Will the action cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **Assisting invasive species, that are harmful to the listed ecological community, to become established, or**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

The proposed development will remove the extent of the ecological community within the site. Provided adequate control measures are in place during the construction phase, the risk of invasive species, pollutants and fertilisers damaging surrounding threatened ecological communities within the site is low.

7. Will the action interfere with the recovery of an ecological community?

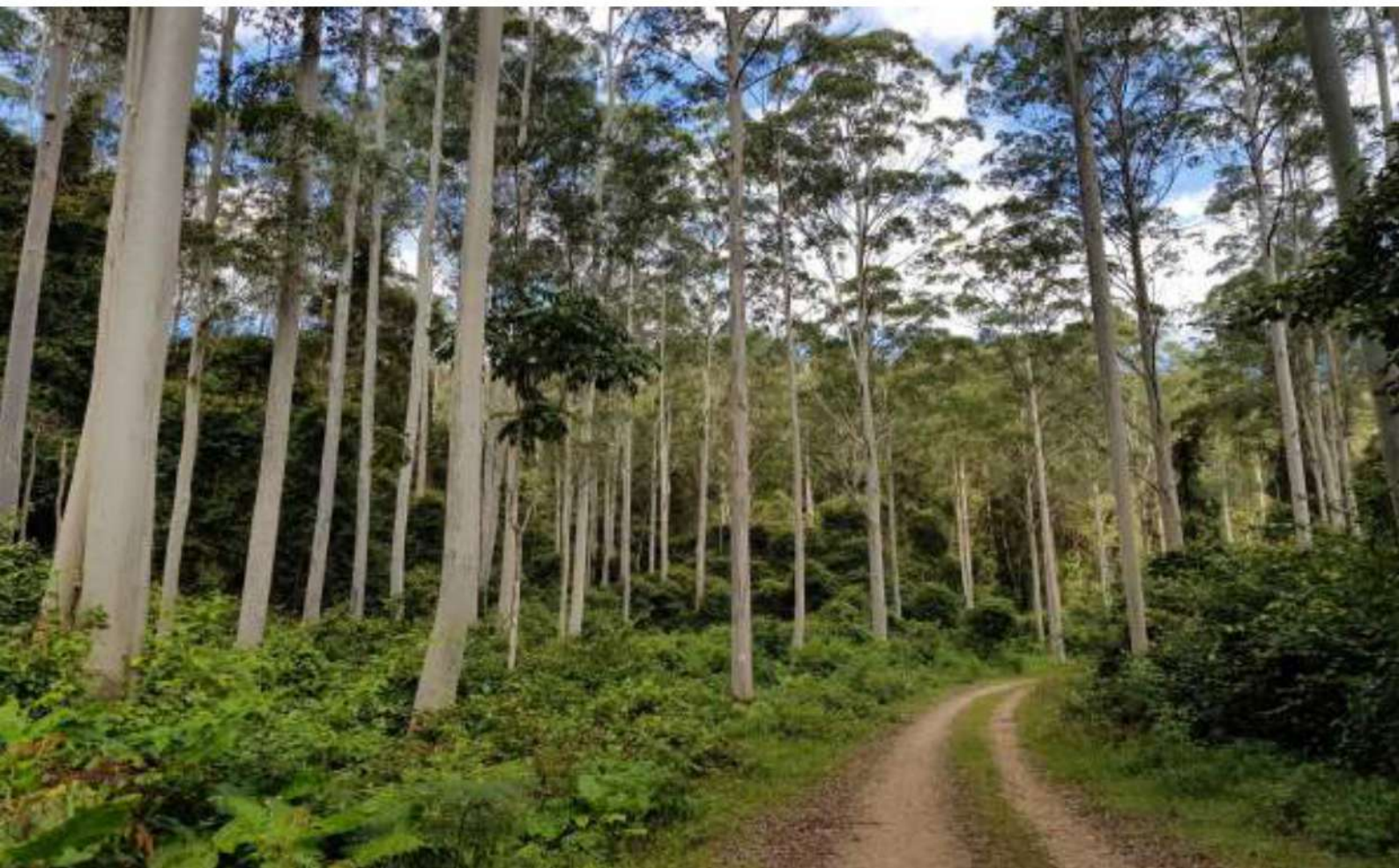
The proposed development will remove habitat (0.33 ha) which is unsuitable for the recovery of this threatened ecological community. The extent of this habitat removal is unlikely to have a significant effect on the recovery of this community within the locality or its extent within NSW.

Conclusion

Although the extent of the *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* within the site will be removed as part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

Referral of the project to the Commonwealth Minister for the Environment is not recommended.

Appendix G – Translocation Protocol





ecoplanning

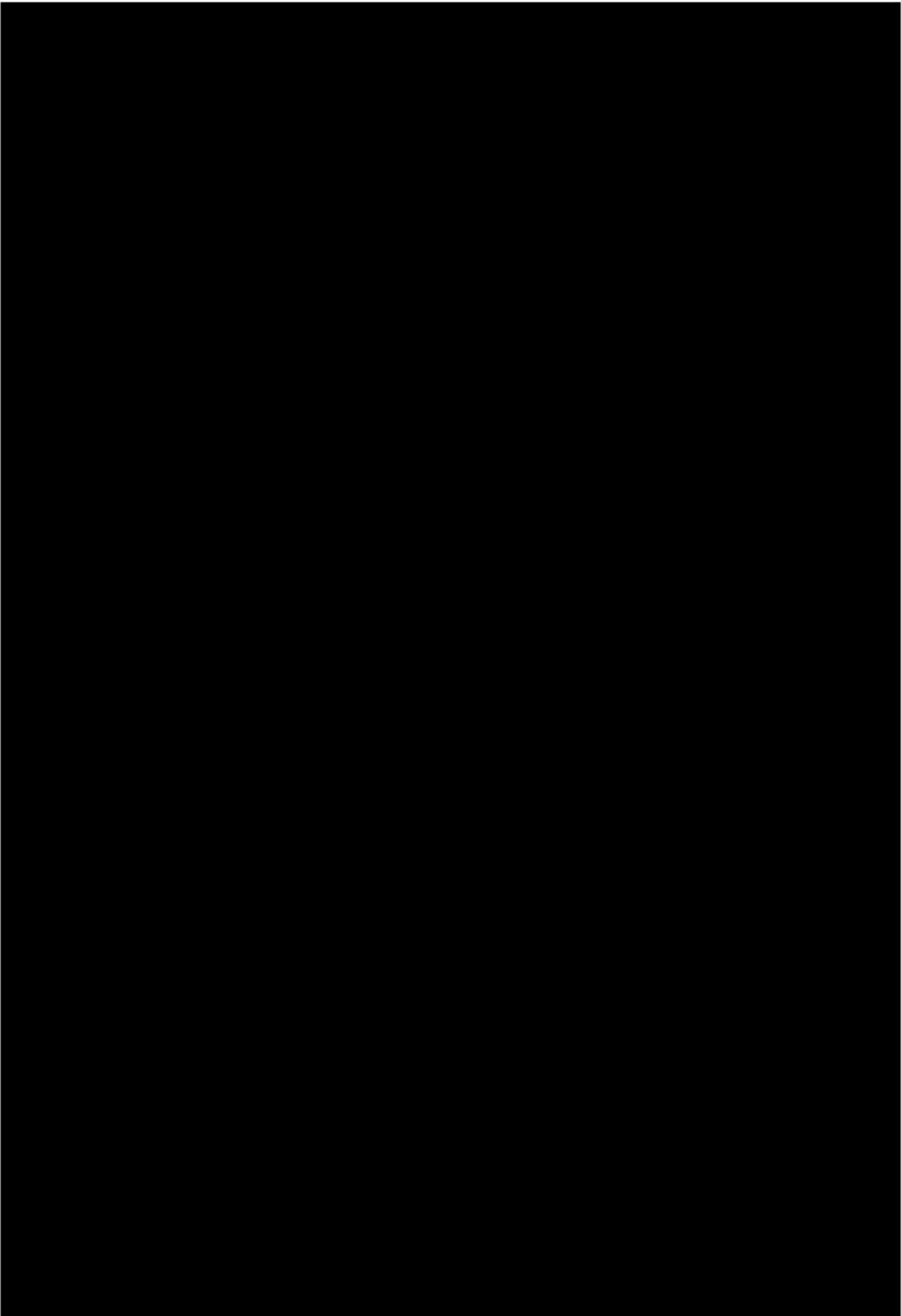
ecology | planning | offsets

460 Pacific Highway (Lot 1212 // DP 818944), Wyong NSW

Prepared for: Red Eye Constructions Pty Ltd

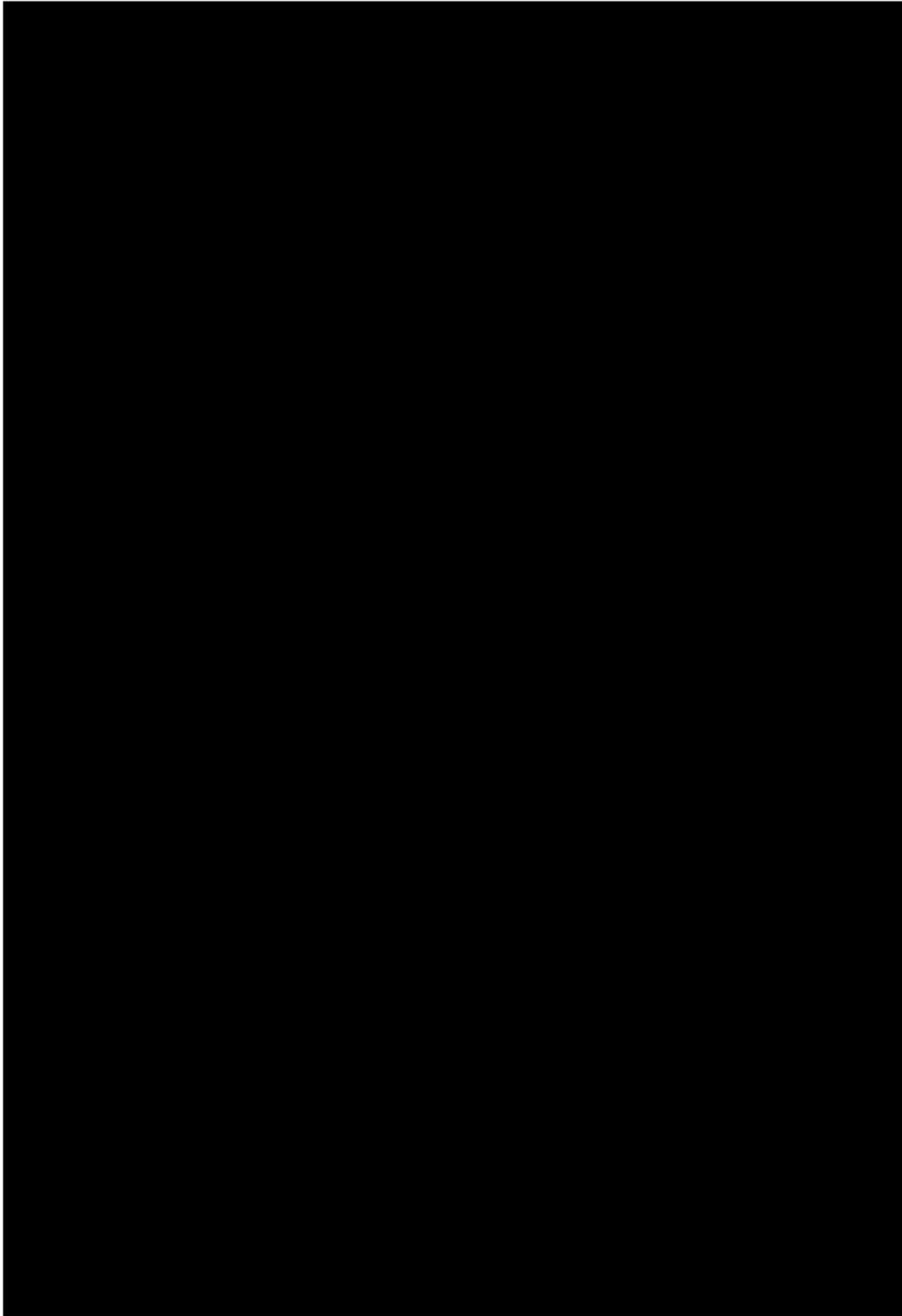
11 September 2023 Version: 1.0



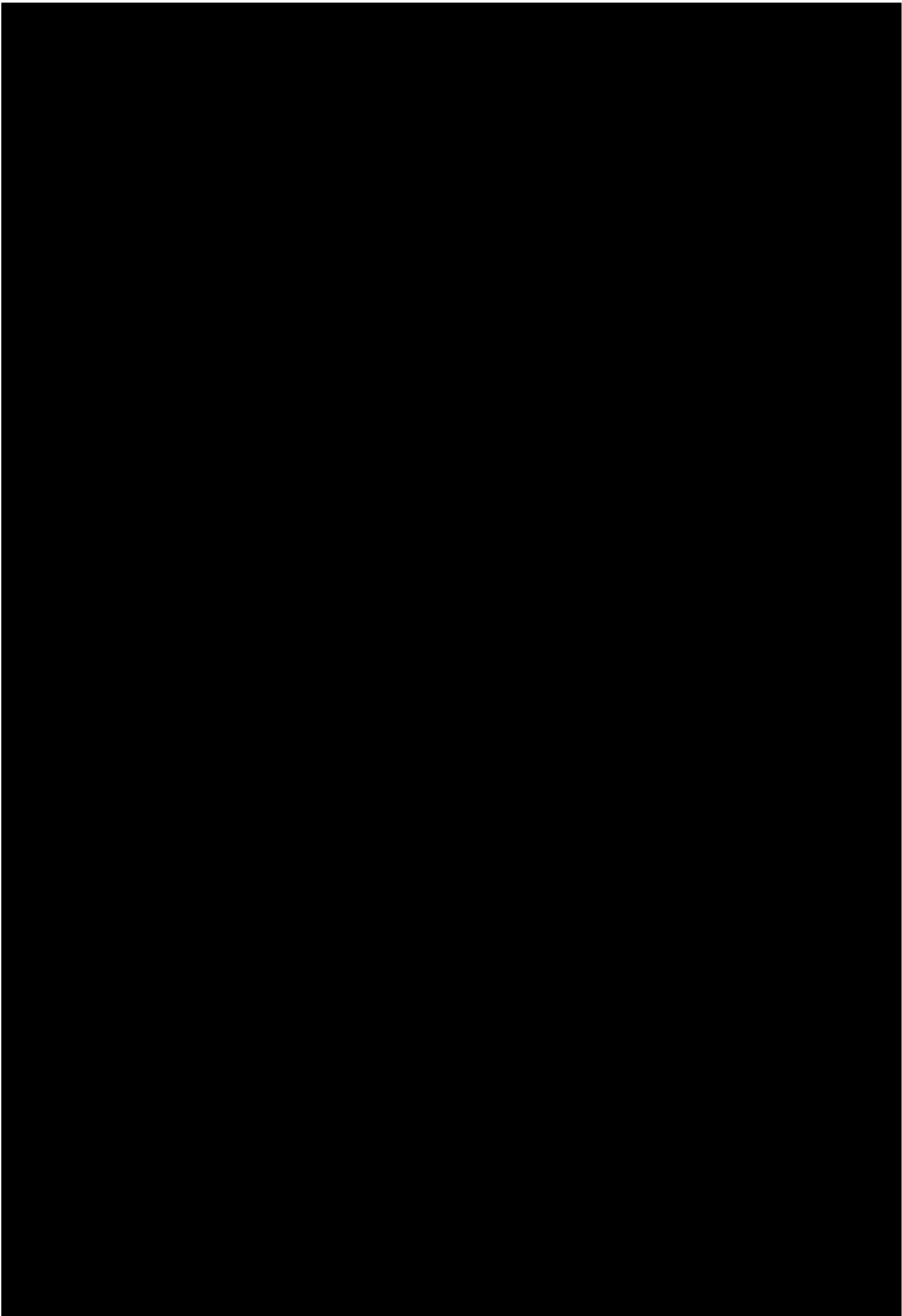


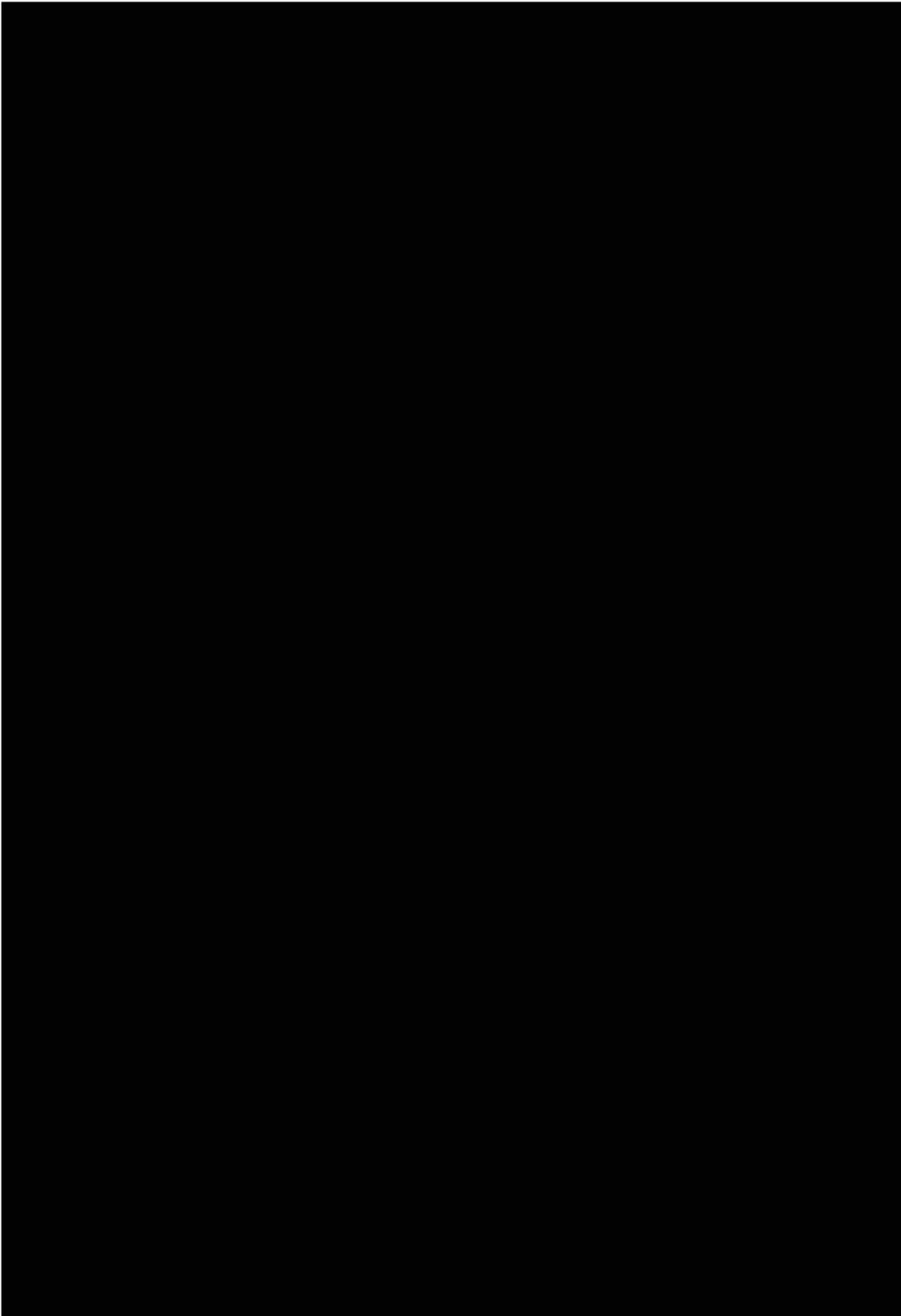
6.3 Evaluation 29

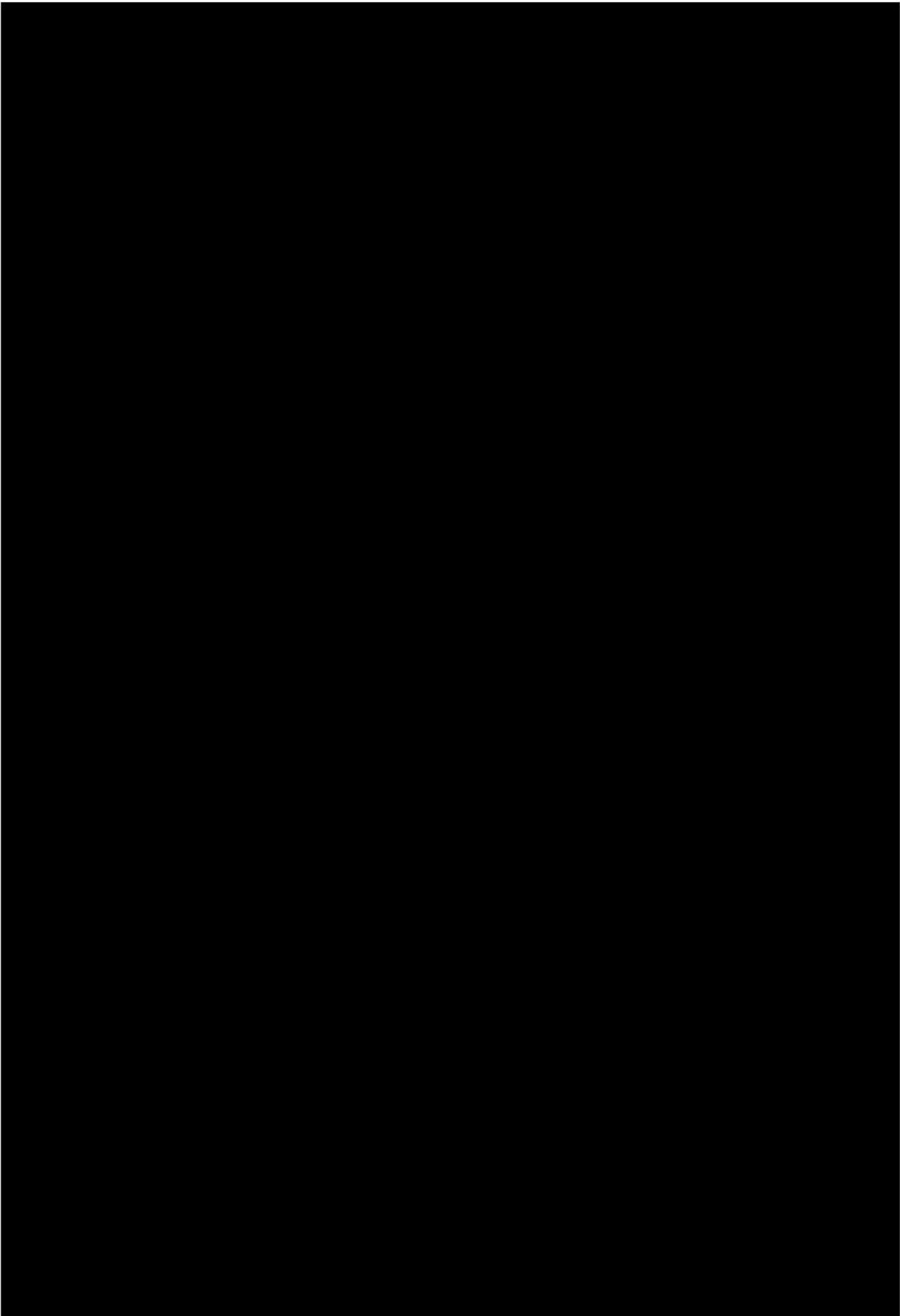


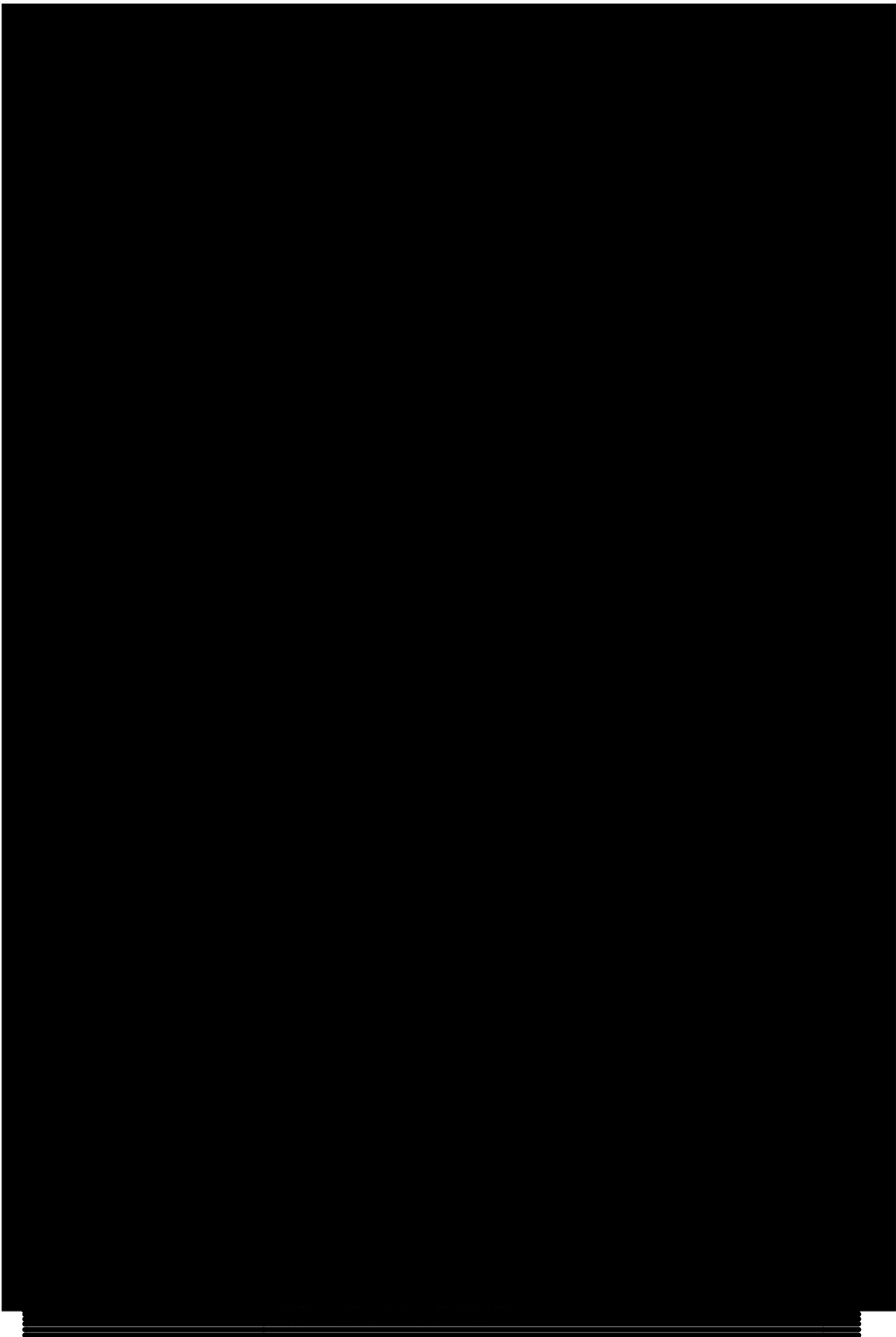




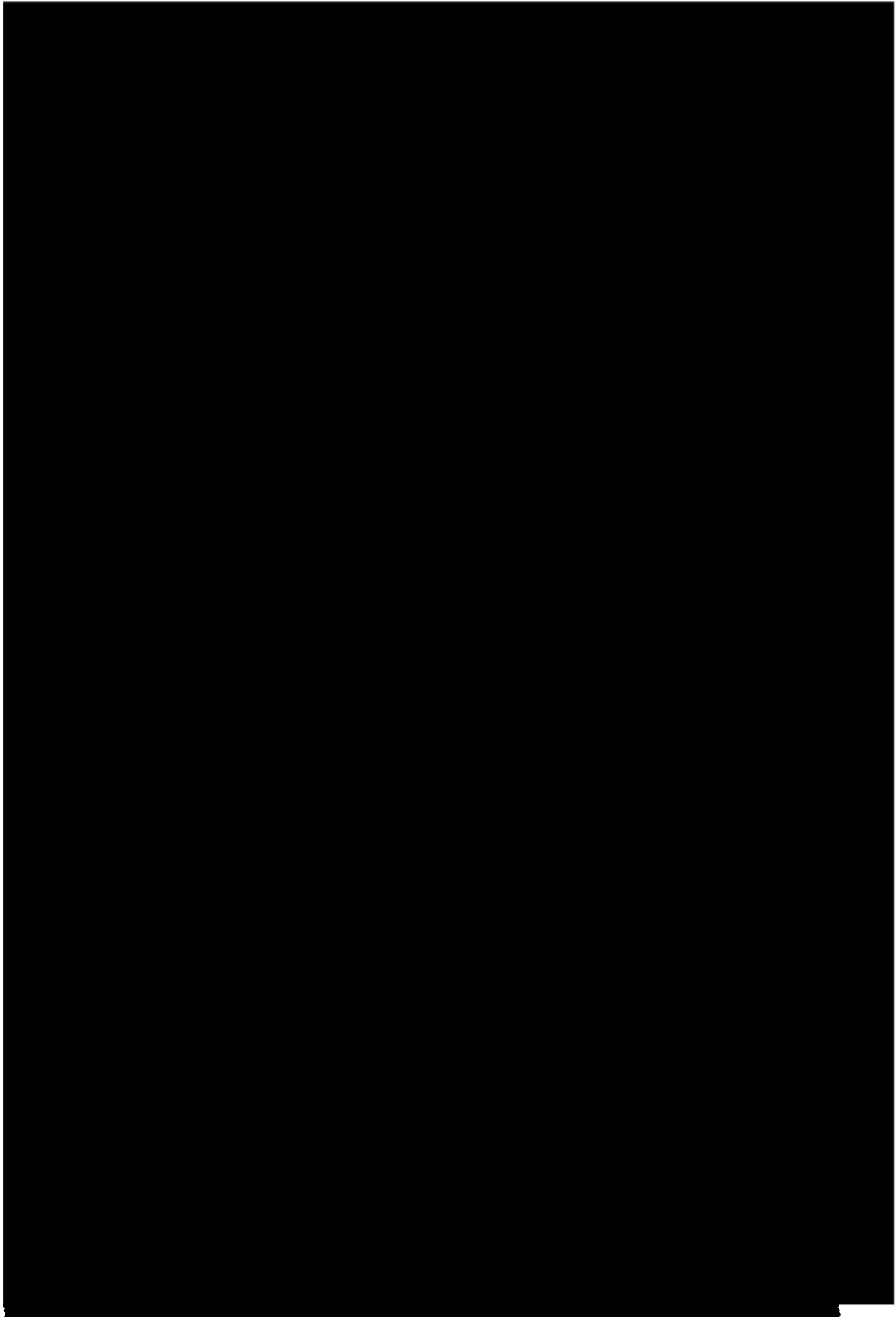


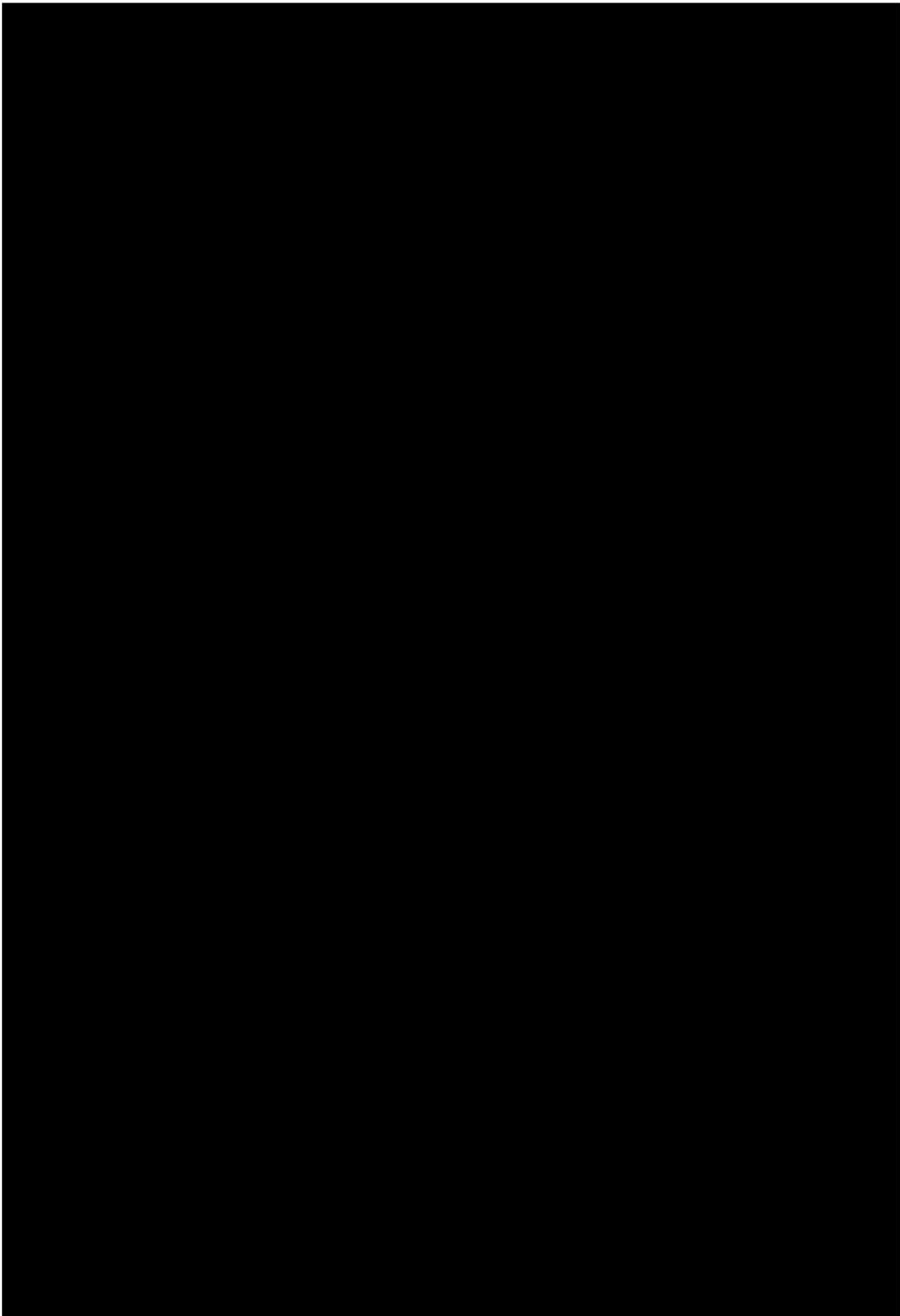


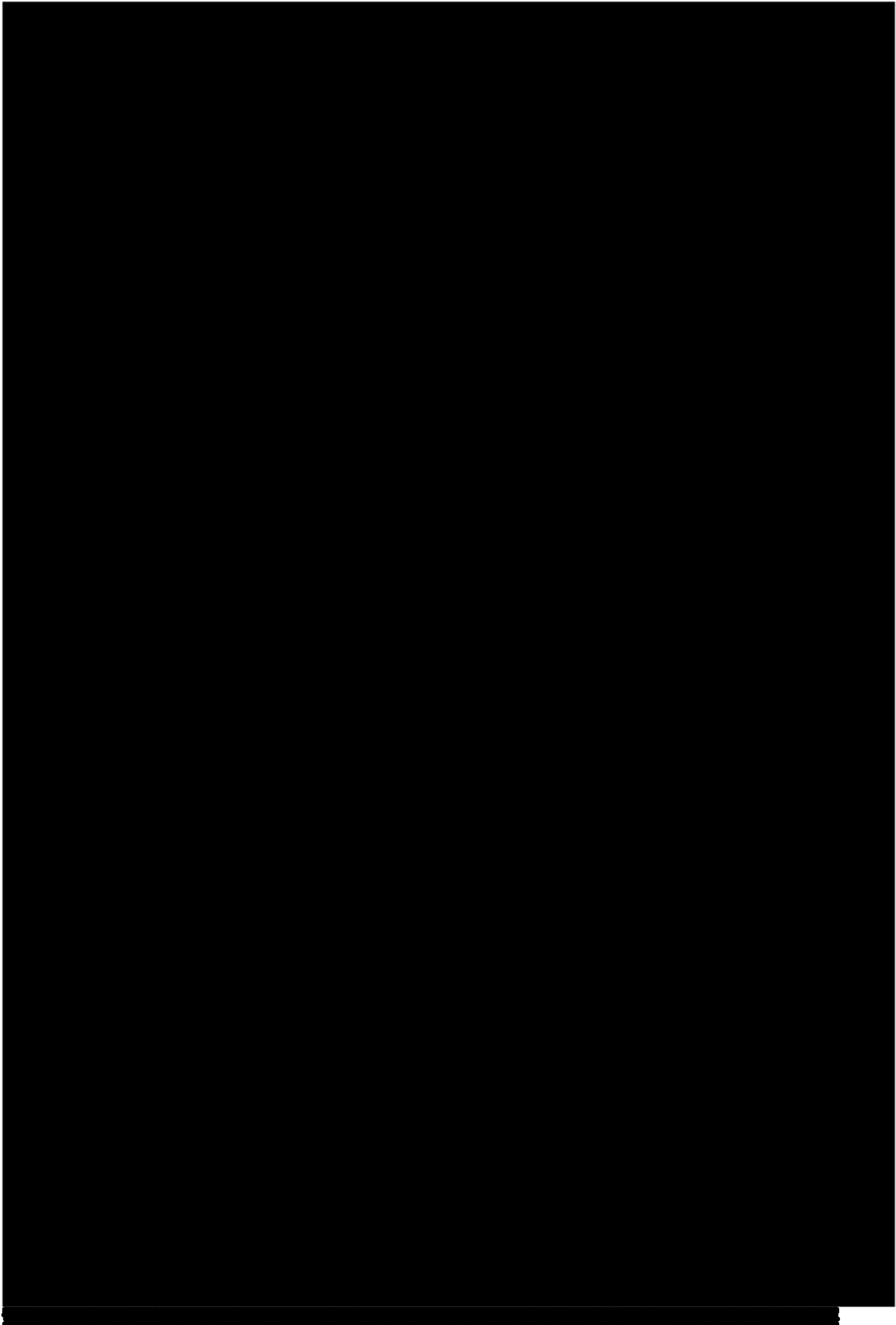


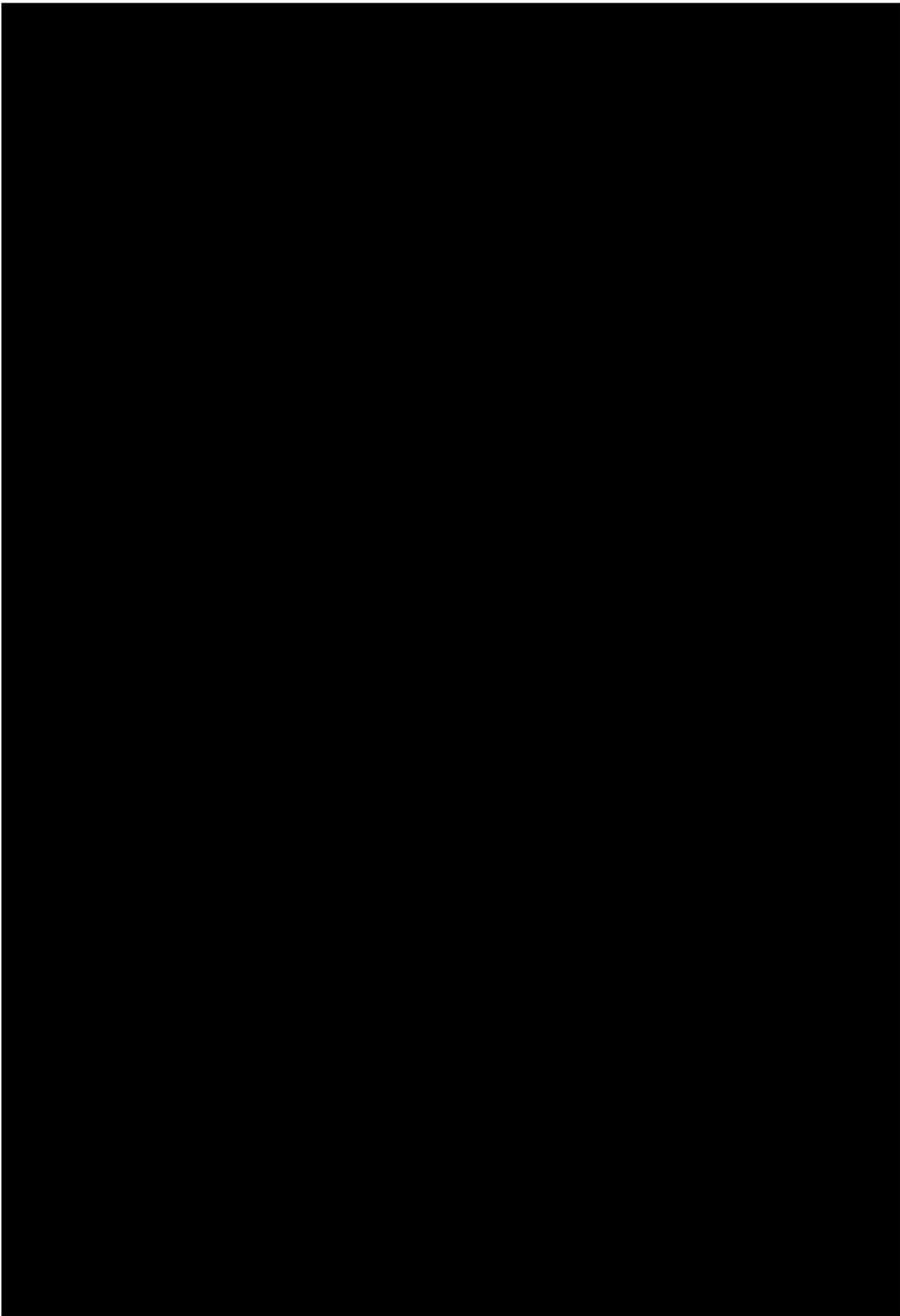


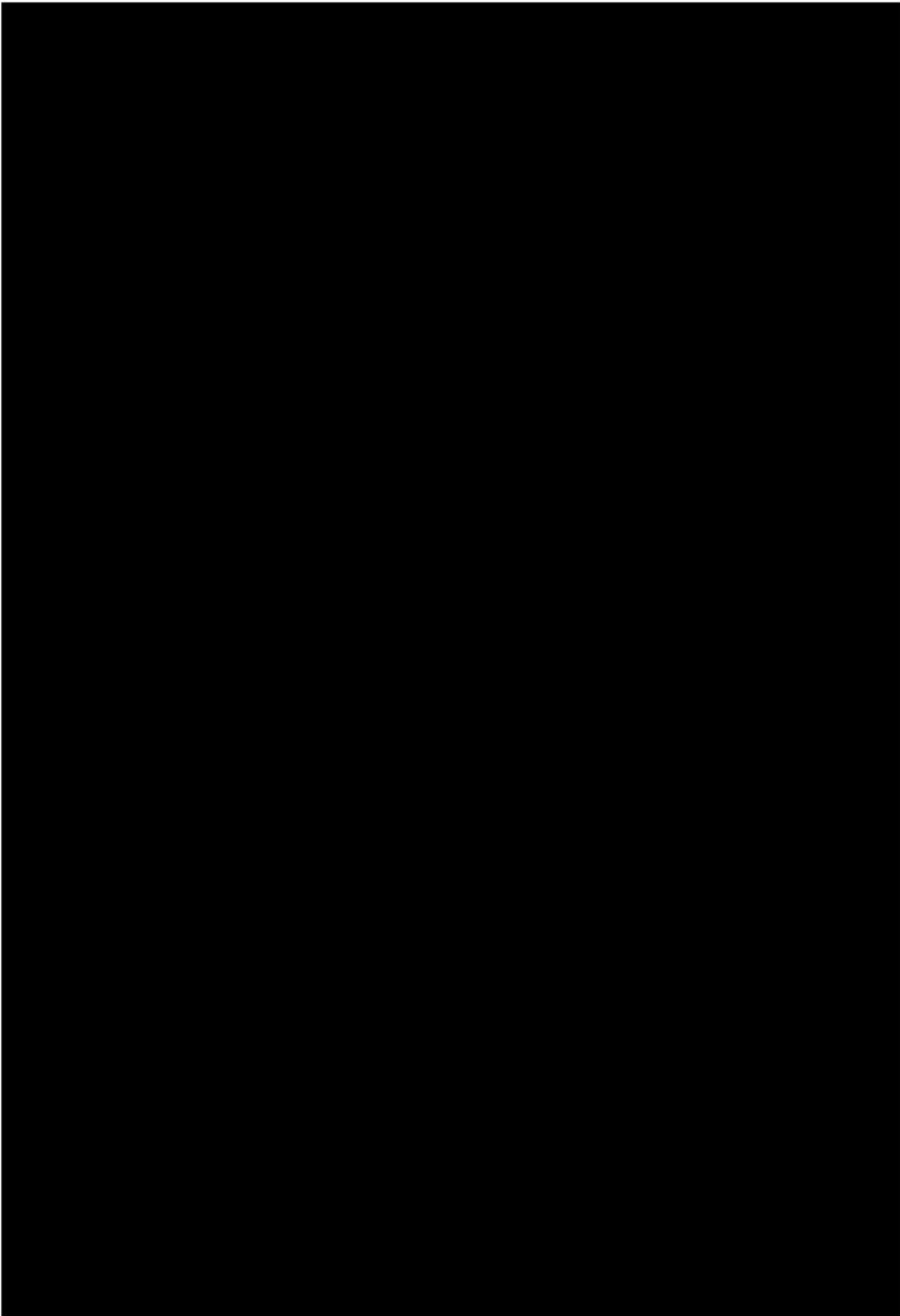




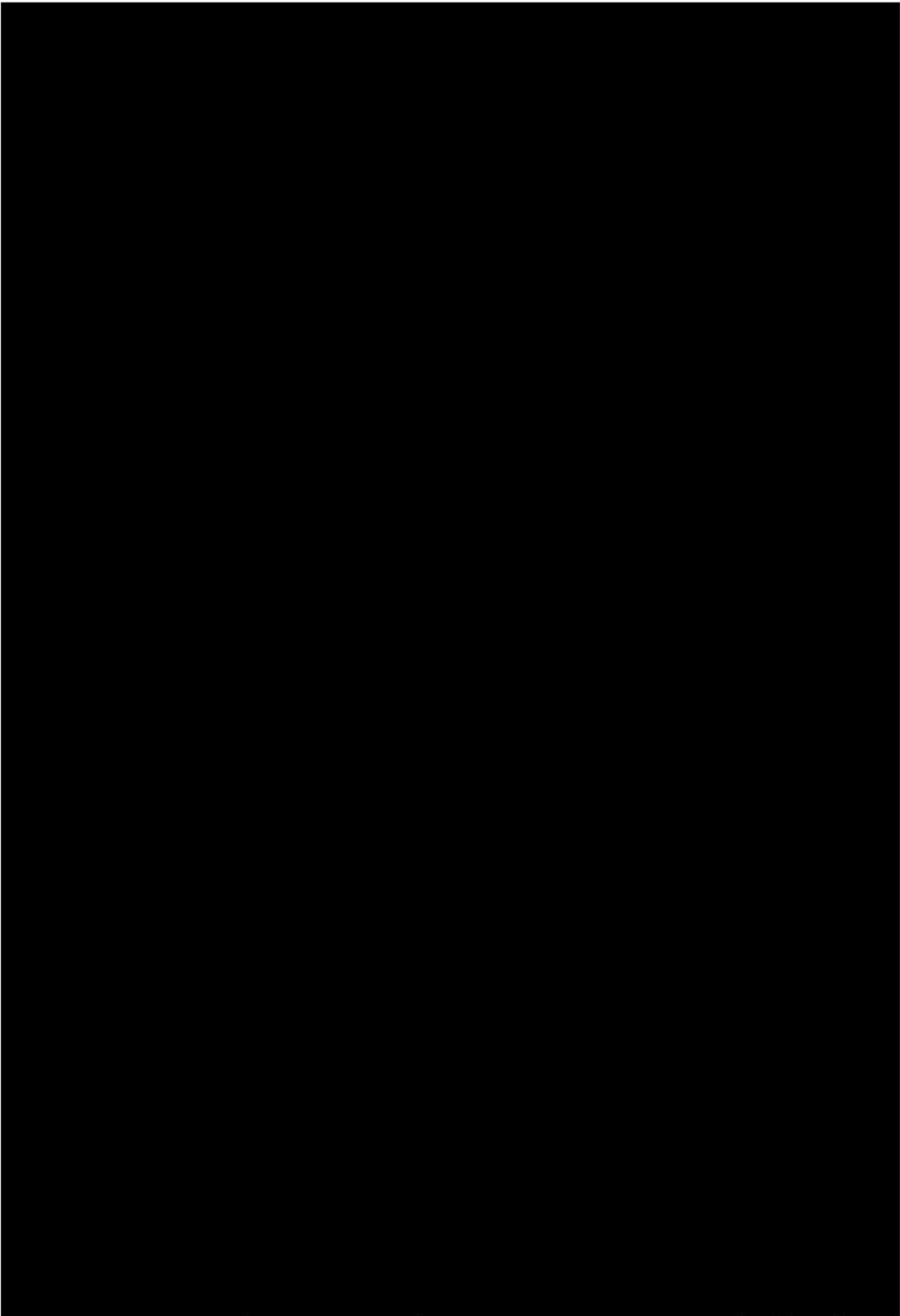




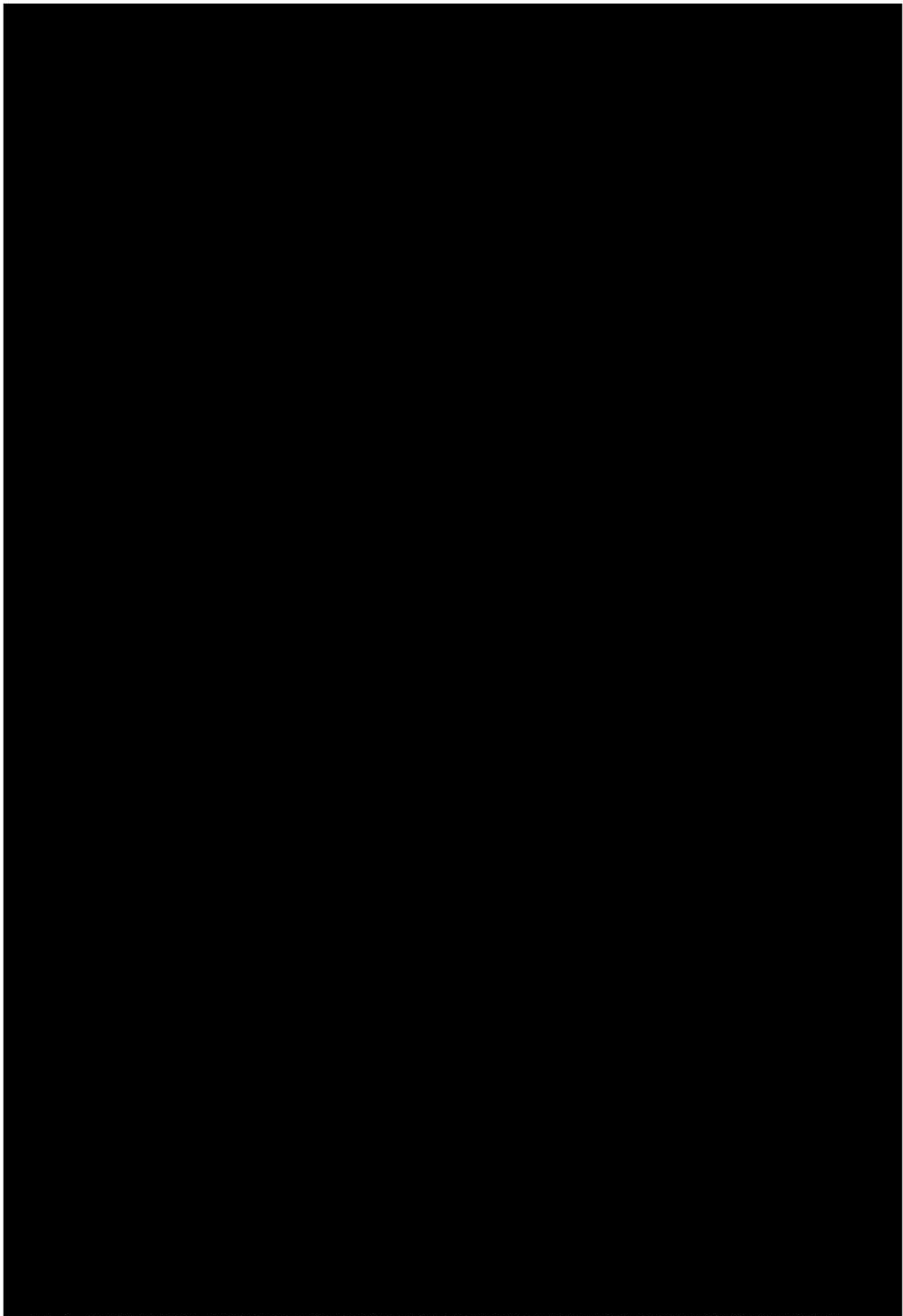








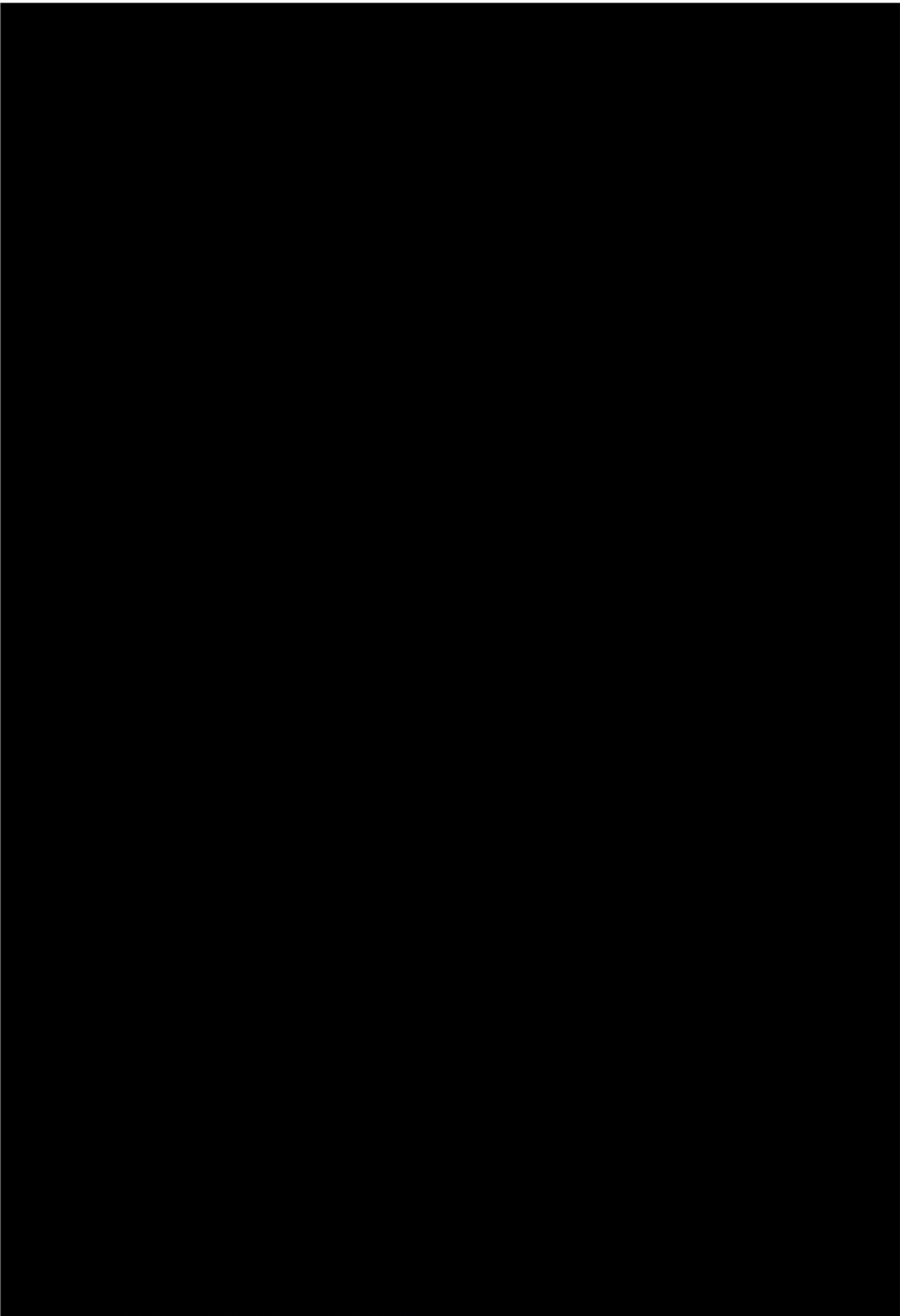


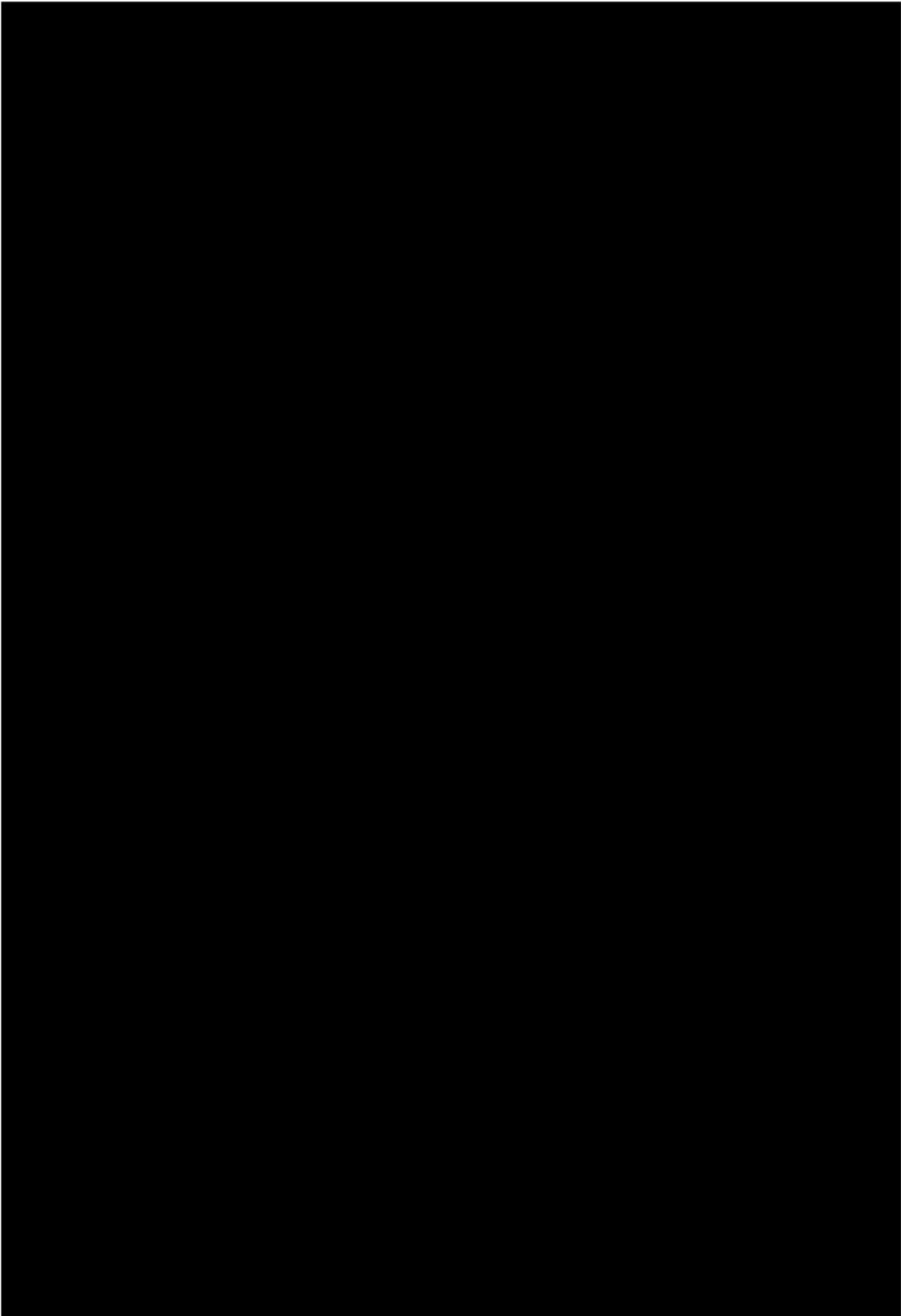


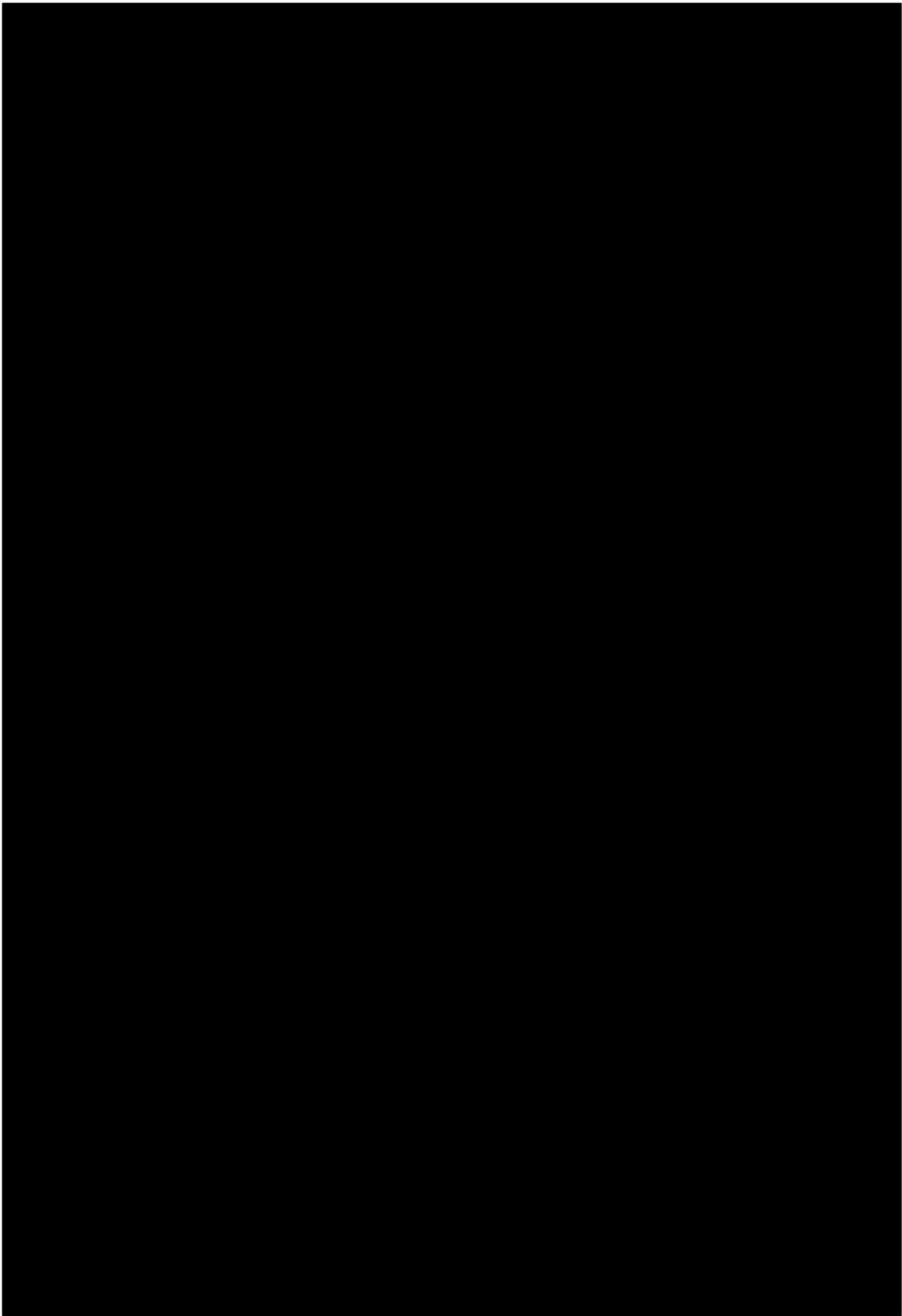
27. It is unclear what proportion of the individuals selected in EEEs can not found in EEE

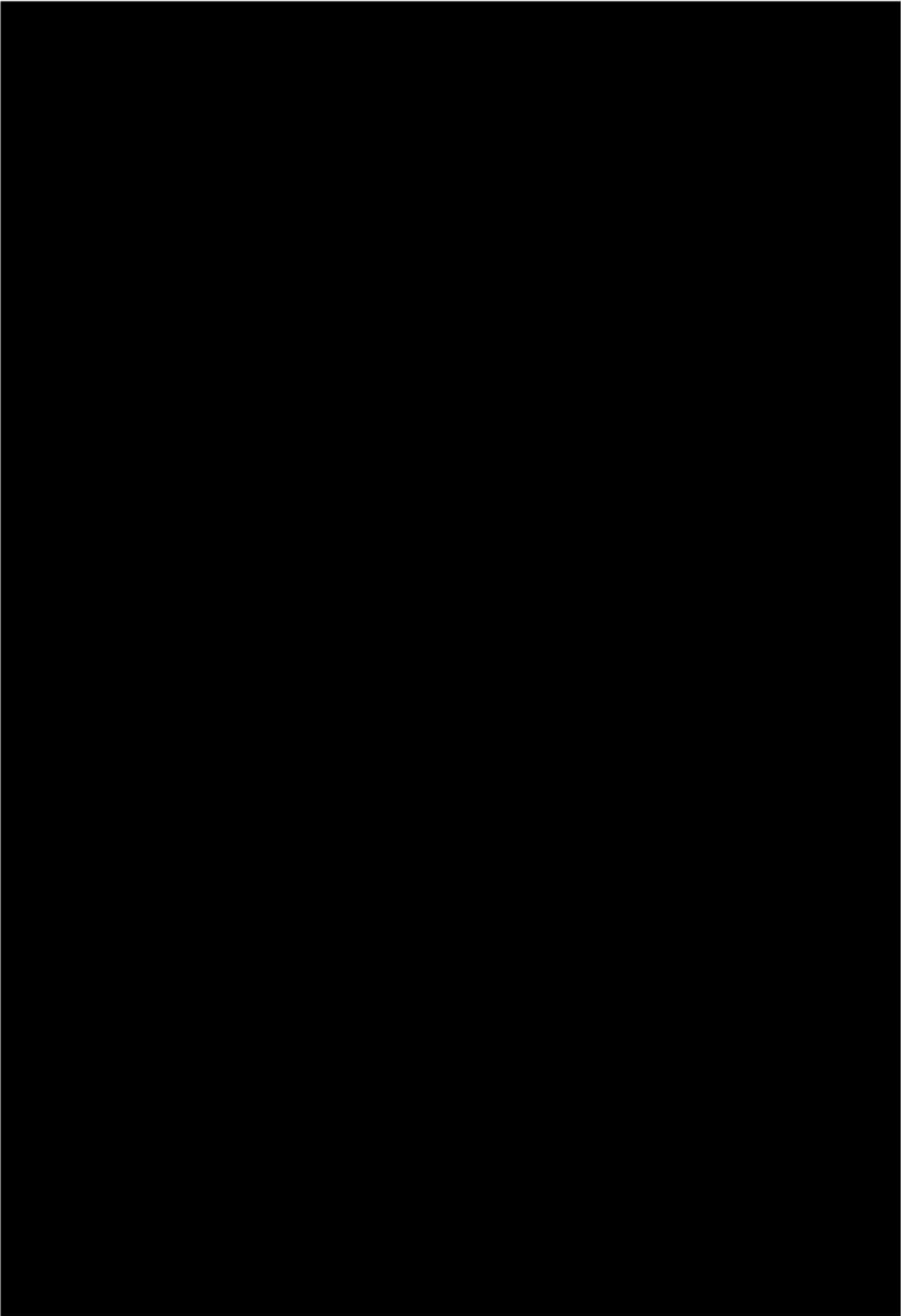


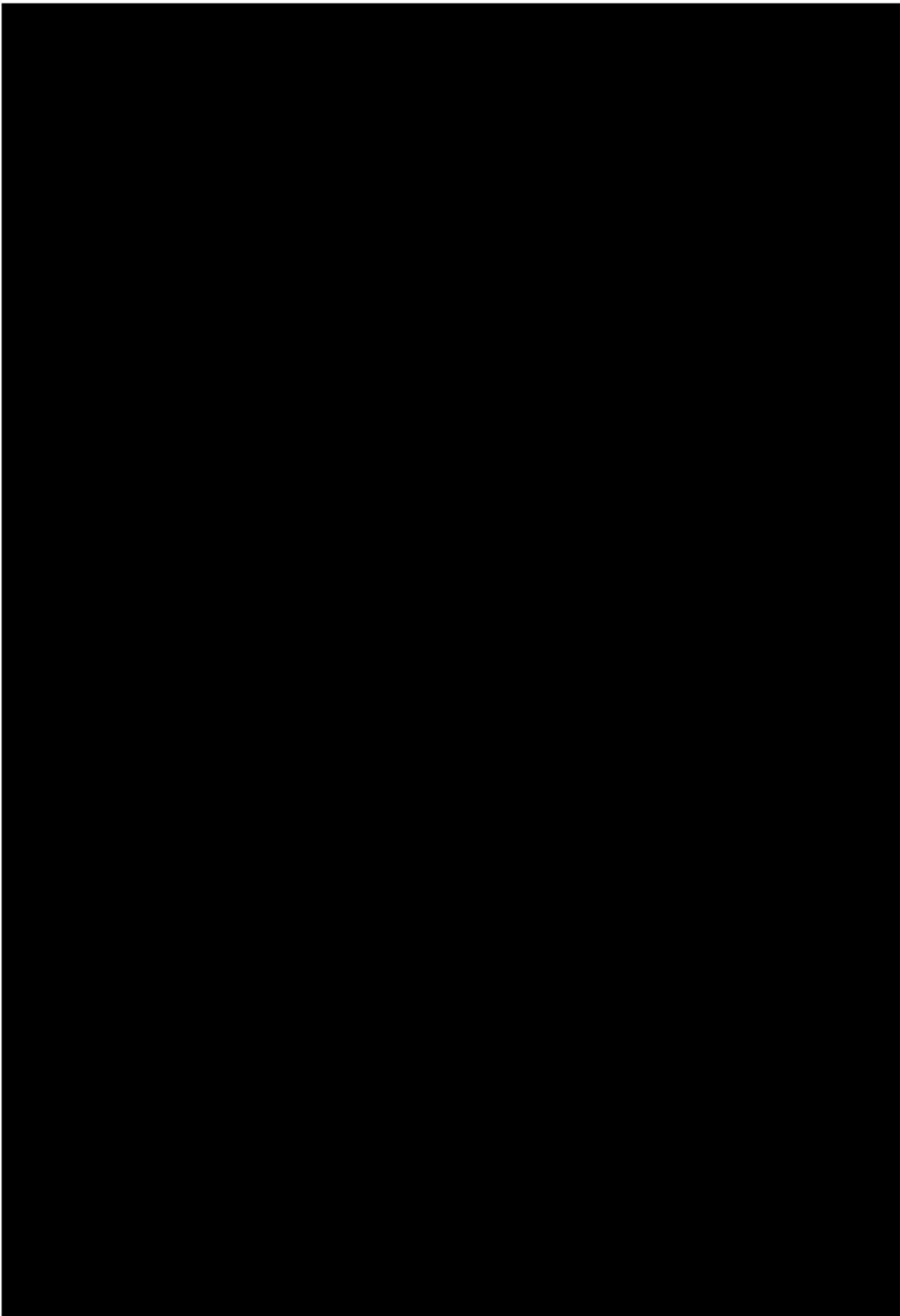


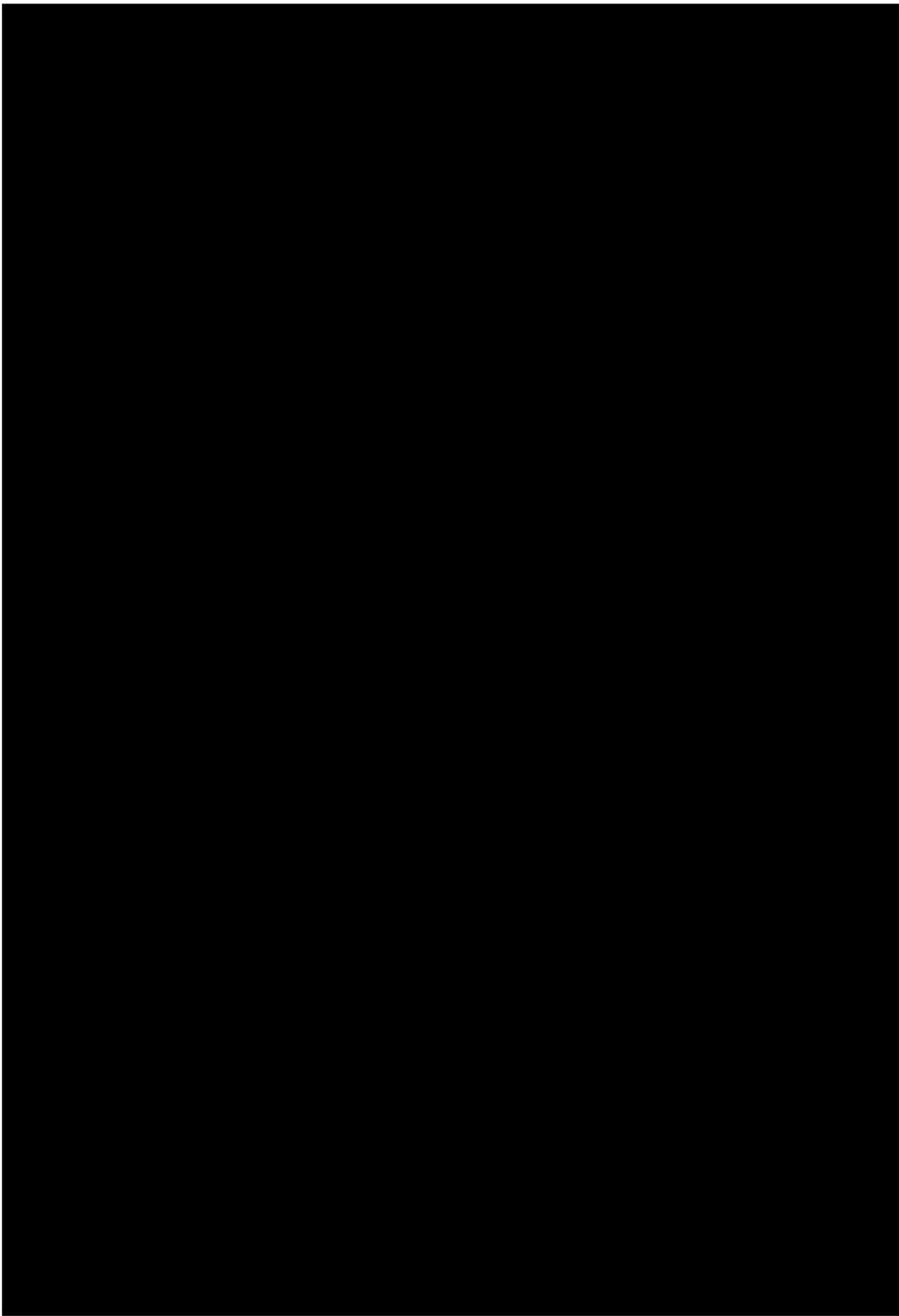


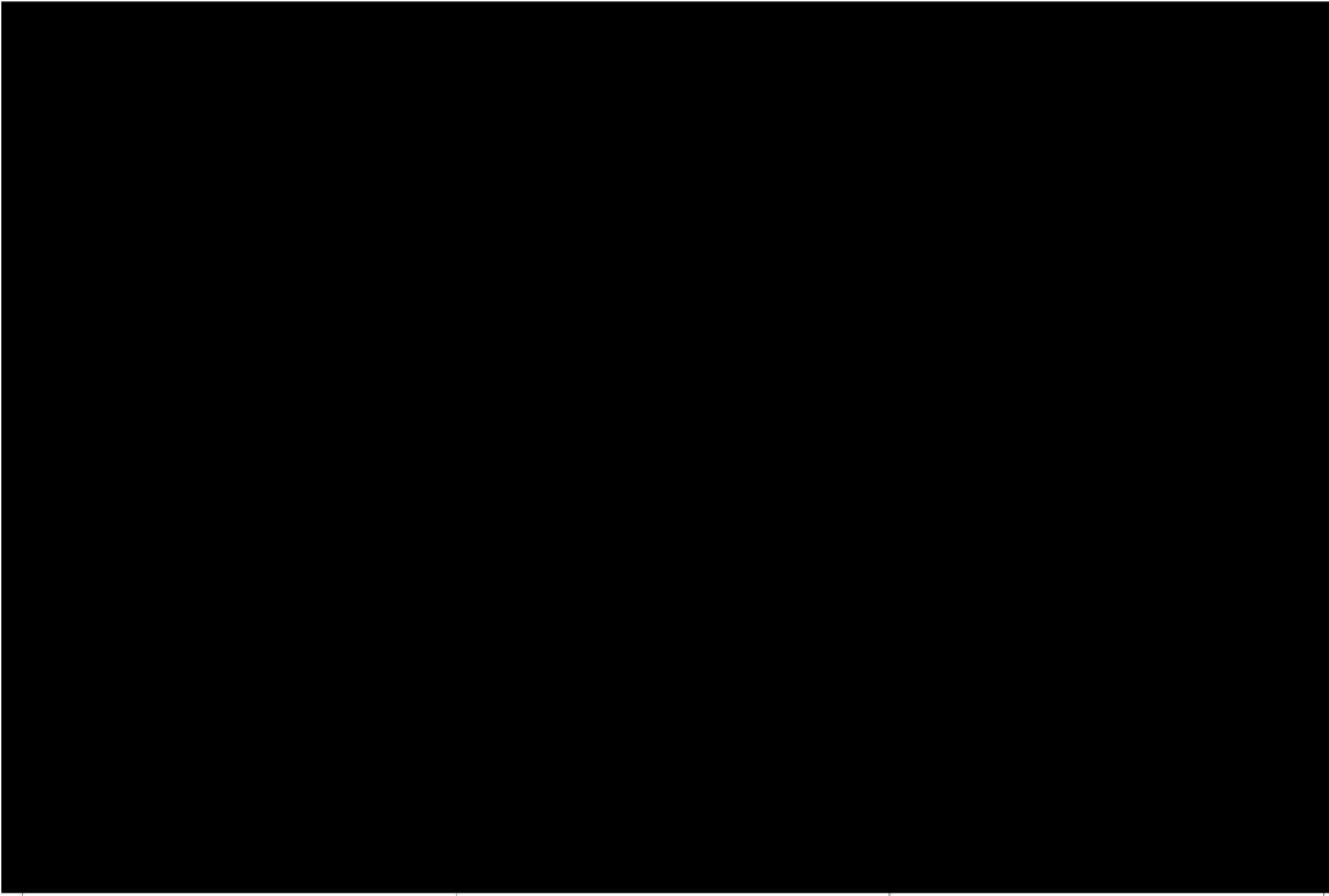


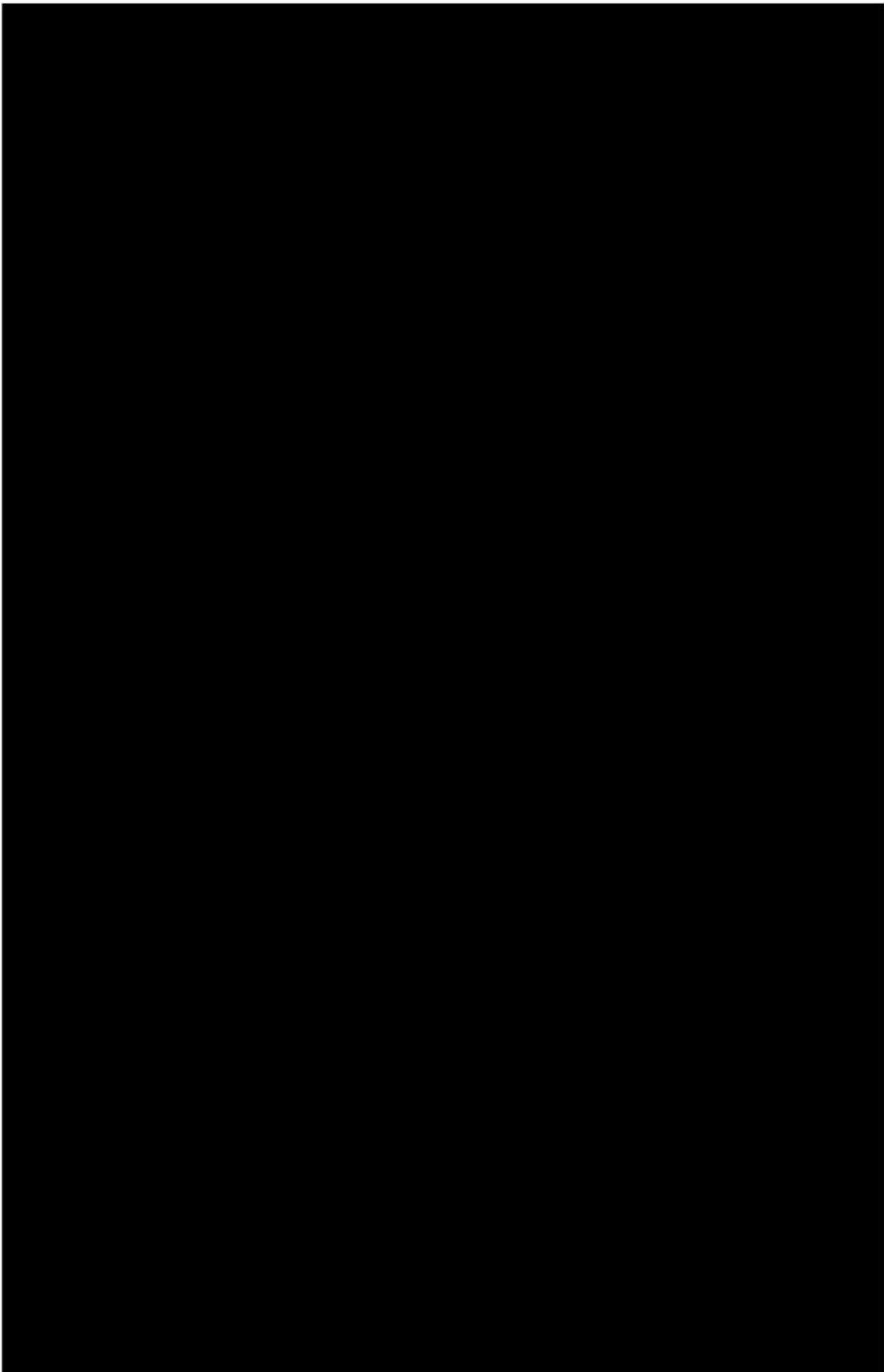


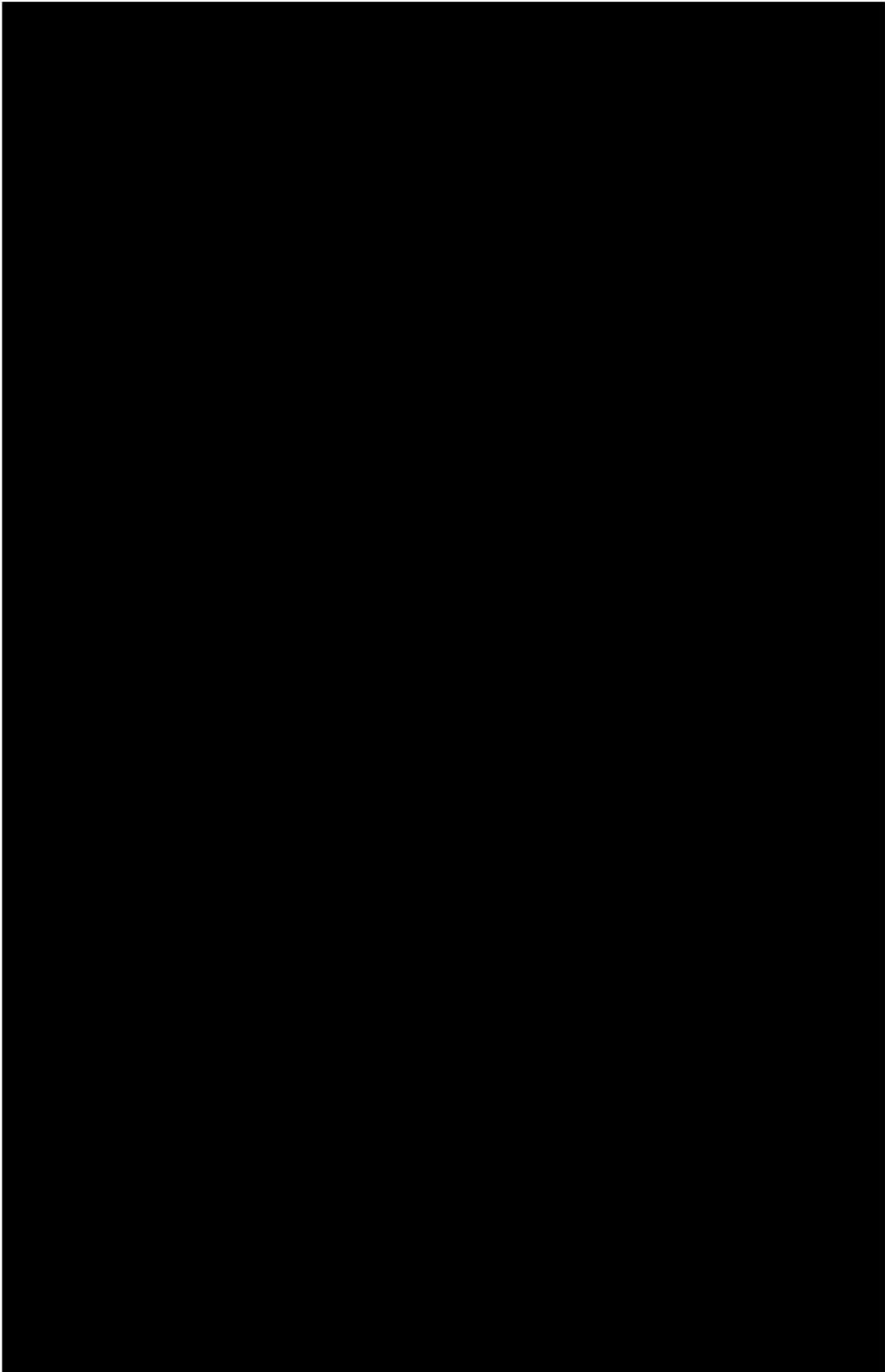


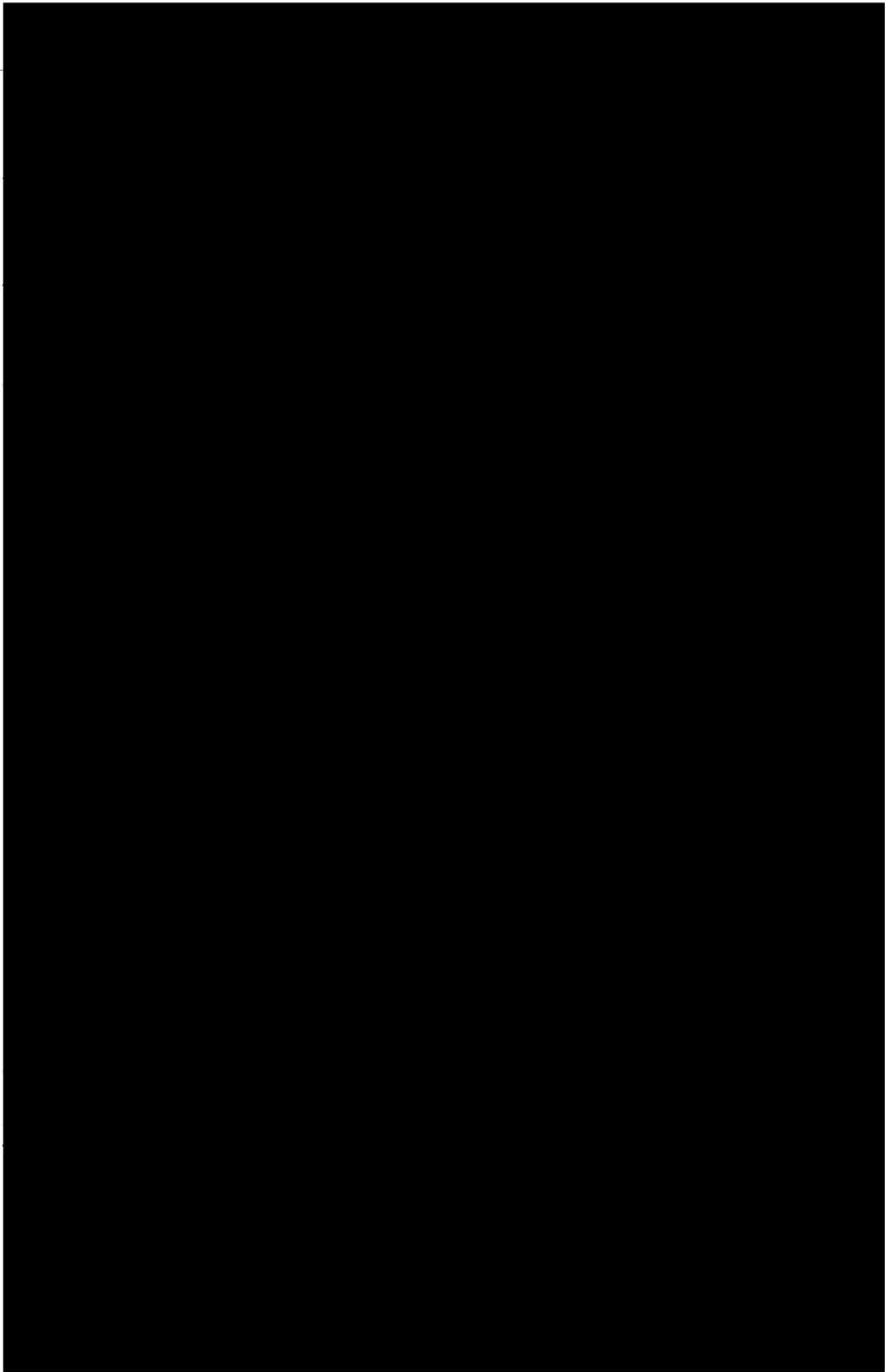


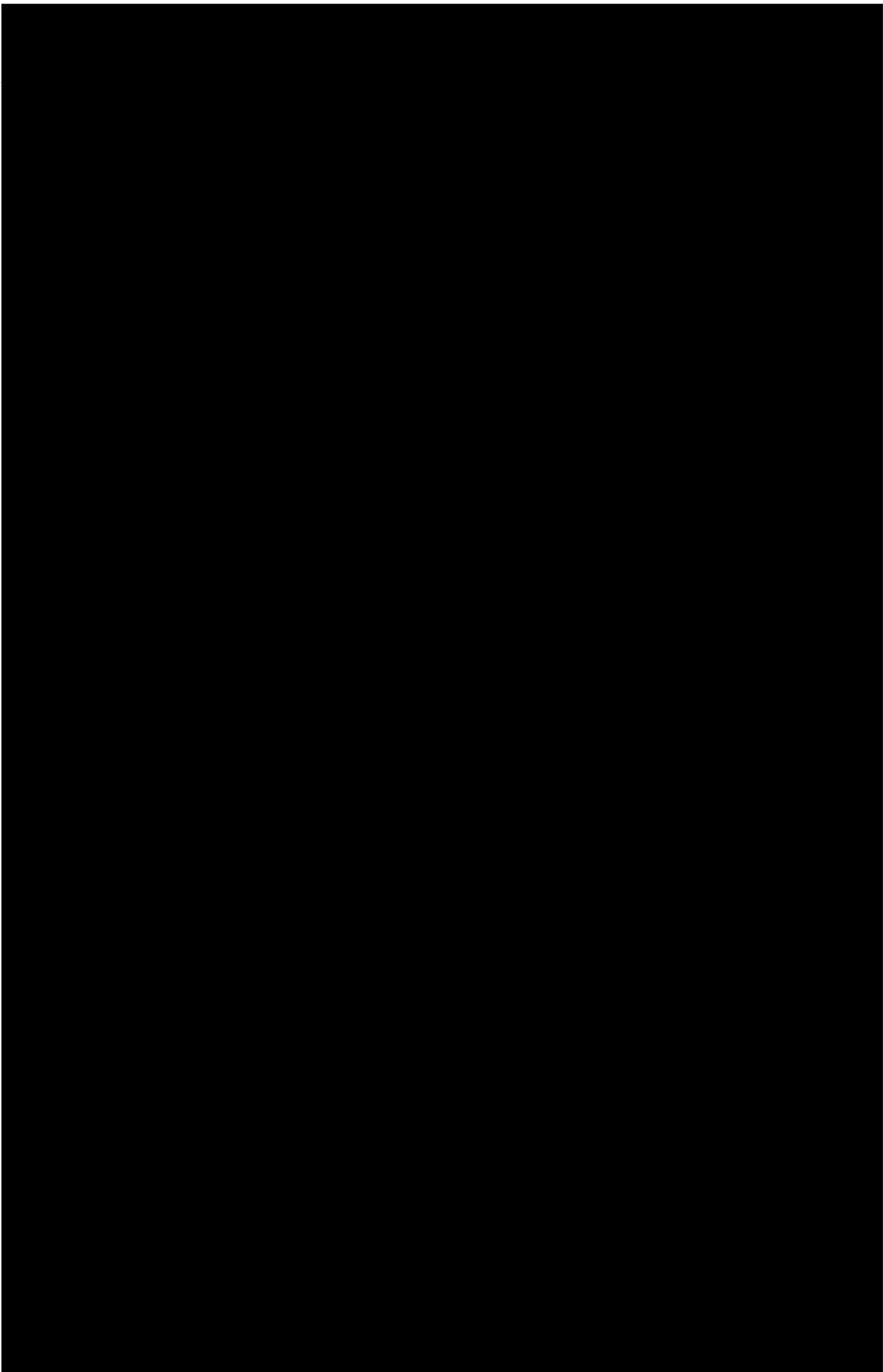


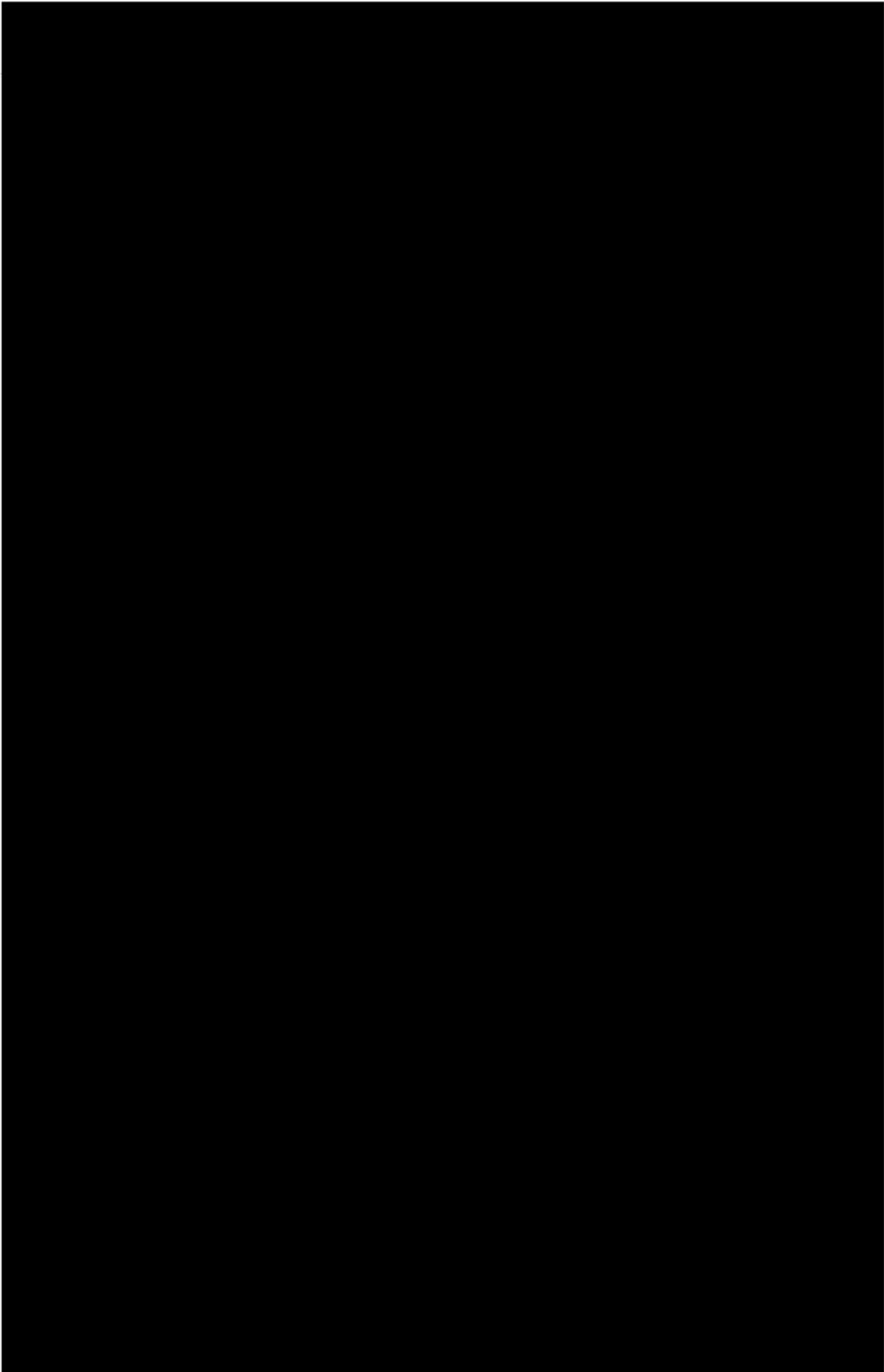


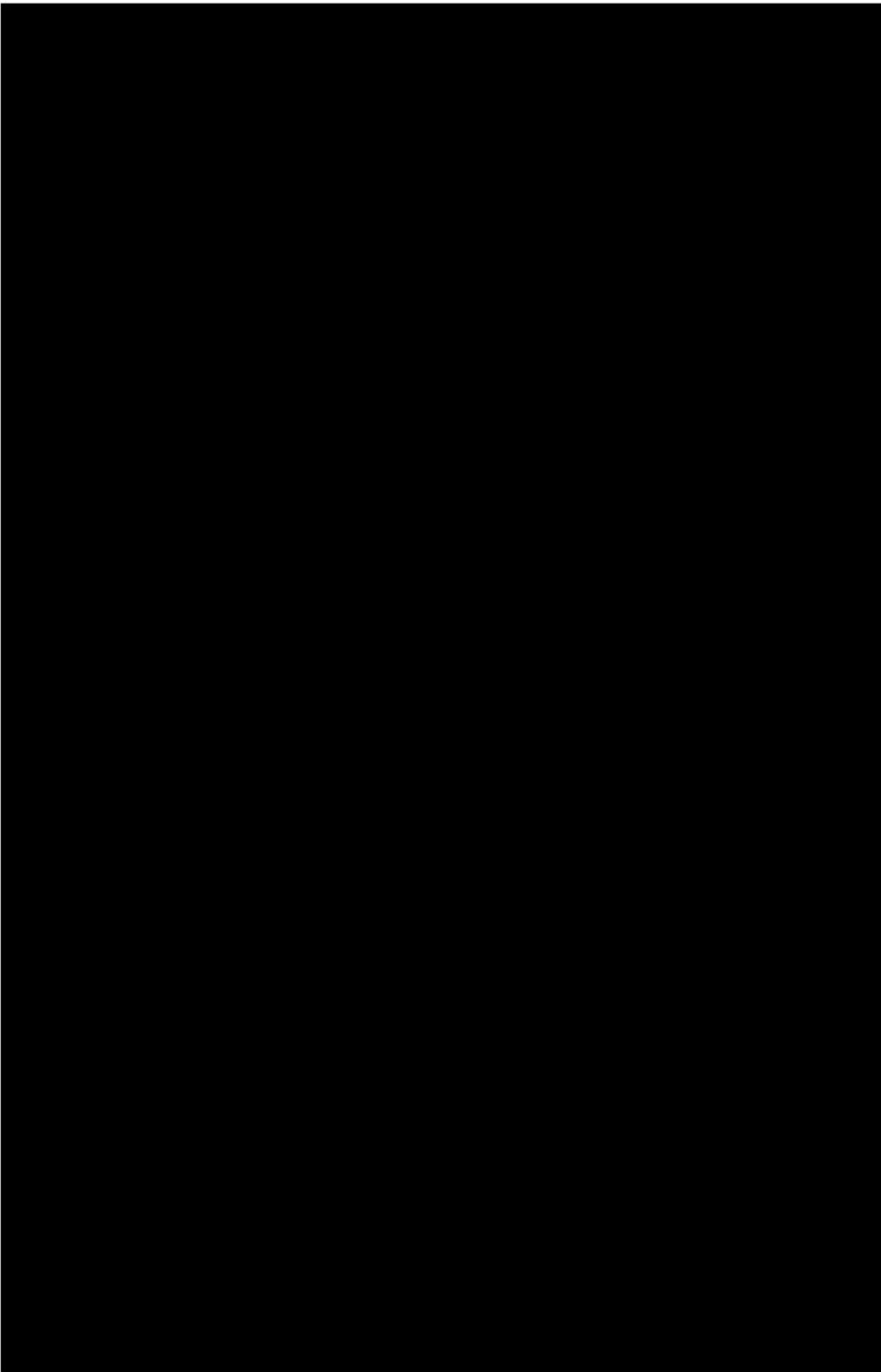


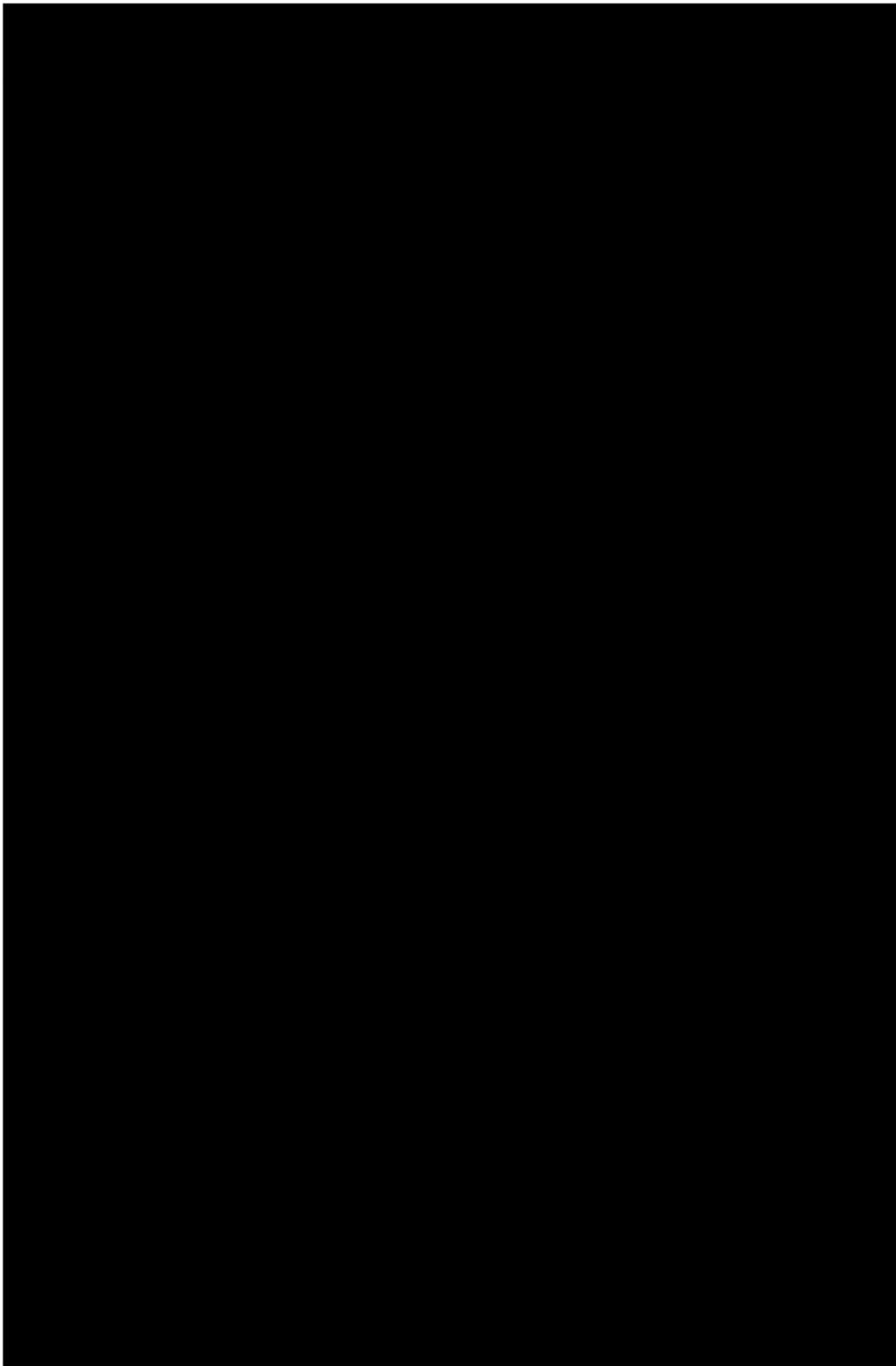












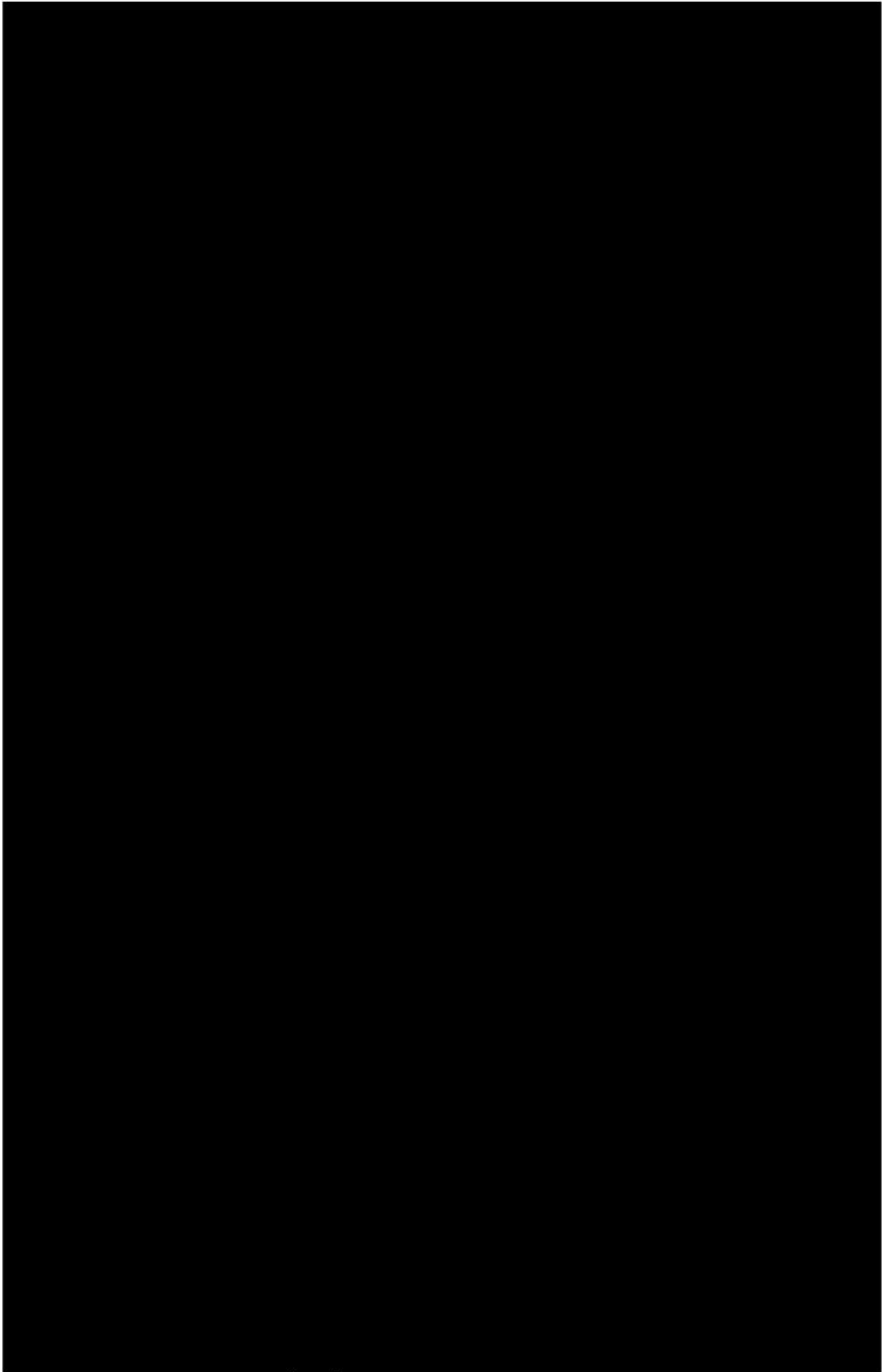
Item description	Indicative budget* (ex GST)
Stage 1 reporting – quarterly reports for 24 months (eight reports in total).	\$12,000
Stage 2 of translocation plan, planting excavated individuals into recipient site- within 12-36 months of excavation of 'core population'.	\$8,000
Stage 2 – monitoring for up to 5 years.	\$18,000
Stage 2 reporting – annual reporting for up to five years.	\$10,000
Total	\$98,000

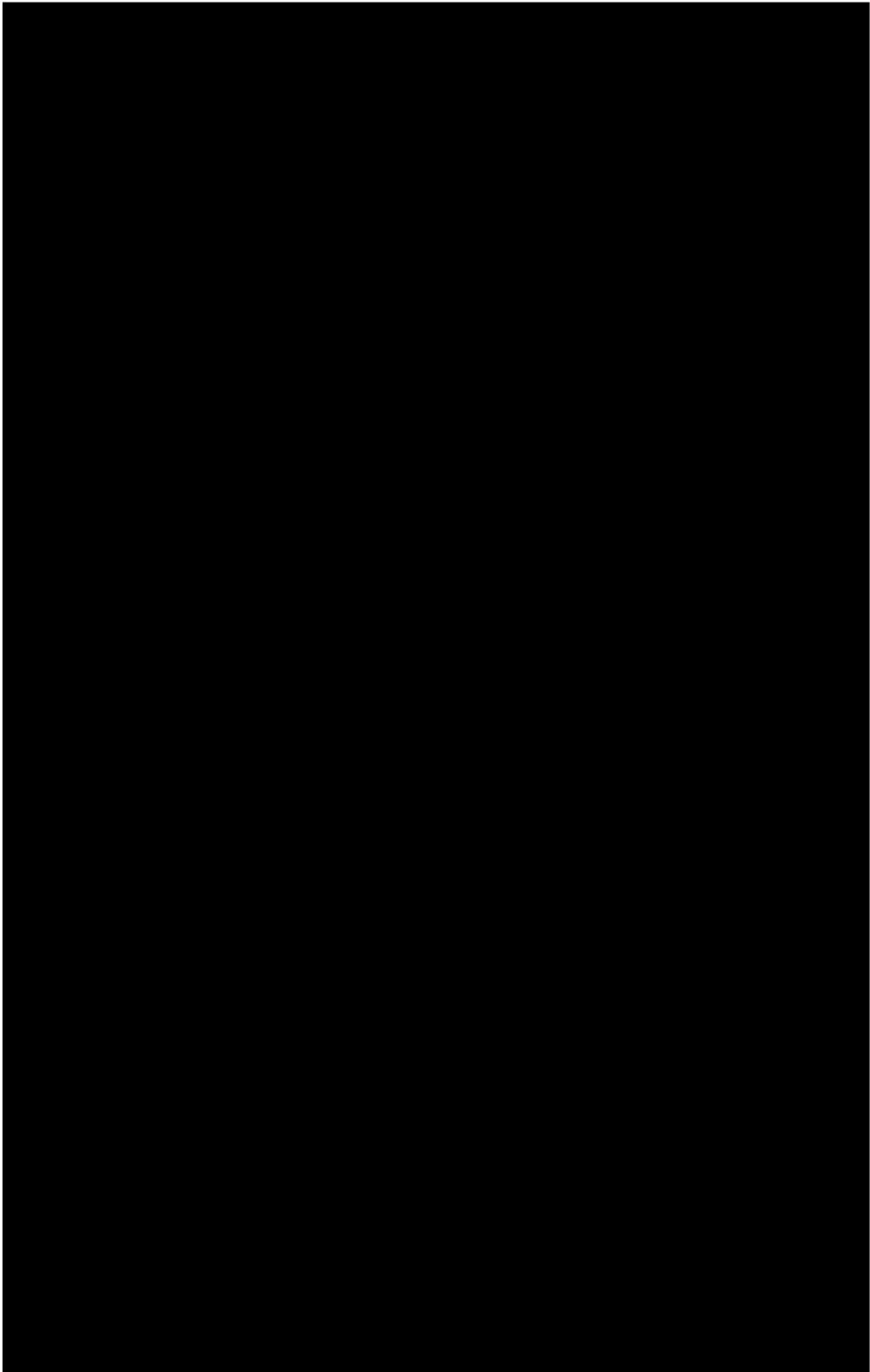
* Budget is indicative only and will be subject to fee agreements between landholder and contractors undertaking works

6.7 Funding

All funding required for this translocation plan, as detailed in **Section 6.6**, would be the responsibility of the landowner of the source site, namely Redeye Constructions Pty Ltd.









Habitat Environmental Services Pty Ltd
www.habitatenvironmentalservices.com.au
ABN: 75 654 044 765

1. INTRODUCTION

Northrop Consulting Engineers Pty Ltd has been engaged to undertake conceptual stormwater management design for the proposed subdivision located at 460 Pacific Hwy, North Wyong. This report accompanies and should be read in conjunction with drawings NL180808 C10.01 – C40.50.

The purpose of this report is to summarise the proposed design solutions for the stormwater management for a Development Application submission to Central Coast Council. The proposed design has been considered with regard to Central Coast Council (CCC) DCP 2022, Central Coast Council Engineering Guidelines, as well as industry best practice.

We note the information contained in this report is not intended to present detailed design solutions but rather provide solutions commensurate with a conceptual design suitable for Development Application assessment.

2. SITE DESCRIPTION

The subject site is comprised of lot 1212/DP818944, 460 Pacific Highway, North Wyong. The site is bound by industrial land use to the north, residential housing to the north-east, the Pacific Highway to the east, industrial land use to the south, and an active industrial site and stockpiles to the west. An open drain and easement bisect the site draining from east to west.

Figure 1 displays an aerial image of the site reflecting its current state.



Figure 1: Aerial Image of Site Location (Nearmap).

The site in its current state contains undeveloped land consisting of numerous stockpiles, sparse vegetation and an open drain channel splitting the site. Based on previous geotechnical investigations performed for near-by developments, the soil profile is believed to consist of poorly drained soils with low permeability.

The total site area is 4.737ha and the topography falls gradually from the east to the west with levels on site ranging from RL8.75 to RL13.83 AHD.



Figure 2 – Catchment Extents

An ILSAX hydrological model was prepared in DRAINS utilising ARR2019 rainfall data to generate runoff hydrographs. Runoff parameters were selected to replicate the site conditions that will be present in the post-developed case. A summary of parameters used for the model are shown below:

- Impervious depression storage = 1 mm
- Pervious depression storage = 5 mm
- Soil type = 3.0

4.2.2 Hydraulics

A screenshot of the DRAINS model for the 1% AEP storm event is displayed in Figure 3. The long section for the system, including culvert sizes and hydraulic grade line is presented in the engineering drawings, appended to the rear of this report.

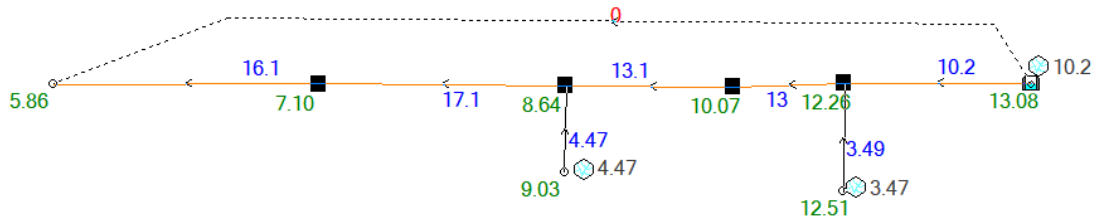


Figure 3 – DRAINS Model Schematic

The design for the culvert has been assessed with a focus on size and capacity to the proposed outlet as indicated on the engineering plans. In consultation with the adjoining land-owner, the design intent is to construct the full extent of the culvert to facilitate the subdivision, as opposed to providing a temporary outlet arrangement.

However, as the road surface is not to be constructed until a later stage, as part of a separate DA approval, it is proposed that the surface is suitably treated for the conveyance of overland surface flow. It is proposed that the surface above the culvert on the adjacent land is treated with either a geotextile covering, established vegetation (turf) or a coarse aggregate to minimise the risk of scour and erosion. A nominal 20m wide flow path would be provided with 300mm earth berms on either side to contain the surface flow and convey it towards the wetland’s outlet.

4.2.3 Local Overland Drainage

The ARR2019 Blockage Assessment Form was used to determine the likelihood of the stormwater system having blockages in a major storm event. It was calculated that the upstream catchment was likely to be 25% blocked. 25% of the upstream flow in the 1% AEP event (2.55m³/s) as adopted as the design flow rate to determine the required size of the overland flow path for the subdivision.

A Manning’s calculation was used to size two overland flow paths for the development, namely, the extent from the Pacific Highway to the Donaldson Street extension through the proposed lot, as well as the road reserve of Donaldson Street.

The adopted criteria for safe flow conveyance were adopted as a velocity depth product of 0.4m²/s as outlined in the Central Coast Council Engineering Guidelines.

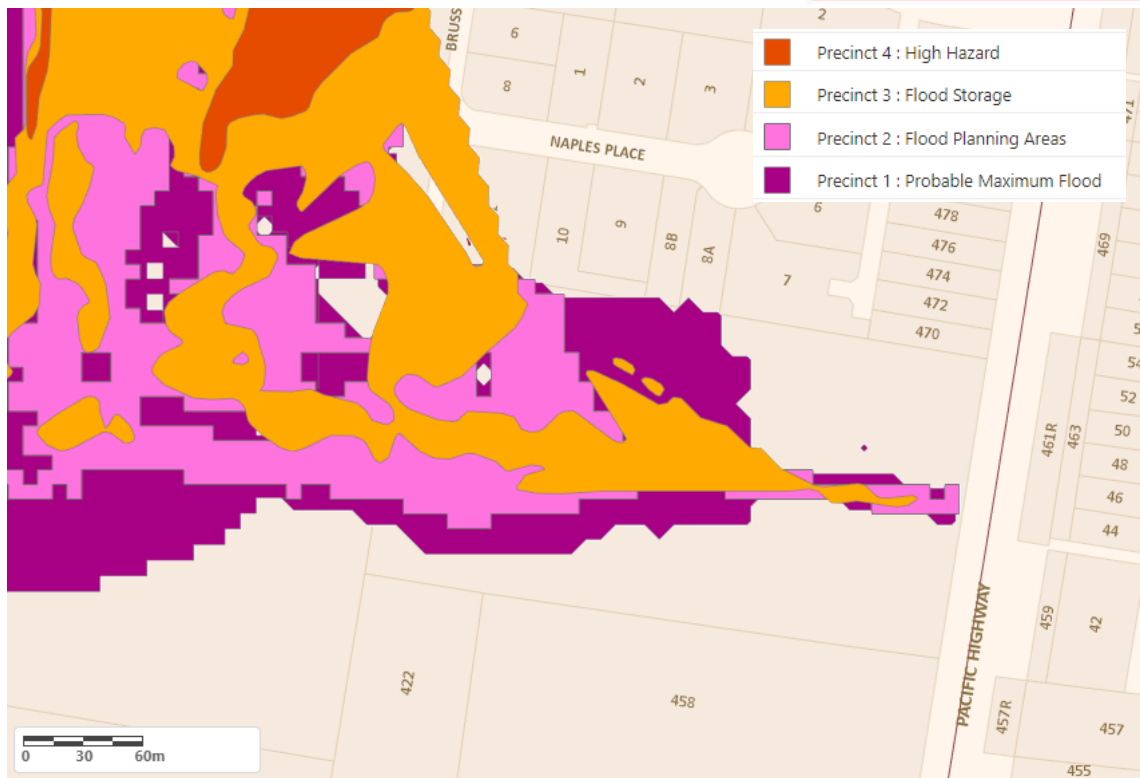


Figure 5 – Flood precincts of 1% AEP & PMF storm events

Based on previous site visits and updated survey information, the adjacent site to the west has created a large stockpile along the boundary to the subject site, that would significantly alter the flow of floodwaters to what is observed in figures 4 and 5. As such, the results as presented in the subject flood study from where the above figures were derived, would no longer be valid due to the extreme topography changes that have occurred since the time of the study.

It can be observed that the extent of flooding shown is likely a result of the conveyance of the upstream runoff through the site, which has been assessed in detail as outlined in Section 4.2. It was demonstrated that adequate conveyance of the 1% AEP is provided by the proposed drainage infrastructure, with provision for overland surface flow to be conveyed with the road reserve.

We are of the opinion that the small extents of fill provided by the subdivision works would have minimal impact on the present-day flood behaviour through the site and would be unlikely to result in adverse impacts on adjacent properties. The proposed works would result in flood behaviour that would mimic present day flood characteristics and flood risks of the subject site and adjacent properties.

APPENDIX A – SUPPLEMENTARY INFORMATION

- Concept Stormwater Management Plans

PROPOSED SUBDIVISION

LOT 1212 DP 818944, 460 PACIFIC HIGHWAY, WYONG



LOCALITY PLAN

APPROXIMATE
LOCATION OF SITE



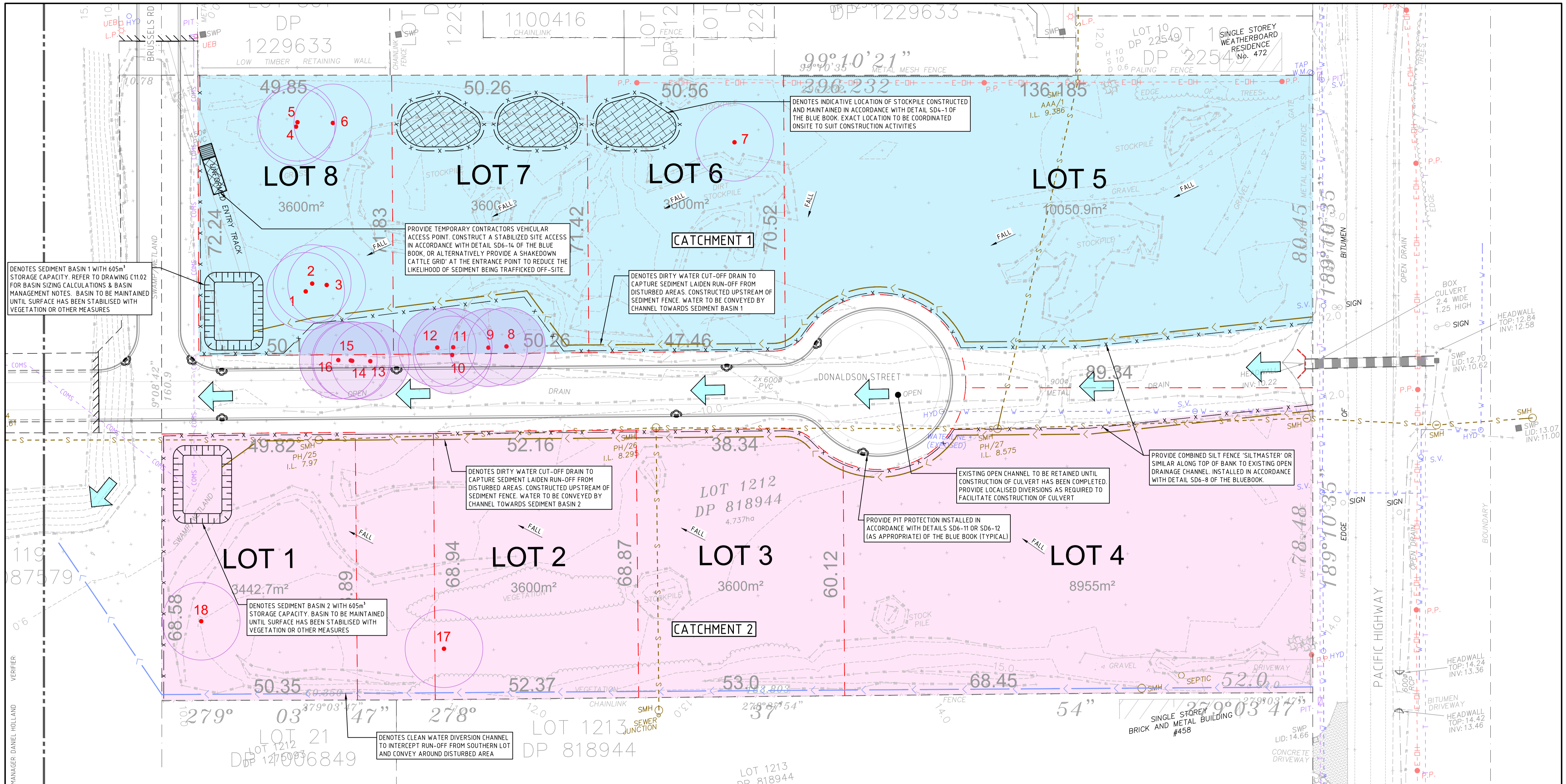
DRAWING SCHEDULE

DWG No.	DRAWING TITLE
C10.01	COVER SHEET
C11.01	SOIL & WATER MANAGEMENT PLAN
C11.02	SOIL & WATER MANAGEMENT DETAILS
C12.01	BULK EARTHWORKS PLAN
C12.10	SITE SECTIONS - SHEET 1
C13.01	GENERAL ARRANGEMENT PLAN - SHEET 1
C13.02	GENERAL ARRANGEMENT PLAN - SHEET 2
C13.10	LONG SECTIONS - SHEET 1
C13.11	LONG SECTIONS - SHEET 2
C13.20	CROSS SECTIONS - DONALDSON STREET - SHEET 1
C13.21	CROSS SECTIONS - DONALDSON STREET - SHEET 2
C13.22	CROSS SECTIONS - DONALDSON STREET - SHEET 3
C13.23	CROSS SECTIONS - DONALDSON STREET - SHEET 4
C13.30	CROSS SECTIONS - BRUSSELS ROAD - SHEET 1
C13.31	CROSS SECTIONS - BRUSSELS ROAD - SHEET 2
C13.32	CROSS SECTIONS - BRUSSELS ROAD - SHEET 3
C13.33	CROSS SECTIONS - BRUSSELS ROAD - SHEET 4
C13.50	STORMWATER LONG SECTIONS - SHEET 1
C14.01	SERVICE COORDINATION PLAN - SHEET 1
C40.01	INTERIM WORKS - GENERAL ARRANGEMENT PLAN
C40.09	INTERIM WORKS - LONG SECTIONS - SHEET 1
C40.10	INTERIM WORKS - CROSS SECTIONS - DONALDSON STREET - SHEET 1
C40.11	INTERIM WORKS - CROSS SECTIONS - DONALDSON STREET - SHEET 2
C40.12	INTERIM WORKS - CROSS SECTIONS - DONALDSON STREET - SHEET 3
C40.13	INTERIM WORKS - CROSS SECTIONS - DONALDSON STREET - SHEET 4
C45.01	INTERIM WORKS - SITE SECTIONS - DONALDSON STREET - SHEET 1

DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SUCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.	PROJECT	DRAWING TITLE	JOB NUMBER
1	PRELIMINARY	KT			14.04.23		<p>Central Coast Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250 Ph (02) 4365 1688 Fax (02) 4367 6555 Email centralcoast@northrop.com.au ABN 81 094 433 100</p>	<p>PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG</p>	<p>COVER SHEET</p>	<p>NL180808</p>
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23					<p>DRAWING NUMBER</p> <p>C10.01</p>	REVISION A
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED						THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.	DRAWING SHEET SIZE = A1			



DENOTES SEDIMENT BASIN 1 WITH 605m³ STORAGE CAPACITY. REFER TO DRAWING C1102 FOR BASIN SIZING CALCULATIONS & BASIN MANAGEMENT NOTES. BASIN TO BE MAINTAINED UNTIL SURFACE HAS BEEN STABILISED WITH VEGETATION OR OTHER MEASURES

PROVIDE TEMPORARY CONTRACTORS VEHICULAR ACCESS POINT. CONSTRUCT A STABILISED SITE ACCESS IN ACCORDANCE WITH DETAIL SD6-14 OF THE BLUE BOOK OR ALTERNATIVELY PROVIDE A SHAKEDOWN CATTLE GRID AT THE ENTRANCE POINT TO REDUCE THE LIKELIHOOD OF SEDIMENT BEING TRAFFICKED OFF-SITE.

DENOTES DIRTY WATER CUT-OFF DRAIN TO CAPTURE SEDIMENT LAIDEN RUN-OFF FROM DISTURBED AREAS. CONSTRUCTED UPSTREAM OF SEDIMENT FENCE. WATER TO BE CONVEYED BY CHANNEL TOWARDS SEDIMENT BASIN 1

DENOTES INDICATIVE LOCATION OF STOCKPILE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH DETAIL SD4-1 OF THE BLUE BOOK. EXACT LOCATION TO BE COORDINATED ON-SITE TO SUIT CONSTRUCTION ACTIVITIES

DENOTES DIRTY WATER CUT-OFF DRAIN TO CAPTURE SEDIMENT LAIDEN RUN-OFF FROM DISTURBED AREAS. CONSTRUCTED UPSTREAM OF SEDIMENT FENCE. WATER TO BE CONVEYED BY CHANNEL TOWARDS SEDIMENT BASIN 2

EXISTING OPEN CHANNEL TO BE RETAINED UNTIL CONSTRUCTION OF CULVERT HAS BEEN COMPLETED. PROVIDE LOCALISED DIVERSIONS AS REQUIRED TO FACILITATE CONSTRUCTION OF CULVERT

PROVIDE COMBINED SILT FENCE 'SILTMASTER' OR SIMILAR ALONG TOP OF BANK TO EXISTING OPEN DRAINAGE CHANNEL. INSTALLED IN ACCORDANCE WITH DETAIL SD6-8 OF THE BLUE BOOK.

PROVIDE PIT PROTECTION INSTALLED IN ACCORDANCE WITH DETAILS SD6-11 OR SD6-12 (AS APPROPRIATE) OF THE BLUE BOOK (TYPICAL)

DENOTES SEDIMENT BASIN 2 WITH 605m³ STORAGE CAPACITY. BASIN TO BE MAINTAINED UNTIL SURFACE HAS BEEN STABILISED WITH VEGETATION OR OTHER MEASURES

DENOTES CLEAN WATER DIVERSION CHANNEL TO INTERCEPT RUN-OFF FROM SOUTHERN LOT AND CONVEY AROUND DISTURBED AREA

LEGEND

	DENOTES EXISTING SITE BOUNDARY LINE		DENOTES SANDBAG OR GEOTEXTILE SOCK FILLED WITH NO FINES GRAVEL PLACED IN INVERT OF GUTTER OR ALONG EDGE OF BITUMEN
	DENOTES PROPOSED LOT BOUNDARY LINE		DENOTES INDICATIVE LOCATION OF STOCKPILE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH DETAIL SD4-1 OF THE BLUE BOOK
	DENOTES COMBINED SILT FENCE 'SILTMASTER' OR SIMILAR, INSTALLED IN ACCORDANCE WITH DETAIL SD6-8 OF THE BLUE BOOK.		DENOTES LIMIT OF WORKS EXTENTS
	DENOTES TEMPORARY CONTRACTORS VEHICULAR ACCESS POINT. CONSTRUCT A STABILISED SITE ACCESS IN ACCORDANCE WITH DETAIL SD6-14 OF THE BLUE BOOK OR PROVIDE A SHAKEDOWN CATTLE GRID AT ENTRANCE POINT TO REDUCE LIKELIHOOD OF SEDIMENT BEING TRAFFICKED OFF-SITE		DENOTES GEOTEXTILE INLET FILTER INSTALLED IN ACCORDANCE WITH DETAIL SD6-12 OF THE BLUE BOOK
	DENOTES GEOTEXTILE INLET FILTER INSTALLED IN ACCORDANCE WITH DETAIL SD6-12 OF THE BLUE BOOK		INDICATES MESH & GRAVEL INLET FILTER INSTALLED IN ACCORDANCE WITH DETAILS SD6-11 OF THE BLUE BOOK

SOIL & WATER MANAGEMENT NOTES

- ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS; NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION (THE 'BLUE BOOK').
- INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
- ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
- INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
- ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAY'S WORK.
- THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION. REFER ARCHITECT'S PLANS FOR TREES TO BE KEPT.
- ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
- STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
- CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
- ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
- PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
- ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
- WATER CAPTURED WITHIN THE SEDIMENT BASIN DURING CONSTRUCTION SHALL BE FLOCCULATED AND SETTLED BEFORE DISCHARGING TO THE CREEK AS SHOWN ON PLAN. THE DISCHARGE OF WATER SHALL OCCUR ONLY WHEN THE SUSPENDED SOLIDS (SS) CONCENTRATION DROPS BELOW 50mg/L. TESTING OF SS CONCENTRATION SHALL BE UNDERTAKEN PRIOR TO DISCHARGE WITH DISCHARGE AND TESTING BEING CONDUCTED WITH APPENDIX E OF THE 'BLUE BOOK'. PROVIDE PUMPING EQUIPMENT TO DISCHARGE WATER AS NECESSARY.

THE CONTRACTOR SHALL ENSURE COUNCIL ASSETS AND THE UTILITIES ARE PROTECTED AT ALL TIMES. ANY AND ALL DAMAGES TO COUNCIL ASSETS AND/OR UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SPECIFICATION OF COUNCIL AND THE UTILITIES AUTHORITY AND AT NO COST TO THE PRINCIPAL OR NORTHPROP CONSULTING ENGINEERS.



NOTE THAT ORIGINAL DRAWING IS IN COLOUR

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

CLIENT: **red eye constructions**

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PLANS: 5000@A10

NORTHPROP

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PROJECT: **PROPOSED SUBDIVISION**
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE: **SOIL & WATER MANAGEMENT PLAN**

JOB NUMBER: **NL180808**

DRAWING NUMBER: **C11.01**

REVISION: **A**

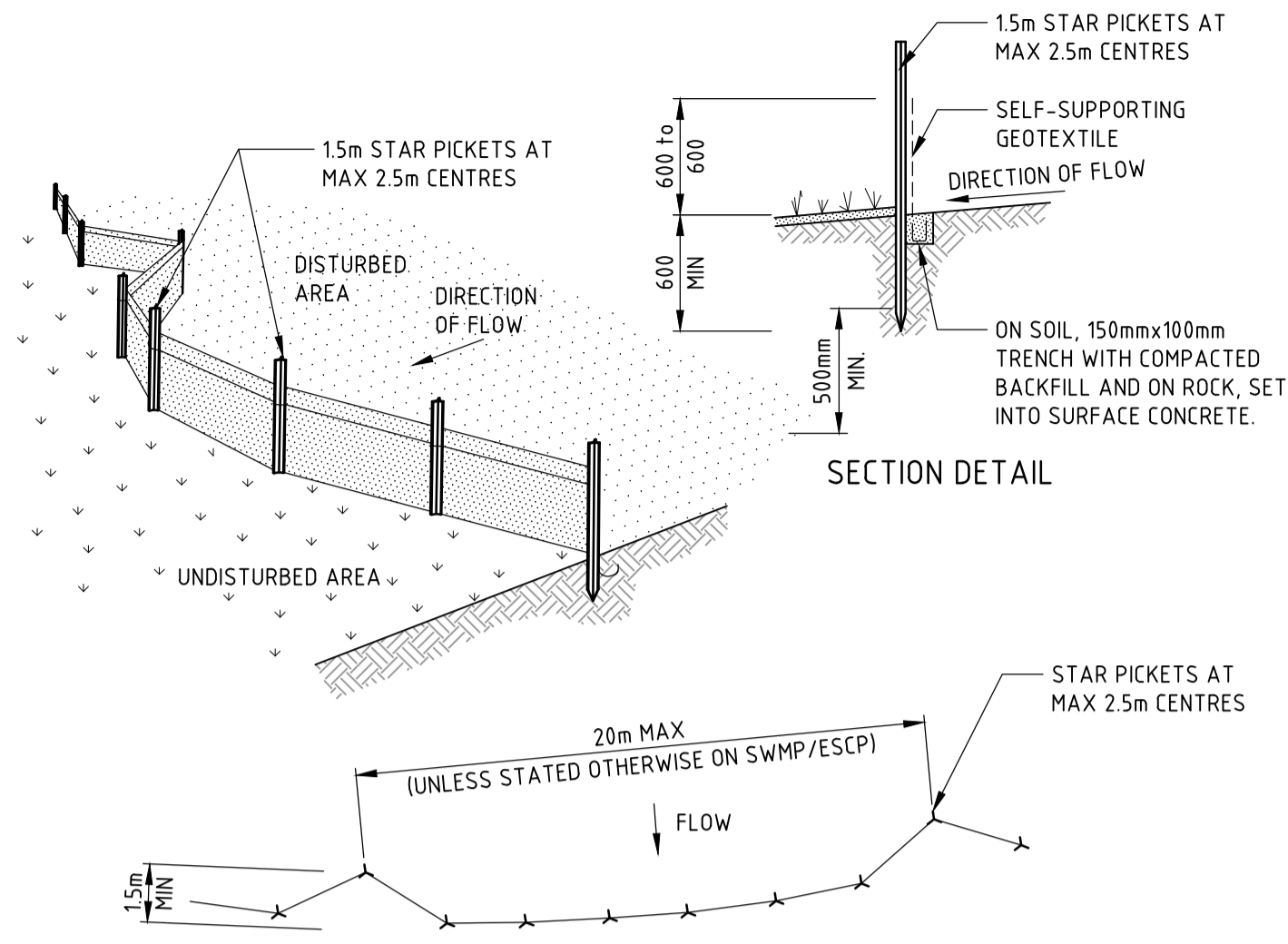
DRAWING SHEET SIZE = A1

SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE WYONG SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDY CLAYS & SILTY SANDS, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C17 OF THE 'BLUE BOOK':

SITE PARAMETERS	
CONSTRAINT	VALUE
SEDIMENT TYPE	F
SOIL HYDROLOGY GROUP	D
K = SOIL ERODIBILITY (K-FACTOR)	0.03
R = RAINFALL ERODIVITY (R-FACTOR)	2910
S = 2 YEAR, 6 HOUR STORM INTENSITY	11.6mm/hr (WYONG)
LS = SLOPE LENGTH/GRADE	0.19 (80m SLOPE @ 1% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	13 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (TYPICAL FOR STRIPPED SITE)
A = DISTURBED AREA	4.74 Ha
SOIL LOSS (m³/yr)	78.8m³/yr
SOIL LOSS (RUSLE METHOD) (tonnes/Ha/Yr)	216 tonnes/Ha/Yr
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	VERY LOW
TOTAL SITE RUN-OFF IS LESS THAN 150m³/Yr. BASIN/TANKS NOT REQUIRED. HOWEVER SEDIMENT BASIN OF MINIMUM SIZE WILL BE PROVIDED FOR EXCAVATION AND EARTHWORKS	

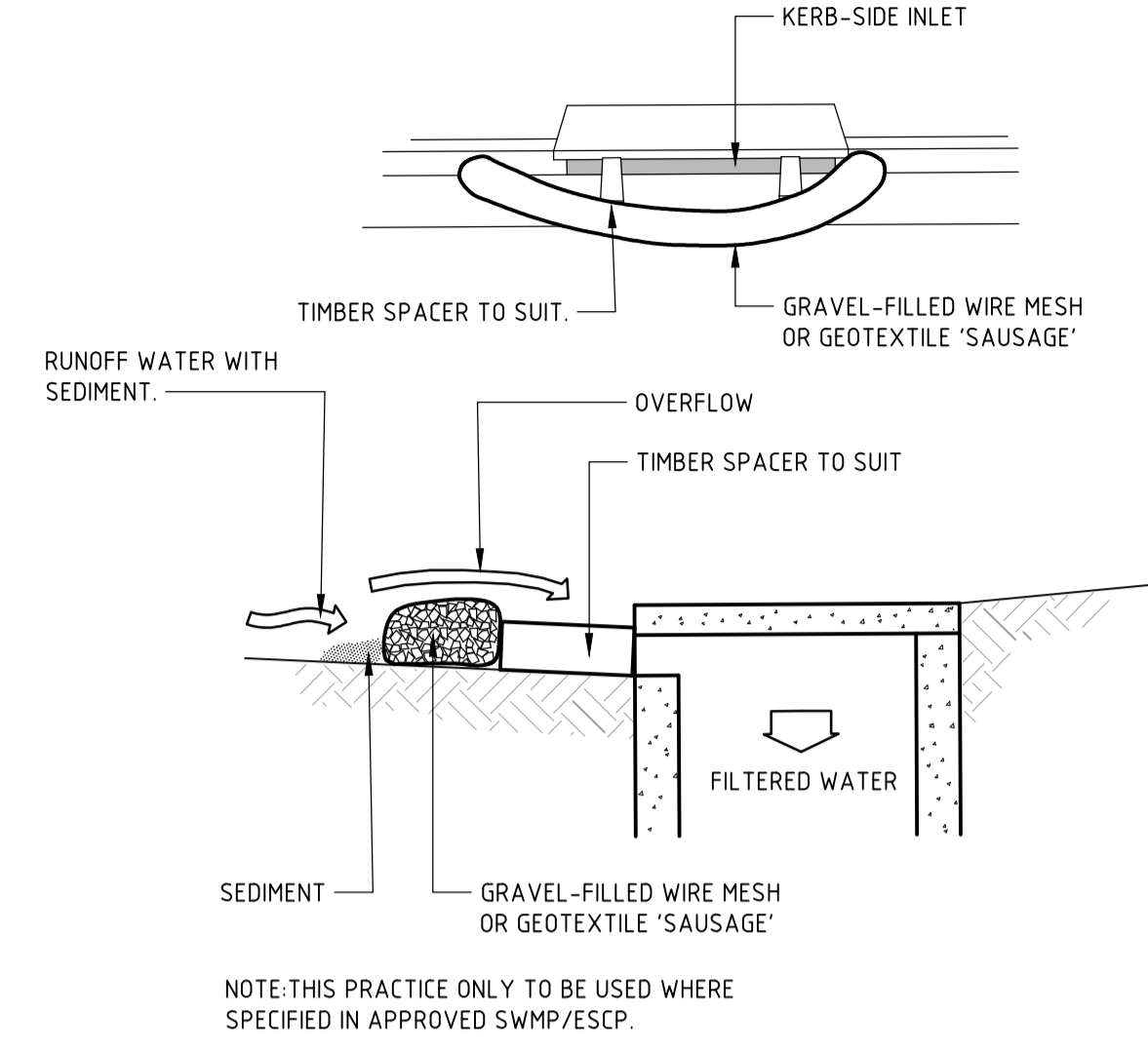
SEDIMENT BASIN 1 SIZING		SEDIMENT BASIN 2 SIZING	
CONSTRAINT	VALUE	CONSTRAINT	VALUE
CV = VOLUMETRIC RUNOFF COEFFICIENT	0.69	CV = VOLUMETRIC RUNOFF COEFFICIENT	0.69
R = 10 DAY, 75 TH PERCENTILE RAINFALL	42.5mm	R = 10 DAY, 75 TH PERCENTILE RAINFALL	42.5mm
A = CATCHMENT AREA	2.04ha	A = CATCHMENT AREA	2.06ha
SETTLING ZONE VOLUME (10xCvRxX)	598m³	SETTLING ZONE VOLUME (10xCvRxX)	598m³
SOIL LOSS (CALC ABOVE)	16.6m³/ha/yr	SOIL LOSS (CALC ABOVE)	16.6m³/ha/yr
SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2)	5.8m³	SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2)	5.8m³
TOTAL BASIN VOLUME REQUIRED	605m³	TOTAL BASIN VOLUME REQUIRED	605m³



CONSTRUCTION NOTES

- CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
- CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 15 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
- JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
- BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

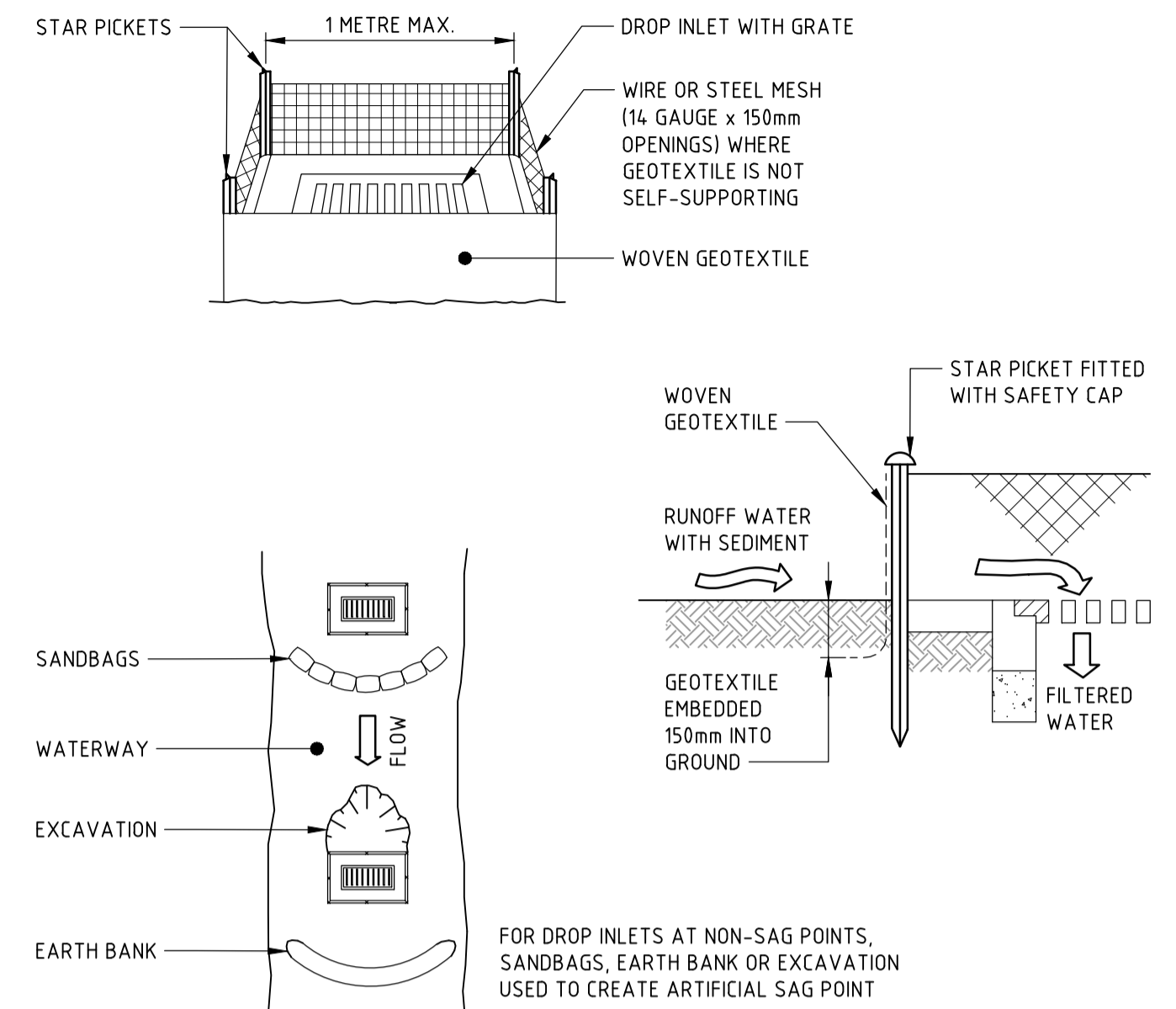
SEDIMENT FENCE (SD 6-8)



CONSTRUCTION NOTES

- INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
- FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
- FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
- PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
- FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
- SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

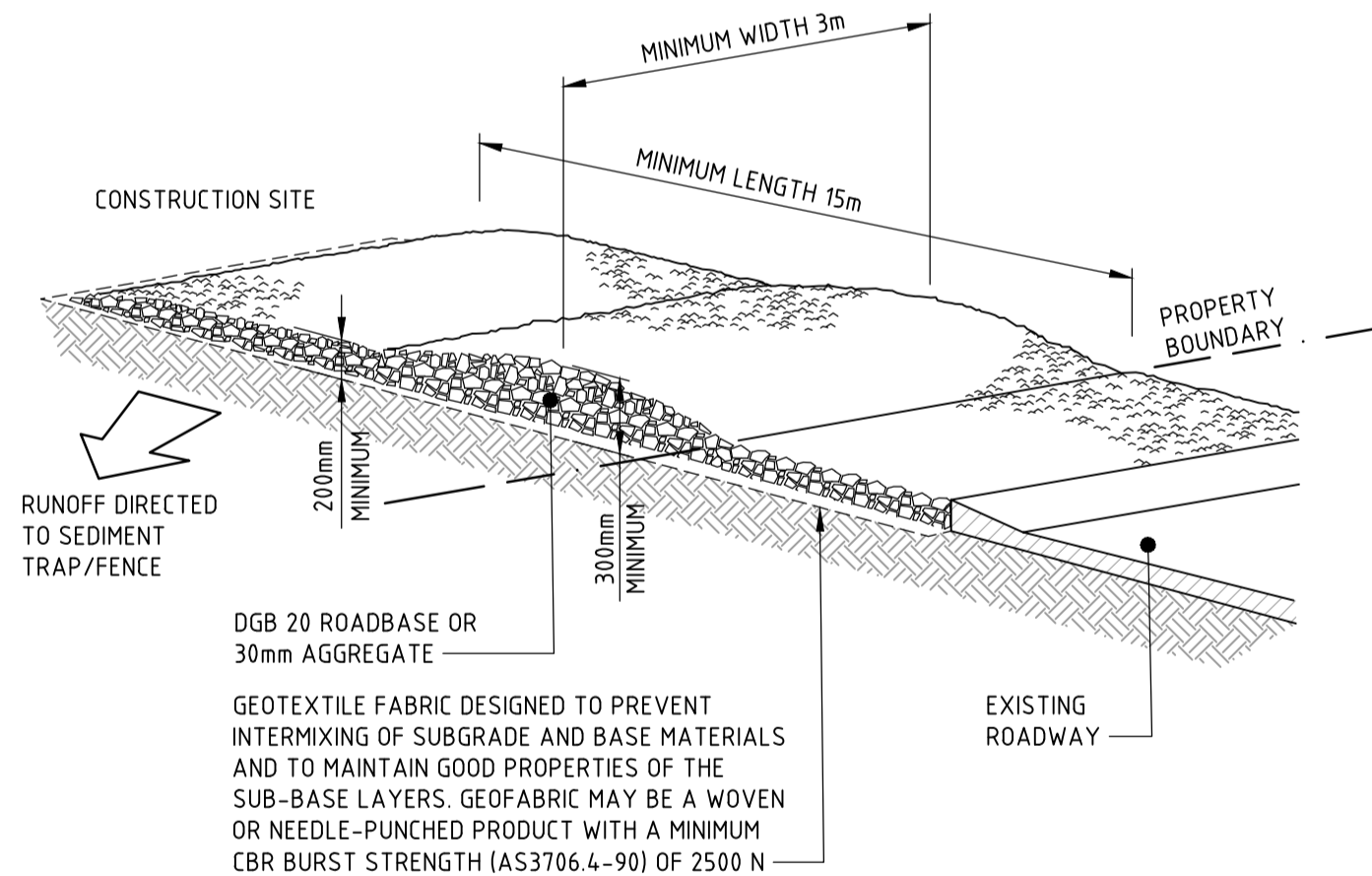
- FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
- FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1METRE CENTRES.
- IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
- DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER (SD 6-12)

SEDIMENT BASIN/TANKS MANAGEMENT NOTES

- PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TANKS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.
- ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED.
- NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
- THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS/TANKS TO TREAT TURBID WATER CAPTURED IN THE BASIN/TANKS MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN/TANKS, AFTER A RAINFALL EVENT.
- ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
- SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/TANKS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE BASIN/TANKS/TRAP.
- ANY BASIN/TANKS MUST BE DEWATERED AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN/TANKS ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES. ENSURE THE SEDIMENT BASINS/TANKS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

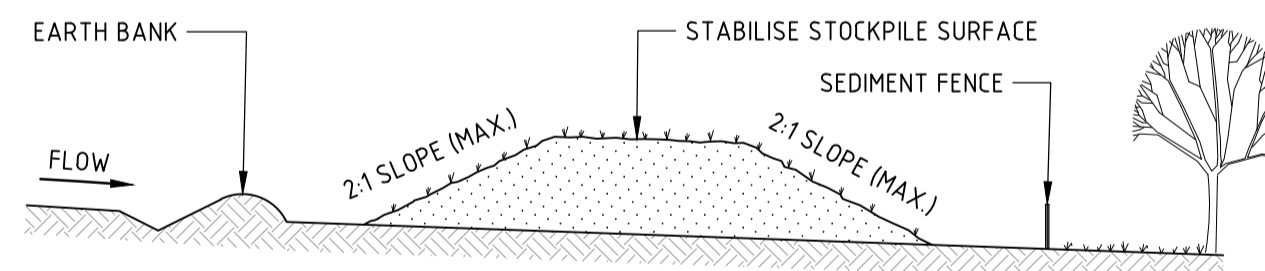
NOTE: THIS SEDIMENT & EROSION CONTROL PLAN IS DESIGNED FOR THE MANAGEMENT OF THE EFFECTS OF STORMWATER RUNOFF DURING CONSTRUCTION. IT IS NOT DESIGNED FOR THE MANAGEMENT OF GROUNDWATER. SHOULD GROUNDWATER MANAGEMENT BE REQUIRED, A SEPARATE MANAGEMENT PLAN WILL NEED TO BE DESIGNED BY A SUITABLY QUALIFIED GEOTECHNICAL/ENVIRONMENTAL CONSULTANT.



CONSTRUCTION NOTES

- STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
- COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
- CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
- ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
- WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

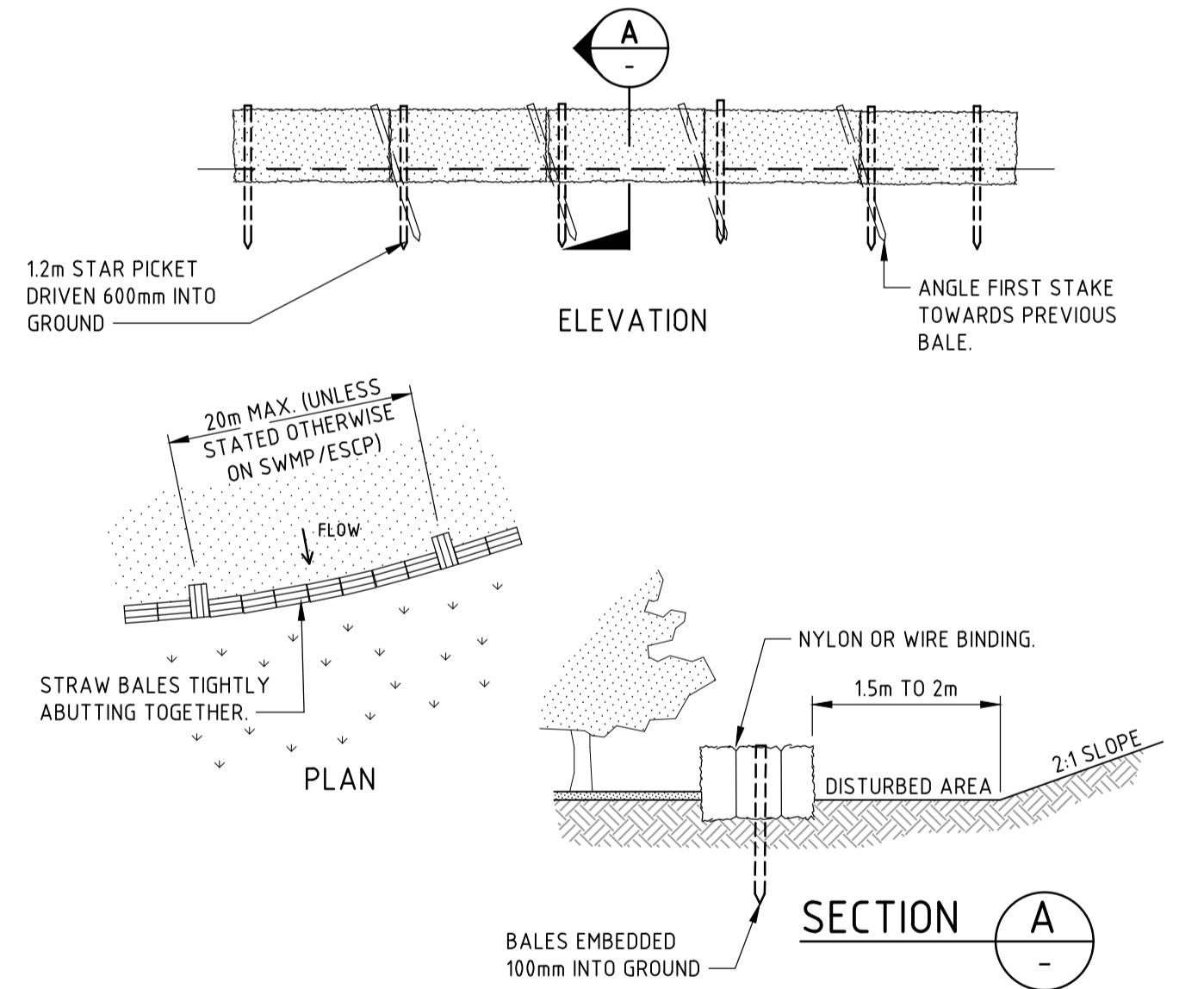
STABILISED SITE ACCESS (SD 6-14)



CONSTRUCTION NOTES

- PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
- WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
- CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILES (SD 4-1)



CONSTRUCTION NOTES

- CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE.
- PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.
- ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
- EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 12 METRE STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
- WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1 TO 2 METRES DOWNSLOPE FROM THE TOE.
- ESTABLISH A MAINTENANCE PROGRAM THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

STRAW BALE FILTER (SD 6-7)

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY	KT			14.04.23	
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23	

red eye constructions
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PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

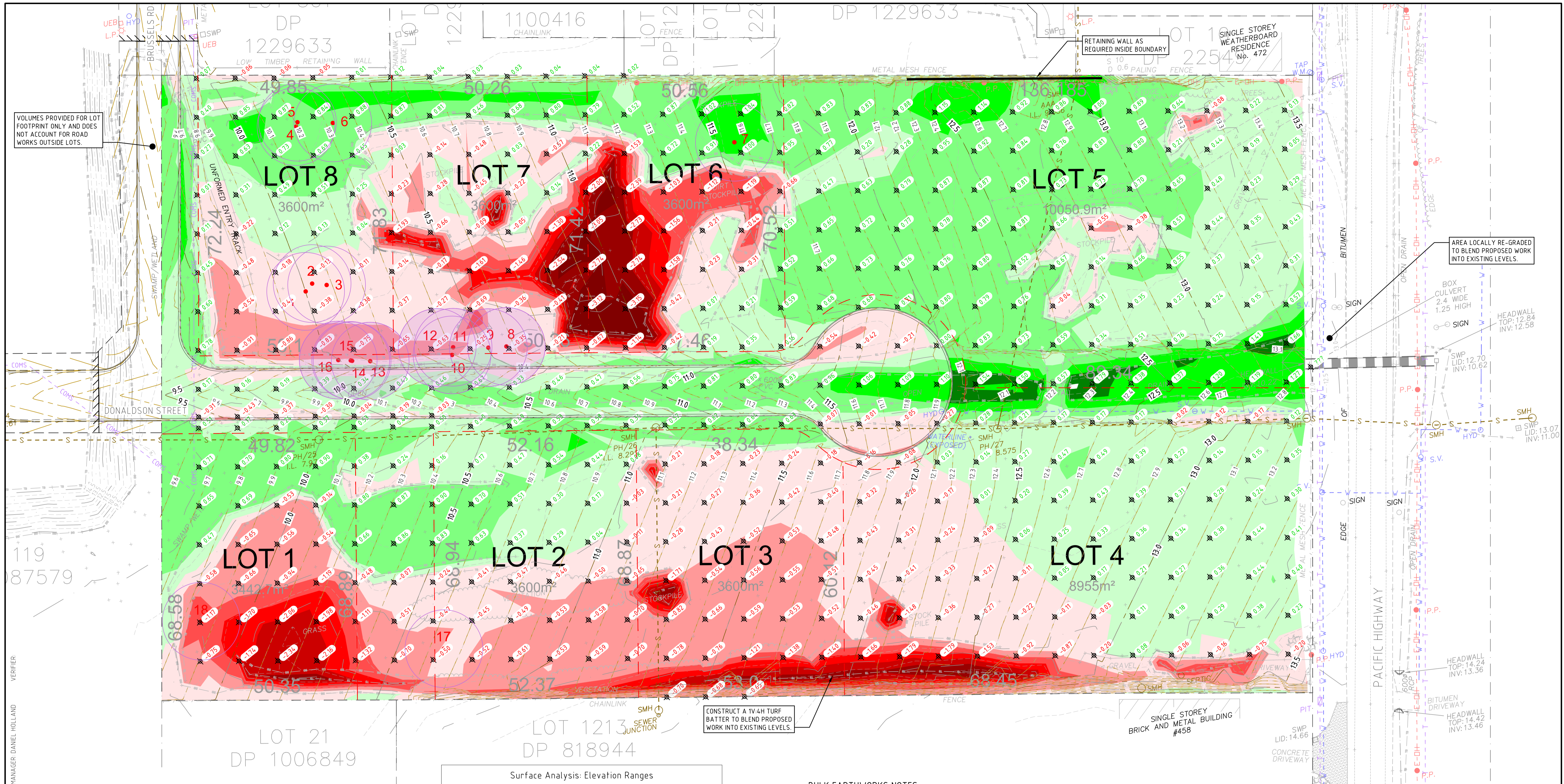
DRAWING TITLE
**SOIL & WATER MANAGEMENT
DETAILS**

JOB NUMBER
NL180808

DRAWING NUMBER C11.02	REVISION A
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DRAWING SHEET SIZE = A1

DRAWN: KATHLEEN TURTON VERIFIED: DANIEL HOLLAND JOB MANAGER: DANIEL HOLLAND DESIGNED: ROBERT SUCKLING



VOLUMES PROVIDED FOR LOT FOOTPRINT ONLY AND DOES NOT ACCOUNT FOR ROAD WORKS OUTSIDE LOTS.

AREA LOCALLY RE-GRADED TO BLEND PROPOSED WORK INTO EXISTING LEVELS.

CONSTRUCT A 1V:4H TURF BATTER TO BLEND PROPOSED WORK INTO EXISTING LEVELS.

SINGLE STOREY BRICK AND METAL BUILDING #458

DRAWN: KATHLEEN TURTON | DESIGNED: ROBERT SUCKLING | JOB MANAGER: DANIEL HOLLAND | VERIFIER:

LEGEND

- DENOTES EXISTING SITE BOUNDARY LINE
- - - DENOTES PROPOSED LOT BOUNDARY LINE
- - - DENOTES EXISTING CONTOUR LINES
- - - DENOTES BULK EARTHWORKS SURFACE CONTOUR LINES
- 0.98 DENOTES DEPTH OF PROPOSED CUT (-VE) OR FILL (+VE)

Surface Analysis: Elevation Ranges

Number	Color	Minimum Elevation (m)	Maximum Elevation (m)	Volume (m ³)
1	Dark Red	-4.000	-3.500	41.60
2	Red	-3.500	-3.000	305.10
3	Light Red	-3.000	-2.500	632.77
4	Lighter Red	-2.500	-2.000	1097.53
5	Lightest Red	-2.000	-1.500	1700.12
6	Lightest Red	-1.500	-1.000	3024.59
7	Lightest Red	-1.000	-0.500	7189.76
8	Lightest Red	-0.500	0.000	12352.39
9	Lightest Red	0.000	0.500	4572.86
10	Lightest Red	0.500	1.000	814.18
11	Lightest Red	1.000	1.500	42.27
12	Lightest Red	1.500	2.000	0.25

BULK EARTHWORKS NOTES

1. BULK EARTHWORKS LEVELS SHOWN ARE BASED ON THE DESIGN FINISHED SURFACE WITH THE FOLLOWING THICKNESS ALLOWANCES.
 - 1.1. ROAD PAVEMENT - FLEXIBLE - 500mm
 - 1.2. ALL OTHER AREAS - 0mm
 - 1.3. NO ALLOWANCE HAS BEEN MADE FOR BULK EARTHWORKS PADS FOR LOTS.
2. THE EXISTING SURFACE WAS NOT ADJUSTED TO ACCOUNT FOR THE REMOVAL OF VEGETATION, TOP SOIL OR UNSUITABLE/CONTAMINATED MATERIAL.
3. THE APPROXIMATE SITE EARTHWORKS VOLUMES BASED ON THE NOTED PAVEMENT THICKNESSES ARE OUTLINED BELOW:
 - CUT: 14,214m³
 - FILL: 14,879m³
 - NET: 665m³ (CUT)
4. THE ABOVE VOLUMES ARE TO BE ASSESSED NOTING THE FOLLOWING:
 - NO ALLOWANCE HAS BEEN MADE FOR DETAILED EXCAVATIONS SUCH AS FOOTINGS, SET DOWNS, SERVICES TRENCHING, TEMPORARY SEDIMENT BASINS ETC.
 - NO ALLOWANCE HAS BEEN MADE FOR TEMPORARY CONSTRUCTION PLATFORMS OR RETAINING WALL BACK FILL
 - NO ALLOWANCE HAS BEEN MADE FOR CULVERT EXCAVATION AND TRENCHING
5. THIS PLAN HAS BEEN PREPARED FOR INFORMATION PURPOSES ONLY AND IS INDICATIVE IN NATURE. THE EARTHWORKS CONTRACTOR IS TO VERIFY ALL LEVELS AND QUANTITIES AND PERFORM THEIR OWN BULK EARTHWORKS ASSESSMENT.

NOTE THAT ORIGINAL DRAWING IS IN COLOUR



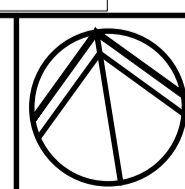
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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY		KT		14.04.23	red eye constructions
A	DEVELOPMENT APPLICATION		KT	RS	02.05.23	

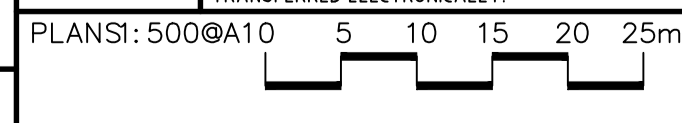


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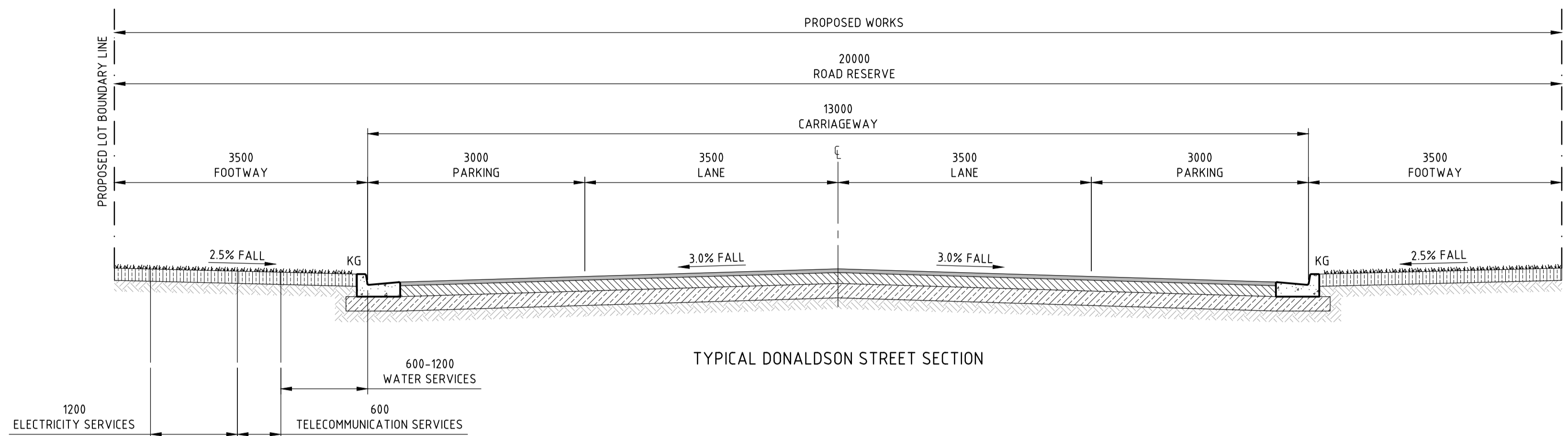


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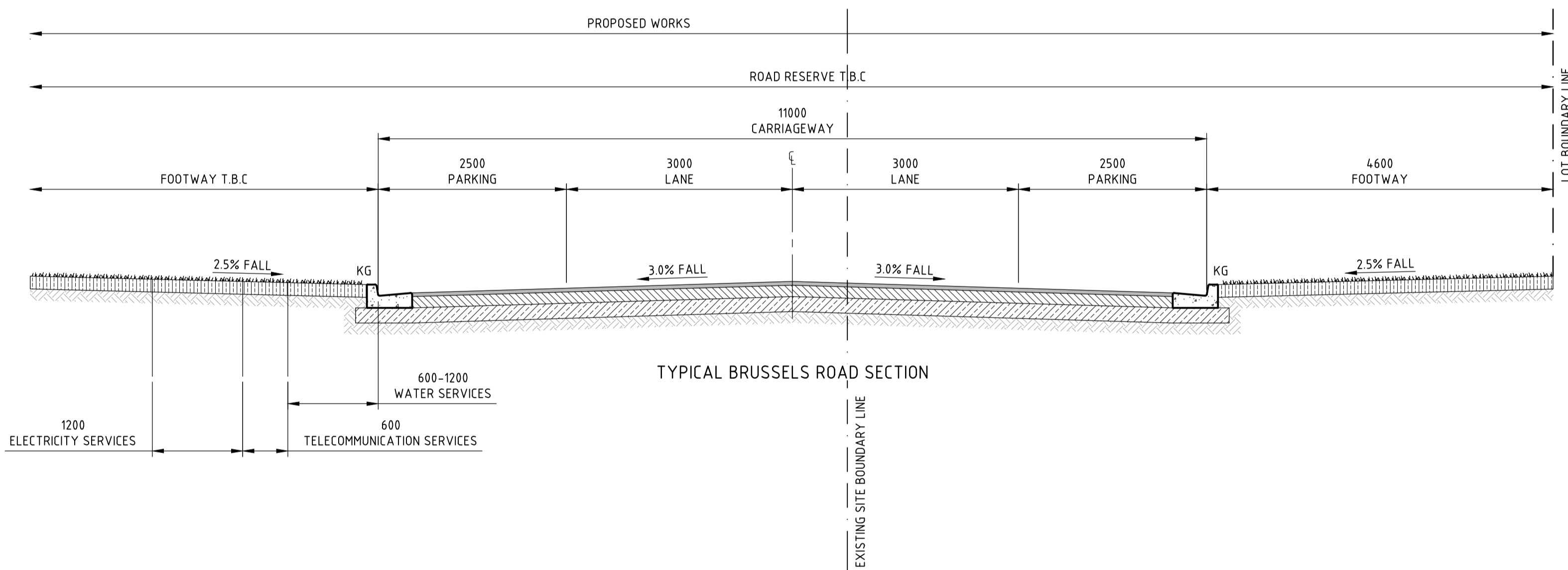
PROJECT
PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE
BULK EARTHWORKS PLAN

JOB NUMBER
NL180808
DRAWING NUMBER
C12.01
REVISION
A
DRAWING SHEET SIZE = A1



TYPICAL DONALDSON STREET SECTION

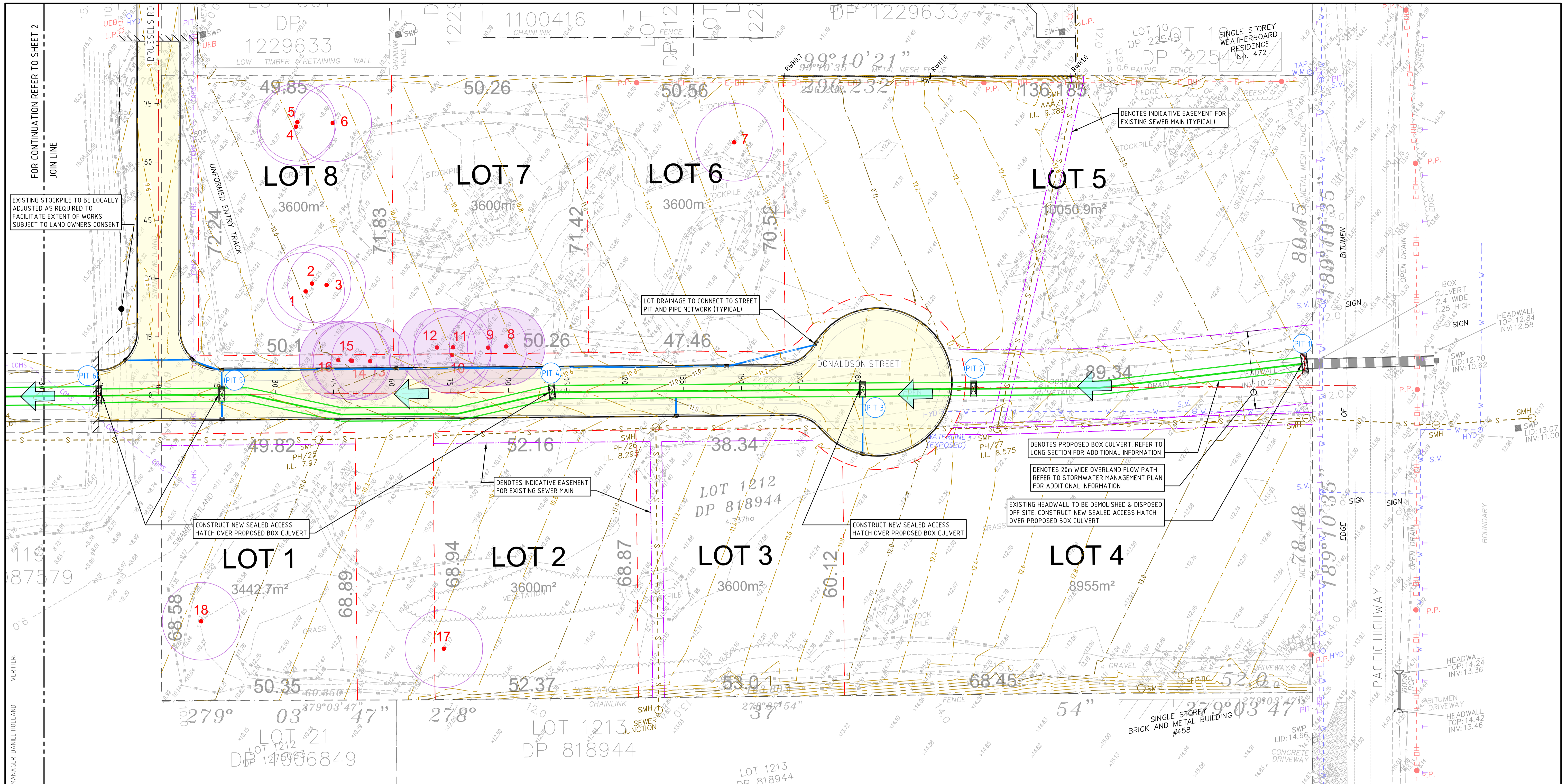


TYPICAL BRUSSELS ROAD SECTION

DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SUCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:

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1	PRELIMINARY	KT			14.04.23		<p>Central Coast Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250 Ph (02) 4365 1668 Fax (02) 4367 6555 Email centralcoast@northrop.com.au ABN 81 094 433 100</p>	<p>PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG</p>	<p>SITE SECTIONS - SHEET 1</p>	<p>NL180808</p>
A	DEVELOPMENT APPLICATION	KT		RS	??					
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FOR CONTINUATION REFER TO SHEET 2
 JOIN LINE
 EXISTING STOCKPILE TO BE LOCALLY ADJUSTED AS REQUIRED TO FACILITATE EXTENT OF WORKS. SUBJECT TO LAND OWNERS CONSENT
 BRUSSELS RD
 SWANMERE LAND
 UNFORMED ENTRY TRACK
 CHAINLINK FENCE
 METAL MESH FENCE
 PALING FENCE
 OPEN DRAIN
 BITUMEN DRIVEWAY
 CONCRETE DRIVEWAY
 PACIFIC HIGHWAY
 VERIFIER
 JOB MANAGER DANIEL HOLLAND
 DESIGNED ROBERT SÜCKLING
 DRAWN KATHLEEN TURTON

LEGEND

	DENOTES EXISTING SITE BOUNDARY LINE		DENOTES BARRIER KERB & CHANNEL IN ACCORDANCE WITH CENTRAL COAST COUNCIL STANDARD DRAWING SD0501		DENOTES KERB INLET PIT (NEW / EXISTING)		DENOTES APPROXIMATE LOCATION OF EXISTING (OVERHEAD) ELECTRICITY LINE
	DENOTES PROPOSED LOT BOUNDARY LINE		DENOTES EXISTING BARRIER KERB & CHANNEL TO BE RETAINED		DENOTES EXISTING CONCRETE HEADWALL TO BE RETAINED		DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE
	DENOTES PROPOSED EASEMENT LINE, REFER TO SURVEY FOR DETAILS		DENOTES FUTURE BARRIER KERB & CHANNEL		DENOTES STORMWATER LINE		DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE (DBYD)
	DENOTES LIMIT OF WORKS EXTENTS		DENOTES TRAFFICABLE AC PAVEMENT		DENOTES EXISTING STORMWATER PIPE TO BE RETAINED		DENOTES APPROXIMATE LOCATION OF EXISTING WATER MAIN
	DENOTES EXISTING SURFACE LEVEL		DENOTES RETAINING WALL		DENOTES OVERLAND FLOW PATH		DENOTES APPROXIMATE LOCATION OF EXISTING SEWER MAIN
	DENOTES EXISTING CONTOURS		DENOTES LOCATION OF EXISTING ORCHID/ID NUMBER & 10m PROTECTION/EXCLUSION RADIUS		DENOTES HEADWALL OUTLET AND SCOUR PROTECTION	LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE ONLY & MAY NOT BE COMPLETE. THE BUILDER IS RESPONSIBLE FOR LOCATING EXISTING INFRASTRUCTURE (CULVERTS, PITS, PIPES, SERVICES, INVERT & COVER LEVELS ETC) PRIOR TO COMMENCING CONSTRUCTION.	
	DENOTES DESIGN CONTOURS	THE BUILDER SHALL ALLOW TO MODIFY ALL EXISTING SERVICE COVERS TO MATCH THE NEW PAVEMENTS, IN ACCORDANCE WITH THE RELEVANT AUTHORITIES REQUIREMENTS.					
	DENOTES ALIGNMENT CONTROL LINE & CHAINAGE, REFER TO LONG SECTION	PROVIDE TEMPORARY TRAFFIC CONTROL IN ACCORDANCE WITH STATE & FEDERAL STATUTORY REQUIREMENTS AND LOCAL COUNCIL SPECIFICATIONS/REQUIREMENTS					
NOTE: ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ORIGIN OF LEVELS SSM 132096, RL 9.440							

NOTE THAT ORIGINAL DRAWING IS IN COLOUR



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY	KT			20.03.23	 red eye constructions <small>Commercial / Residential / Industrial / Institutional</small>
2	PRELIMINARY	KT			14.04.23	
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23	

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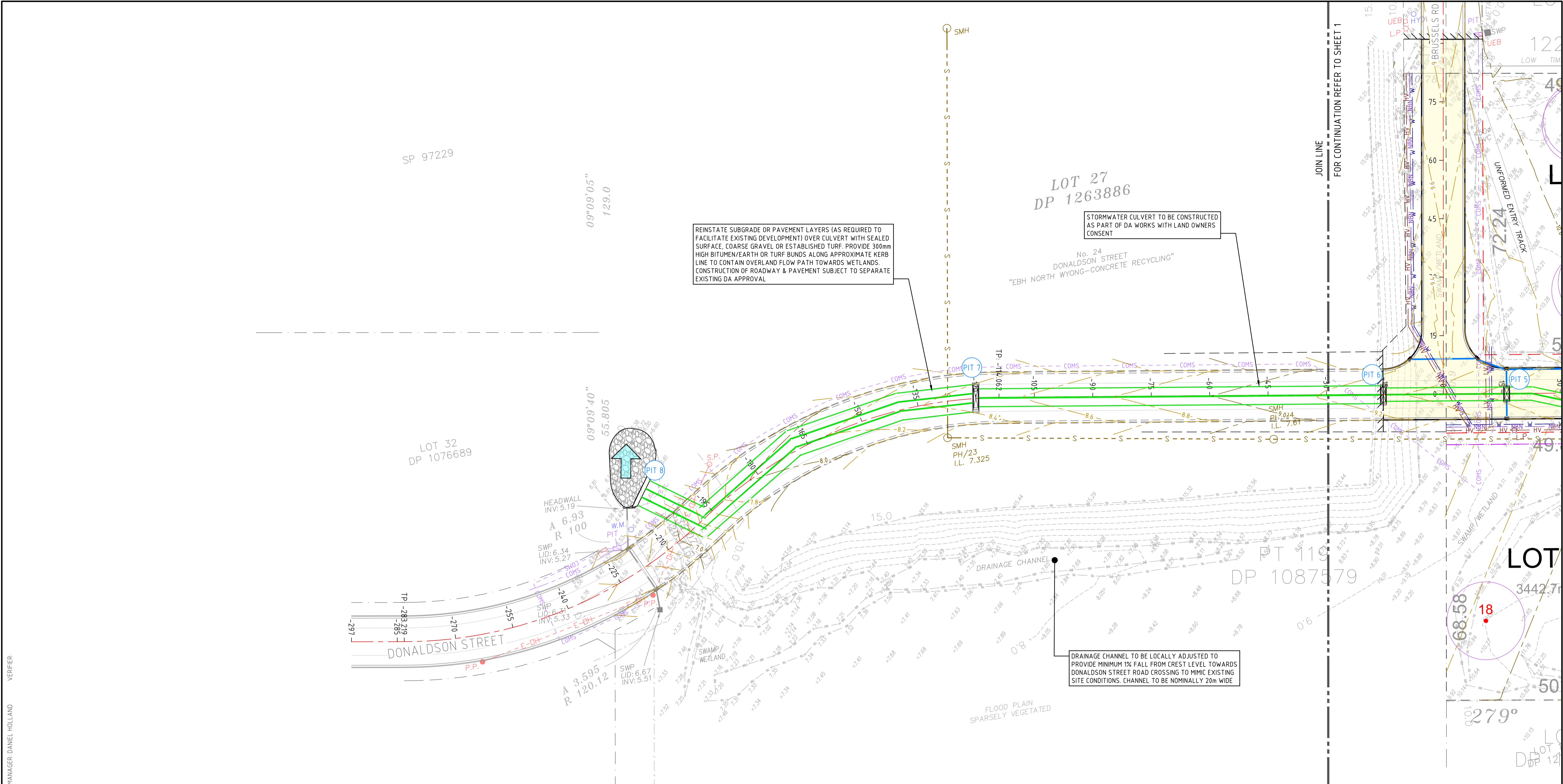
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 PLANS: 1:500 @ A10
 5 10 15 20 25m

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 Ph (02) 4365 1688 Fax (02) 4367 6555
 Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT
PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE
GENERAL ARRANGEMENT PLAN
SHEET 1

JOB NUMBER
NL180808
 DRAWING NUMBER
C13.01
 REVISION
A
 DRAWING SHEET SIZE = A1



REINSTATE SUBGRADE OR PAVEMENT LAYERS (AS REQUIRED TO FACILITATE EXISTING DEVELOPMENT) OVER CULVERT WITH SEALED SURFACE, COARSE GRAVEL OR ESTABLISHED TURF. PROVIDE 300mm HIGH BITUMEN/EARTH OR TURF BUNDS ALONG APPROXIMATE KERB LINE TO CONTAIN OVERLAND FLOW PATH TOWARDS WETLANDS. CONSTRUCTION OF ROADWAY & PAVEMENT SUBJECT TO SEPARATE EXISTING DA APPROVAL.

STORMWATER CULVERT TO BE CONSTRUCTED AS PART OF DA WORKS WITH LAND OWNERS' CONSENT.

DRAINAGE CHANNEL TO BE LOCALLY ADJUSTED TO PROVIDE MINIMUM 1% FALL FROM CREST LEVEL TOWARDS DONALDSON STREET ROAD CROSSING TO MATCH EXISTING SITE CONDITIONS. CHANNEL TO BE NOMINALLY 20m WIDE.

LEGEND

	DENOTES EXISTING SITE BOUNDARY LINE		DENOTES BARRIER KERB & CHANNEL IN ACCORDANCE WITH CENTRAL COAST COUNCIL STANDARD DRAWING SD0501		DENOTES KERB INLET PIT (NEW / EXISTING)		DENOTES APPROXIMATE LOCATION OF EXISTING (OVERHEAD) ELECTRICITY LINE
	DENOTES PROPOSED LOT BOUNDARY LINE		DENOTES EXISTING BARRIER KERB & CHANNEL TO BE RETAINED		DENOTES EXISTING CONCRETE HEADWALL TO BE RETAINED		DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE
	DENOTES PROPOSED EASEMENT LINE, REFER TO SURVEY FOR DETAILS		DENOTES FUTURE BARRIER KERB & CHANNEL		DENOTES STORMWATER LINE		DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE (DBYD)
	DENOTES LIMIT OF WORKS EXTENTS		DENOTES RETAINING WALL		DENOTES EXISTING STORMWATER PIPE TO BE RETAINED		DENOTES APPROXIMATE LOCATION OF EXISTING WATER MAIN
	DENOTES EXISTING SURFACE LEVEL		DENOTES LOCATION OF EXISTING ORCHID/ID NUMBER & 10m PROTECTION/EXCLUSION RADIUS		DENOTES OVERLAND FLOW PATH		DENOTES APPROXIMATE LOCATION OF EXISTING SEWER MAIN
	DENOTES EXISTING CONTOURS						
	DENOTES DESIGN CONTOURS						
	DENOTES ALIGNMENT CONTROL LINE & CHAINAGE, REFER TO LONG SECTION						

LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE ONLY & MAY NOT BE COMPLETE. THE BUILDER IS RESPONSIBLE FOR LOCATING EXISTING INFRASTRUCTURE (CULVERTS, PITS, PIPES, SERVICES, INVERT & COVER LEVELS ETC) PRIOR TO COMMENCING CONSTRUCTION.

THE BUILDER SHALL ALLOW TO MODIFY ALL EXISTING SERVICE COVERS TO MATCH THE NEW PAVEMENTS, IN ACCORDANCE WITH THE RELEVANT AUTHORITIES REQUIREMENTS.

PROVIDE TEMPORARY TRAFFIC CONTROL IN ACCORDANCE WITH STATE & FEDERAL STATUTORY REQUIREMENTS AND LOCAL COUNCIL SPECIFICATIONS/REQUIREMENTS.

NOTE: ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ORIGIN OF LEVELS SSM 132096, RL 9.440.

NOTE THAT ORIGINAL DRAWING IS IN COLOUR



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY		KT		20.03.23	 DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED
2	PRELIMINARY		KT		14.04.23	
A	DEVELOPMENT APPLICATION		KT	RS	2.05.23	

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PLANS: 1:500 @ A10

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PROJECT: PROPOSED SUBDIVISION
 LOT 1212 DP 818944
 460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE: GENERAL ARRANGEMENT PLAN
 SHEET 2

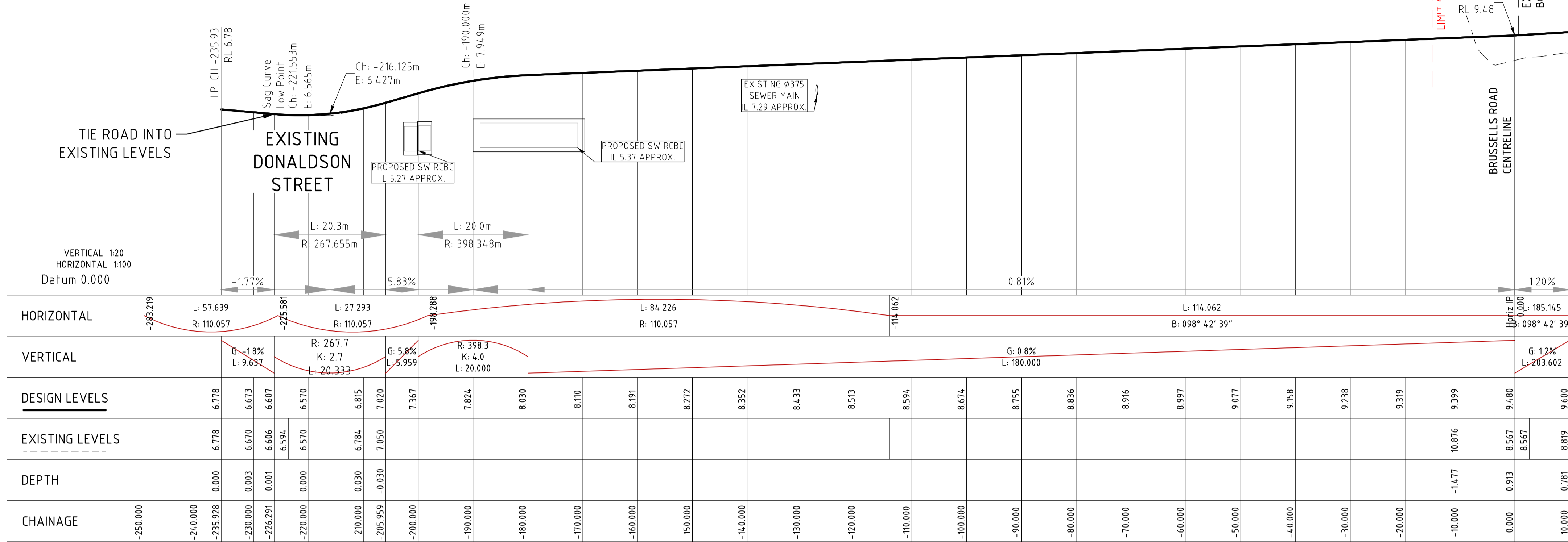
JOB NUMBER: NL180808

DRAWING NUMBER	REVISION
C13.02	A

DRAWING SHEET SIZE = A1

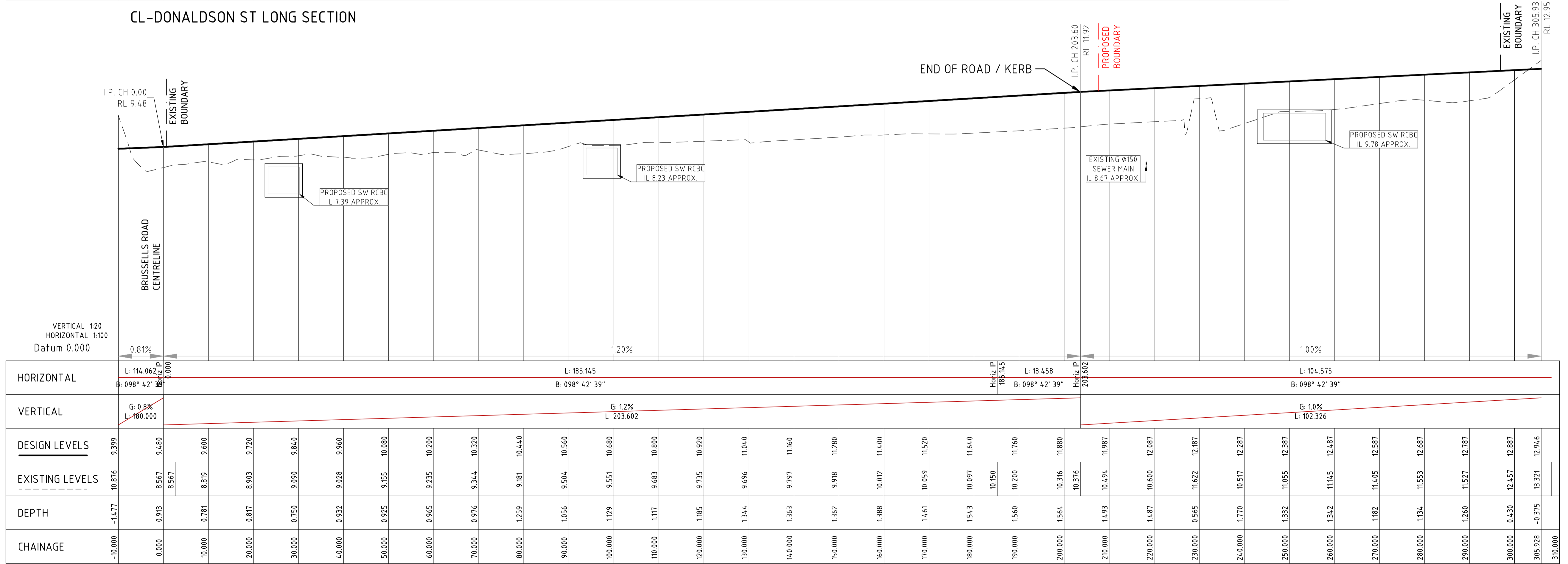
DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SUCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:

WORKS SUBJECT TO EXISTING DA APPROVAL
DESIGN LEVELS SHOWN INDICATIVE.
DETAILED DESIGN TO BE PROVIDED BY OTHERS



CL-DONALDSON ST LONG SECTION

NOTE:
STORMWATER CULVERT AS SHOWN
ARE AT LOCATIONS WHERE CROSSING
CENTRELINE OF DONALDSON ROAD.
REFER TO STORMWATER LONG SECTION
FOR ADDITIONAL DETAILS.



CL-DONALDSON ST LONG SECTION

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1	PRELIMINARY		KT		20.03.23
2	PRELIMINARY		KT		14.04.23
A	DEVELOPMENT APPLICATION		KT	RS	2.05.23

CLIENT: **red eye constructions**

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VERT: 1:100@A1
HORIZ: 1:500@A1

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PROJECT: **PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG**

DRAWING TITLE: **LONG SECTIONS SHEET 1**

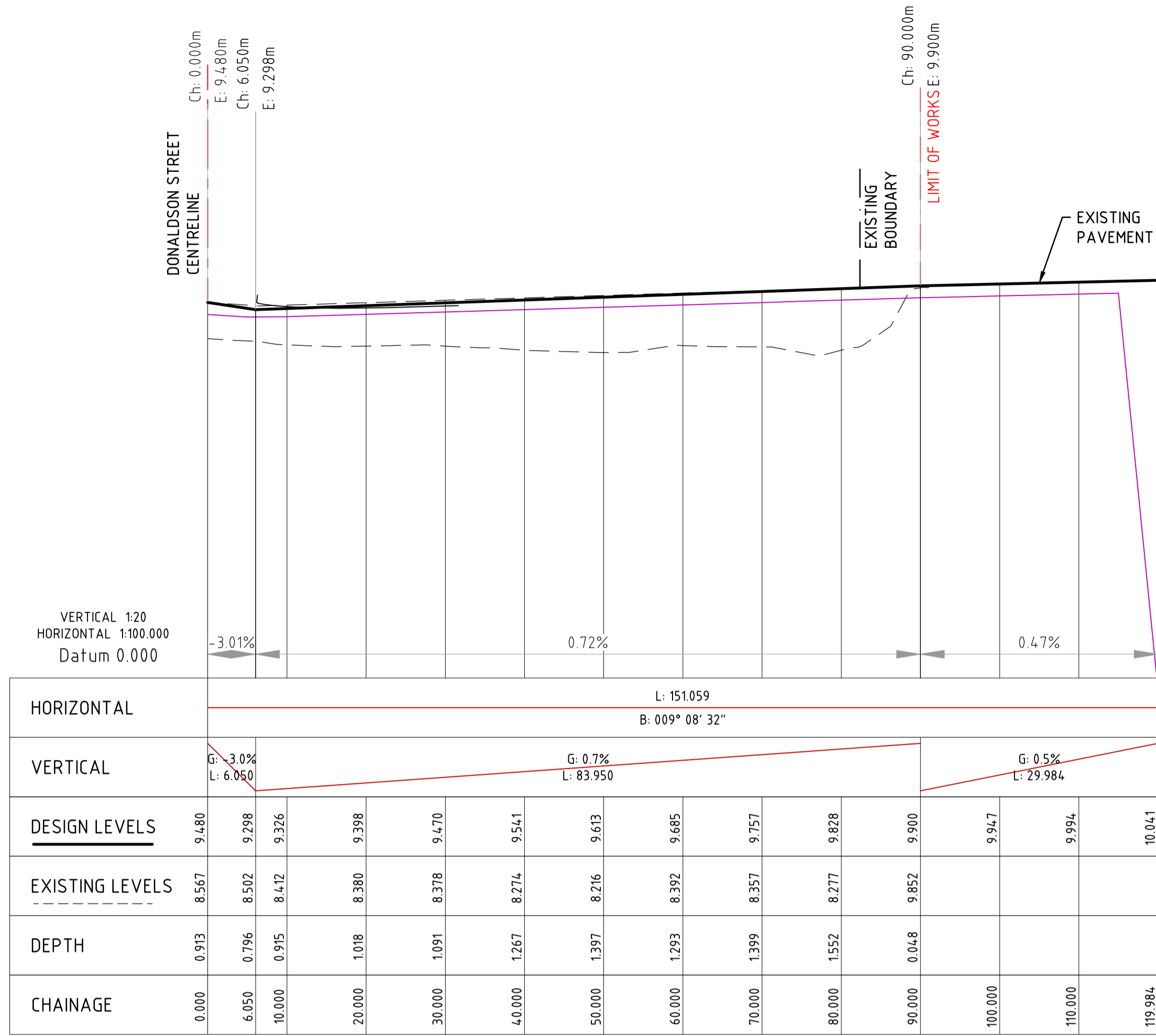
JOB NUMBER: **NL180808**

DRAWING NUMBER: **C13.10** REVISION: **A**

DRAWING SHEET SIZE = A1

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CL_BRUSSELS ROAD LONG SECTION

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2	PRELIMINARY	KT			14.04.23
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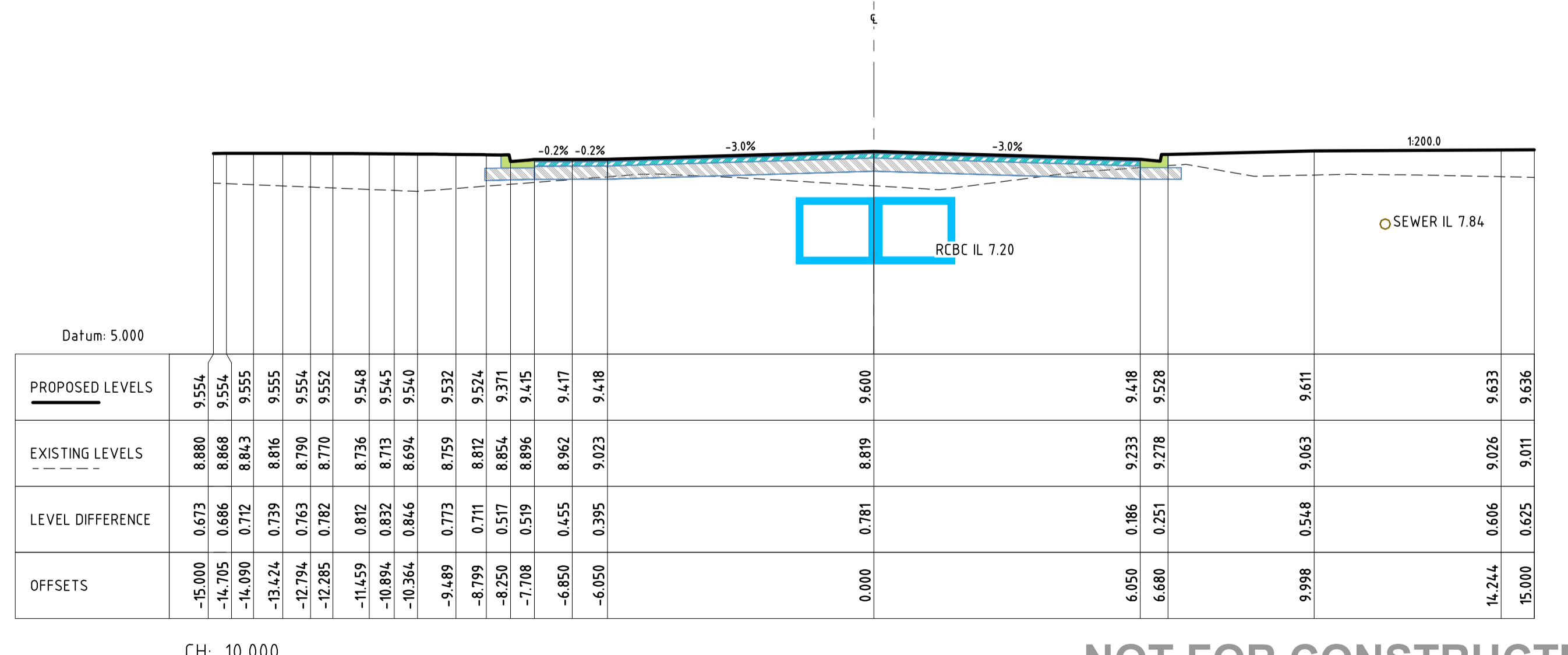
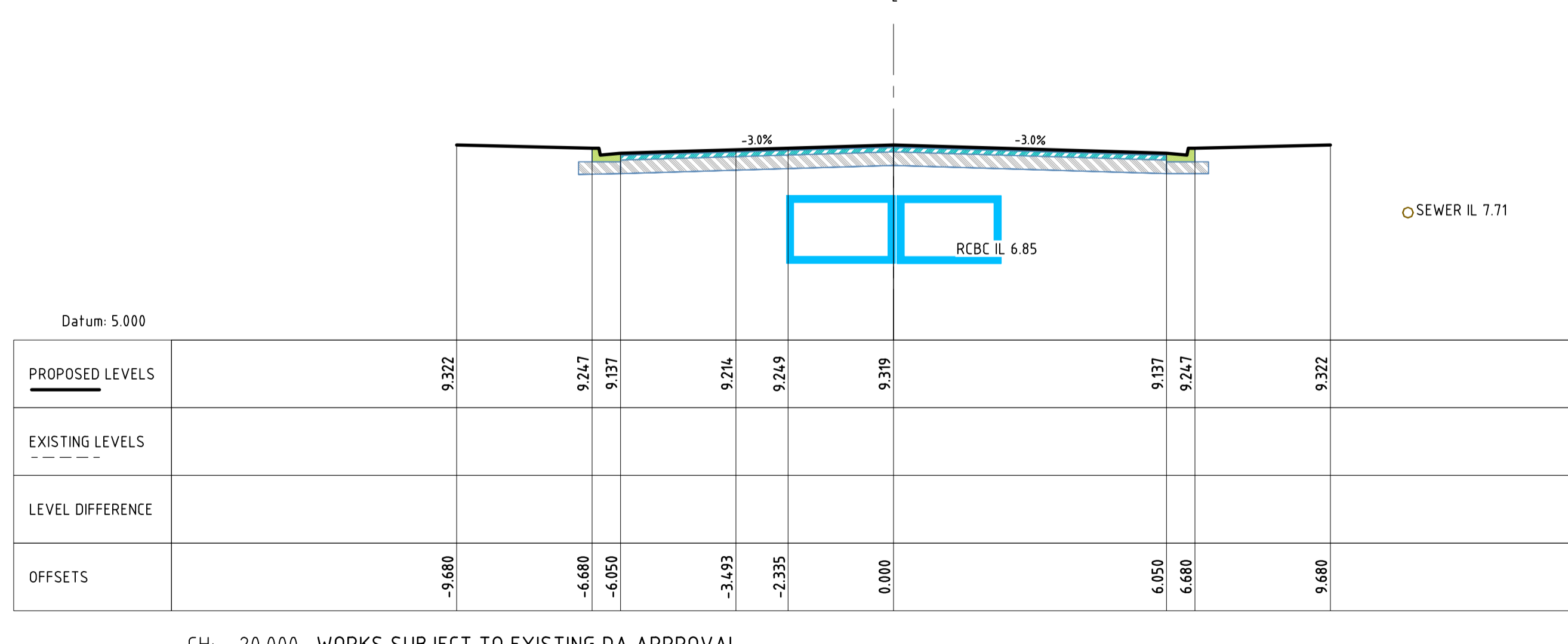
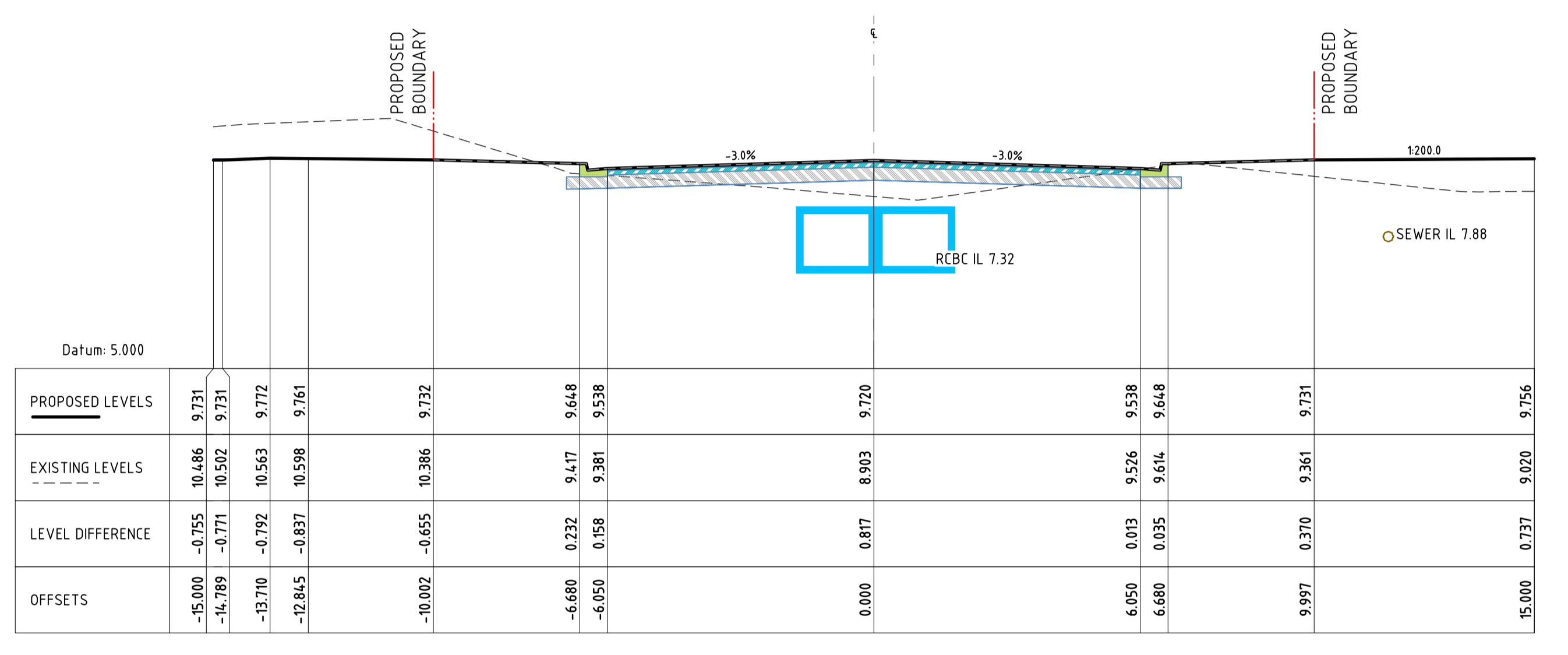
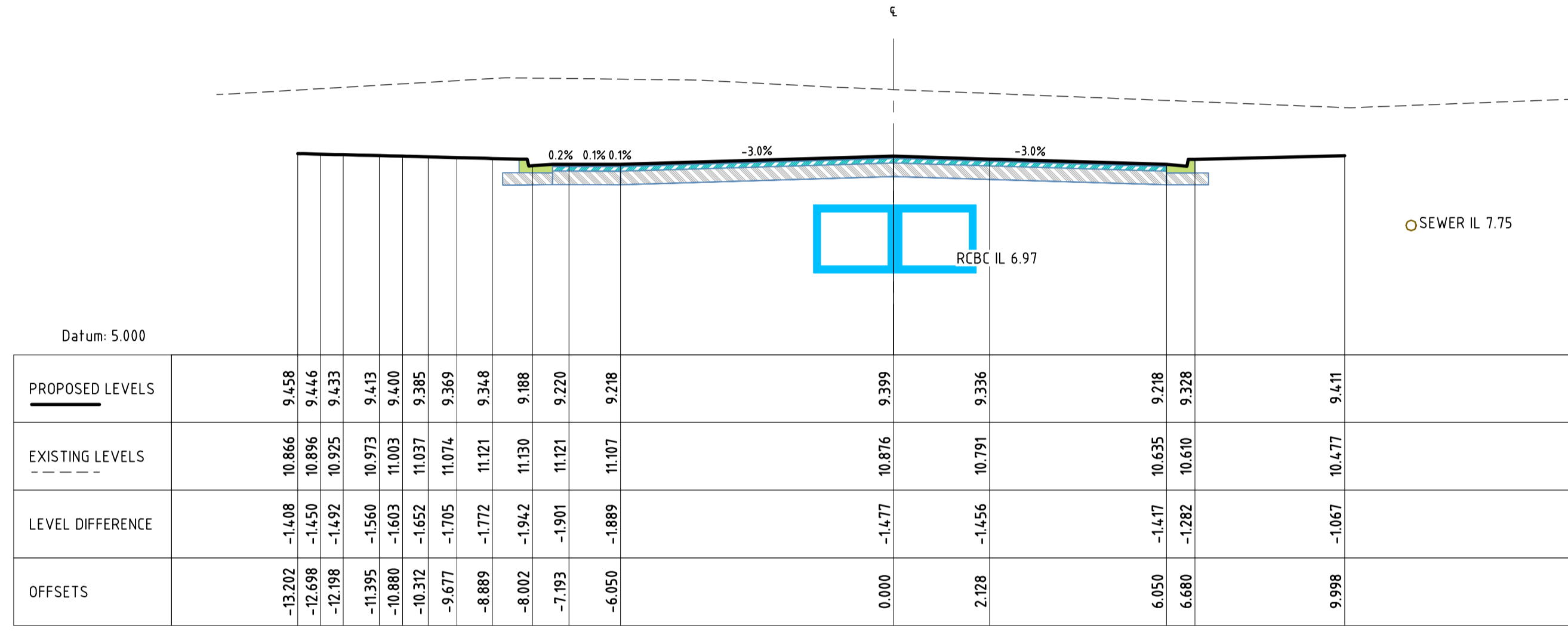
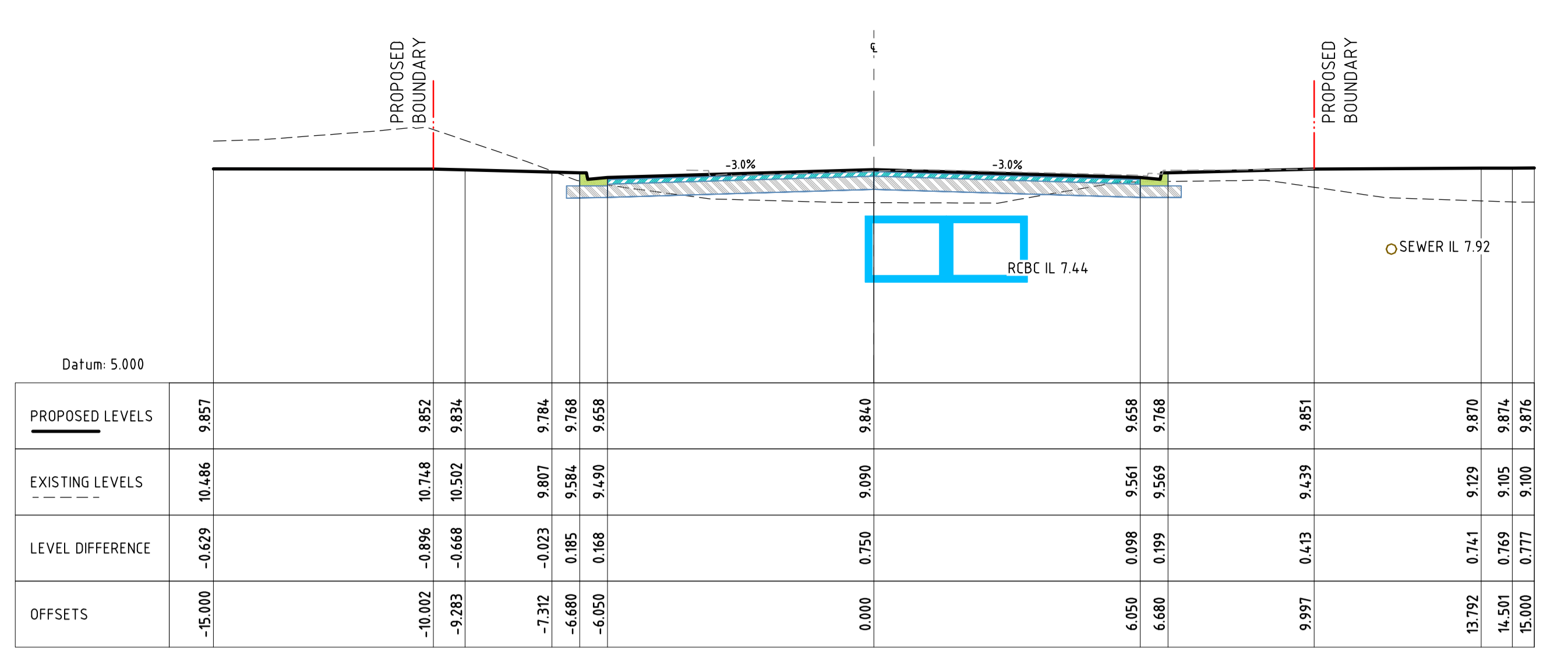
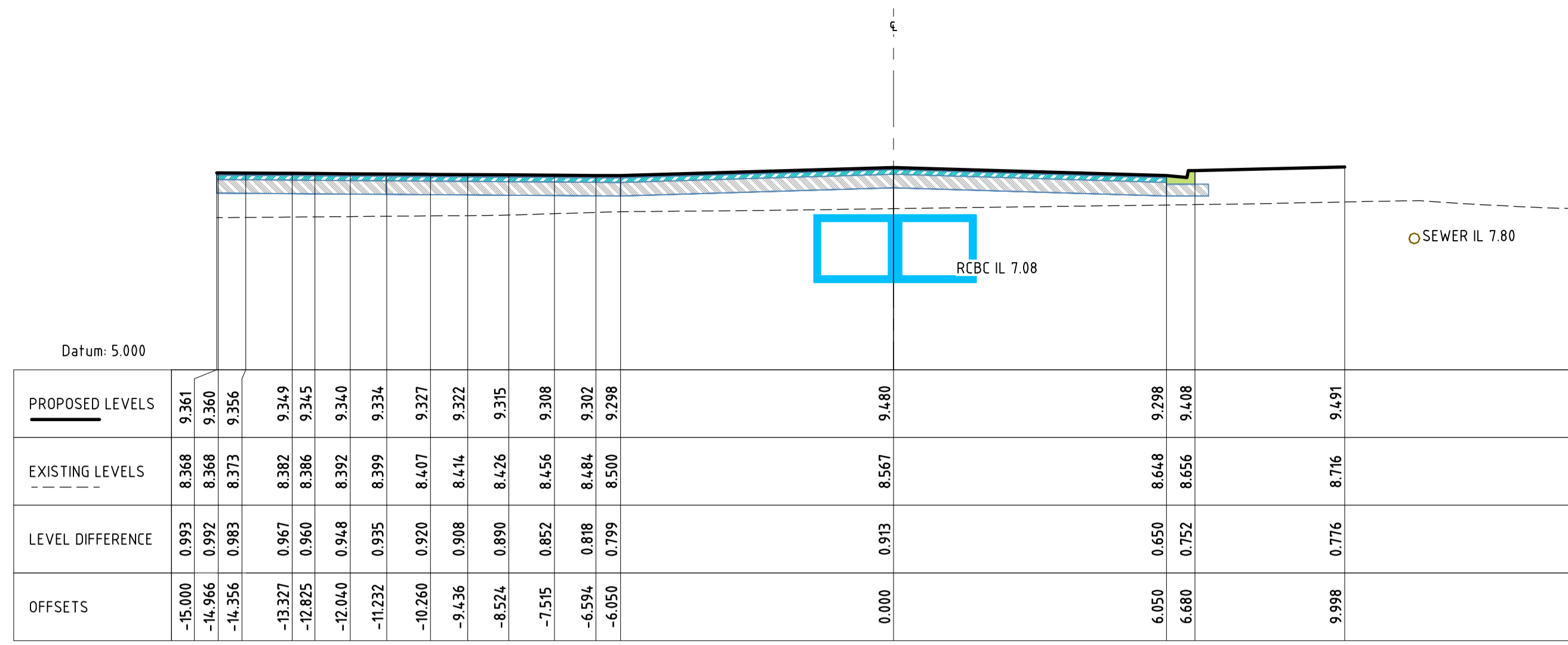
PROJECT

**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

DRAWING TITLE

**LONG SECTIONS
SHEET 2**

JOB NUMBER	
NL180808	
DRAWING NUMBER	REVISION
C13.11	A
DRAWING SHEET SIZE = A1	



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			20.03.23
2	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

CLIENT: **red eye constructions**

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HORIZ: 1:100@A1

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Central Coast

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PROJECT

PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE

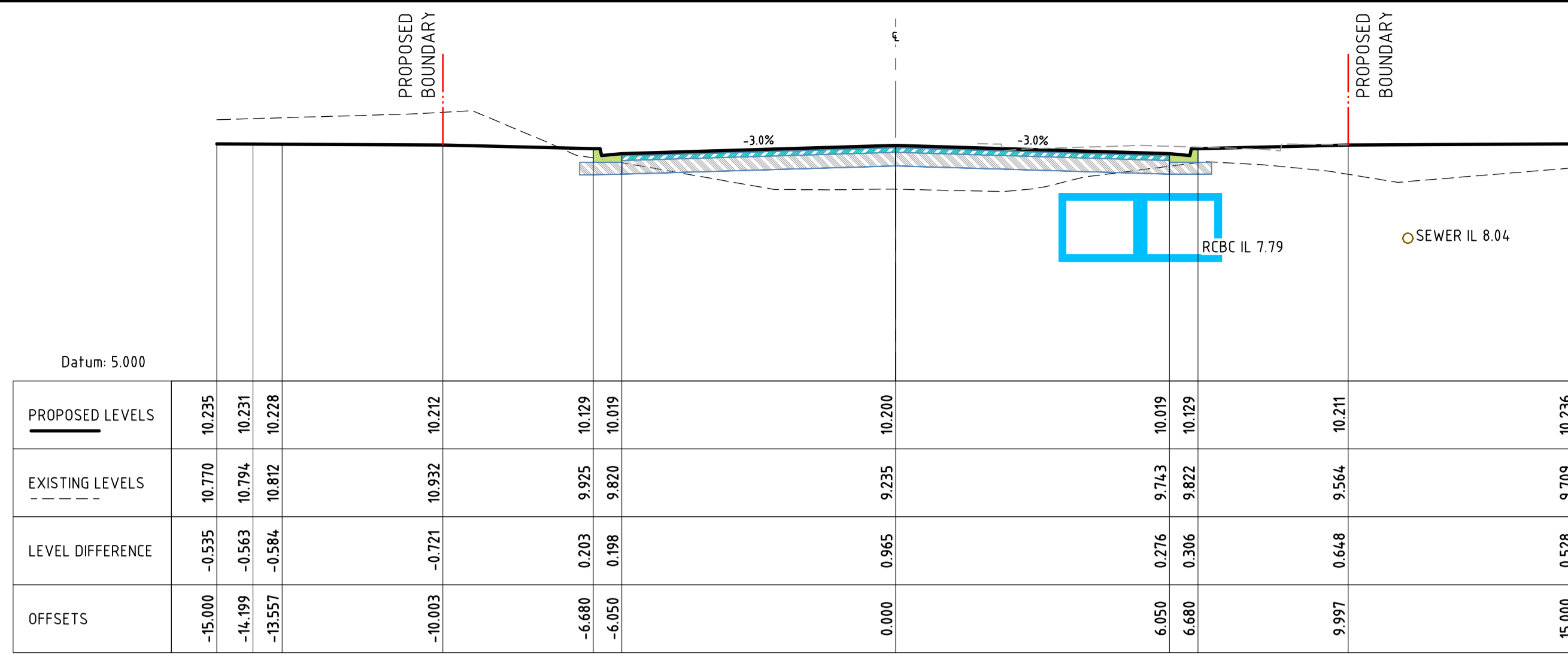
CROSS SECTIONS
DONALDSON STREET - SHEET 1

JOB NUMBER: **NL180808**

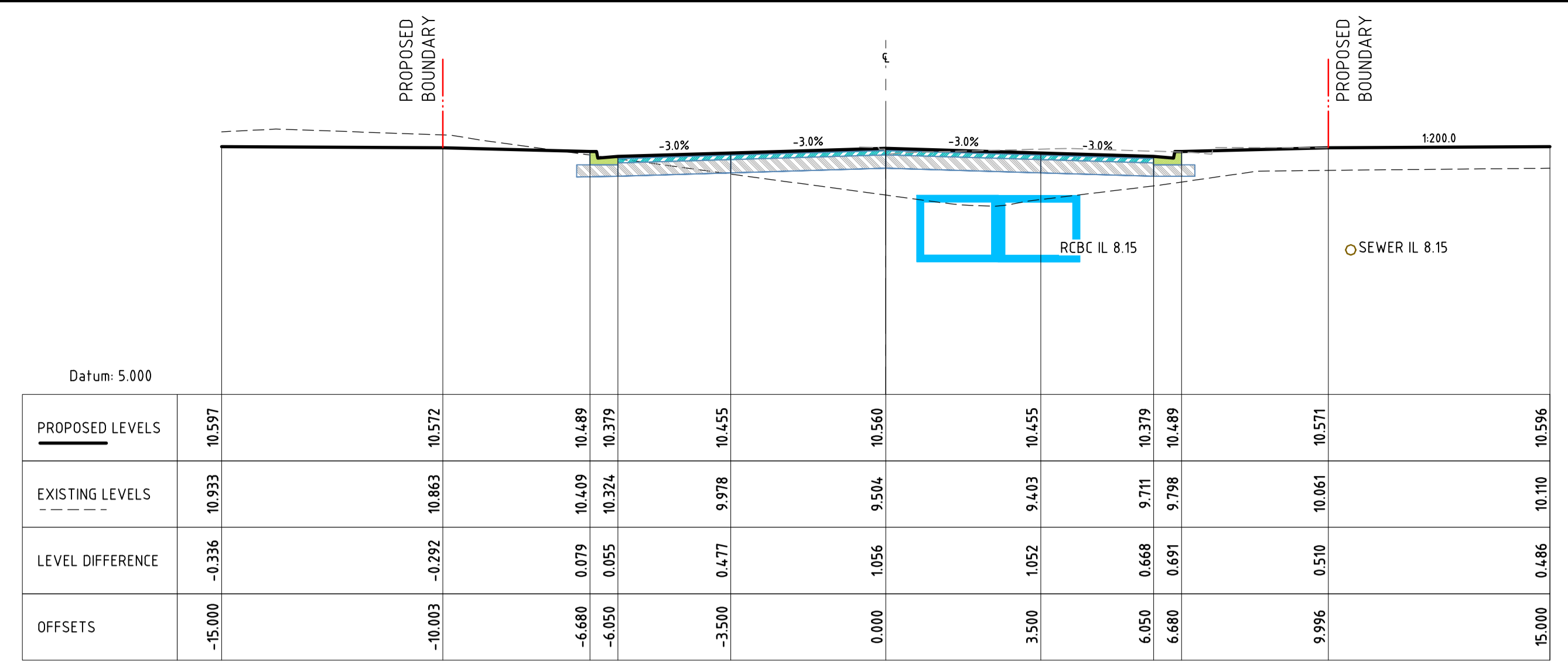
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REVISION: **A**

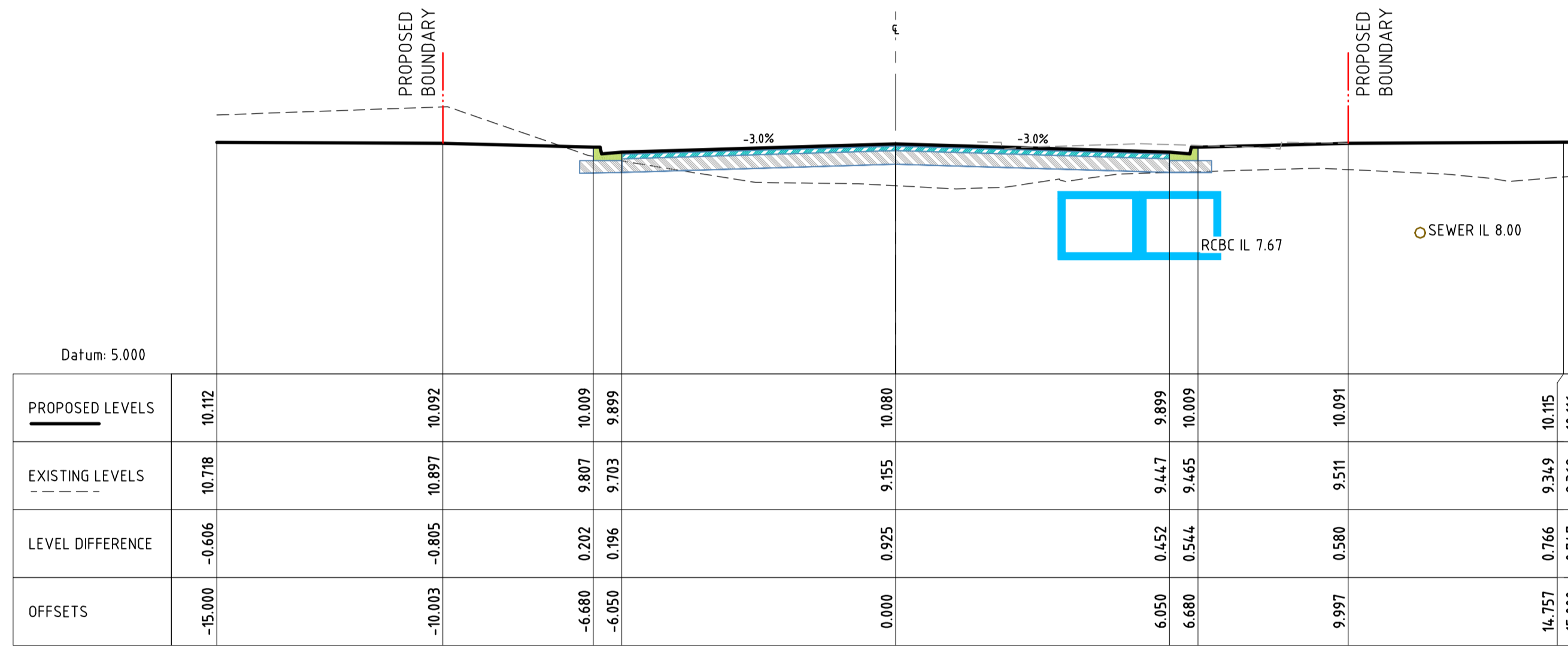
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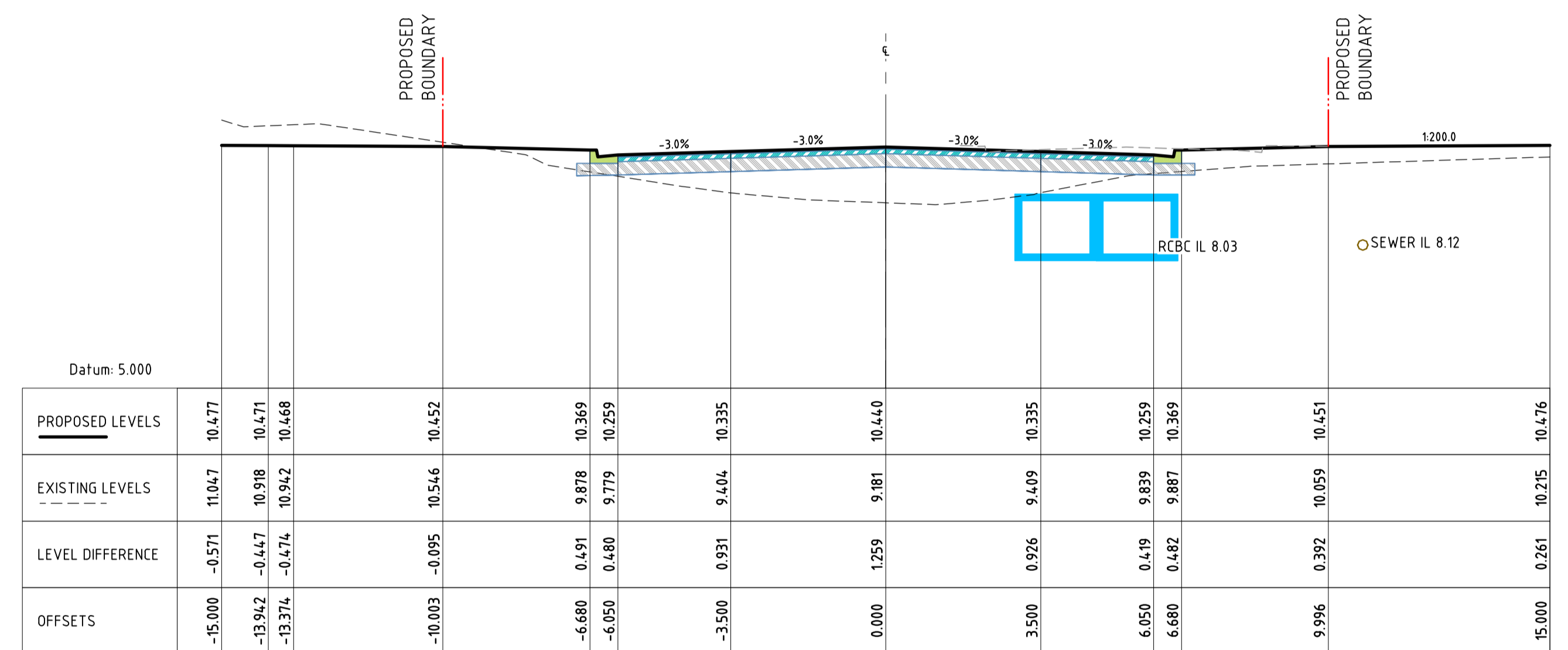
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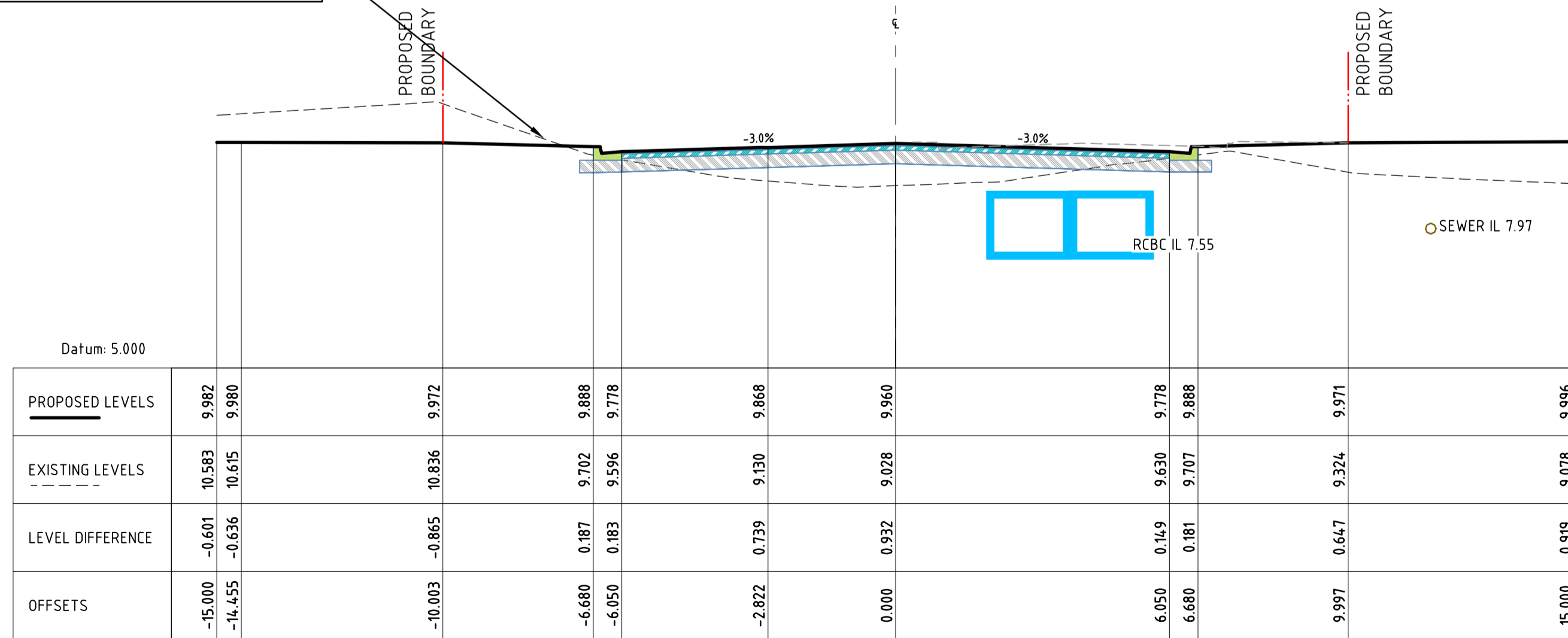


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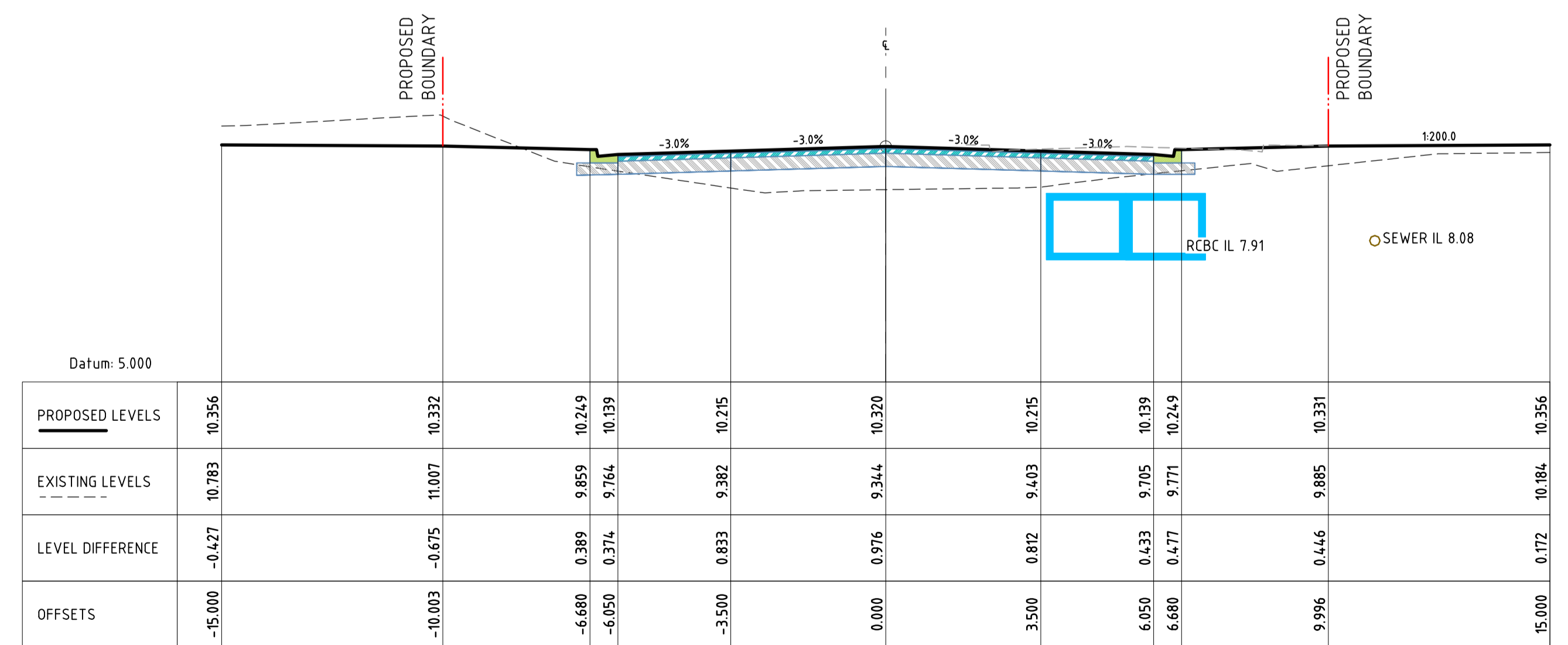


CH: 80.000

TEMPORARY ROAD PROFILE SHOWN LIGHT GREY FOR INFORMATION REFER TO C4.0.10-C4.0.12 FOR DETAILS. (TYPICAL)



CH: 40.000



CH: 70.000

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DRAWN: KATHLEEN TURTON | DESIGNED: ROBERT SUCKLING | JOB MANAGER: DANIEL HOLLAND | VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY		KT		20.03.23
2	PRELIMINARY		KT		14.04.23
A	DEVELOPMENT APPLICATION		KT	RS	2.05.23

CLIENT: **red eye constructions**

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VERT: 1:100@A1
HORIZ: 1:100@A1

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PROJECT: **PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG**

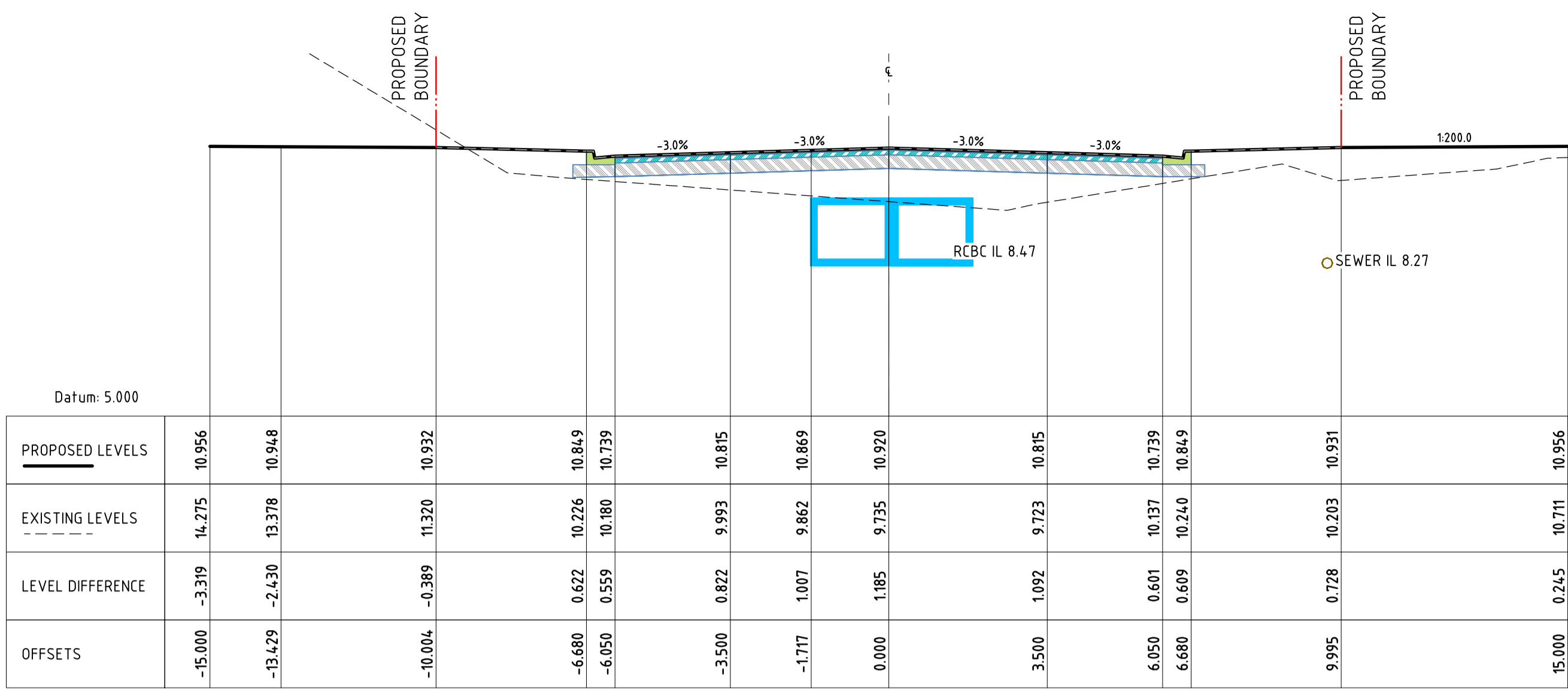
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JOB NUMBER: **NL180808**

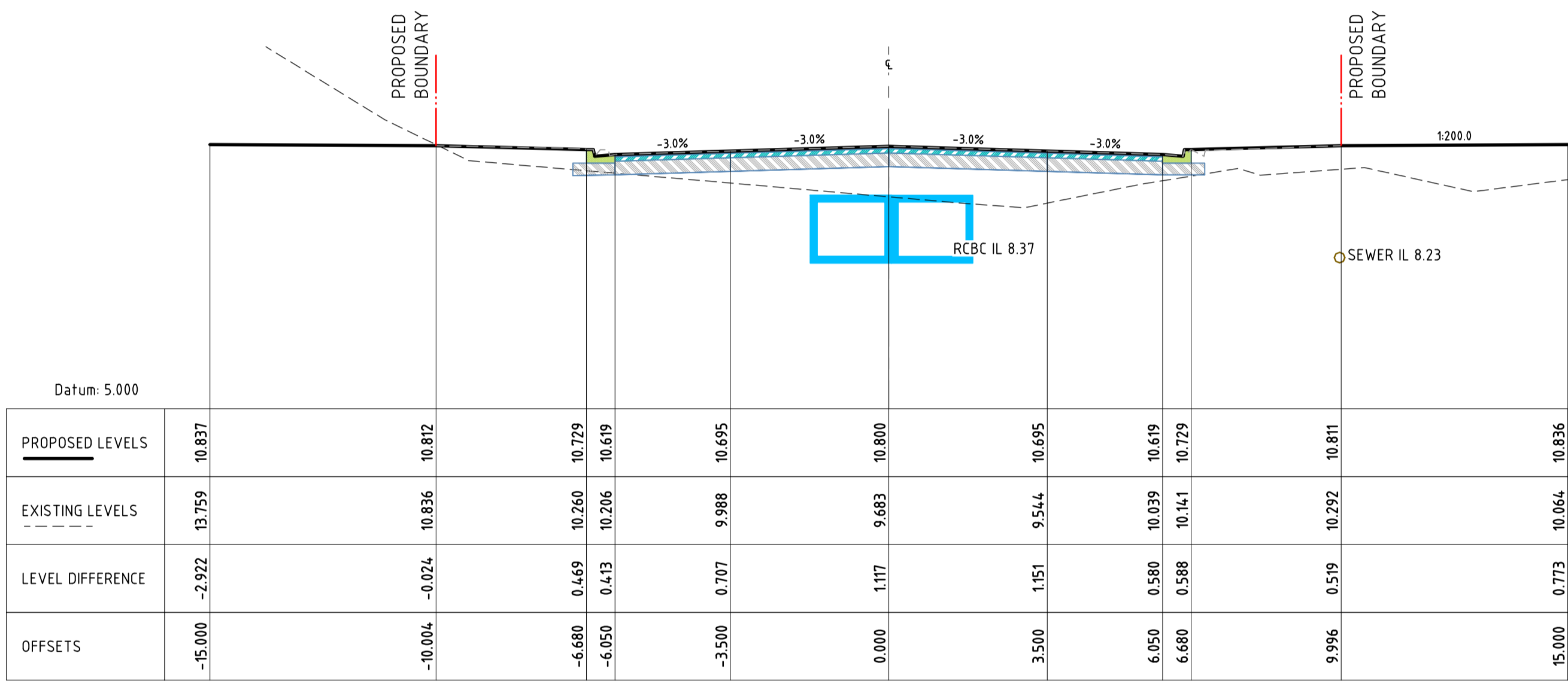
DRAWING NUMBER: **C13.21** REVISION: **A**

DRAWING SHEET SIZE = A1

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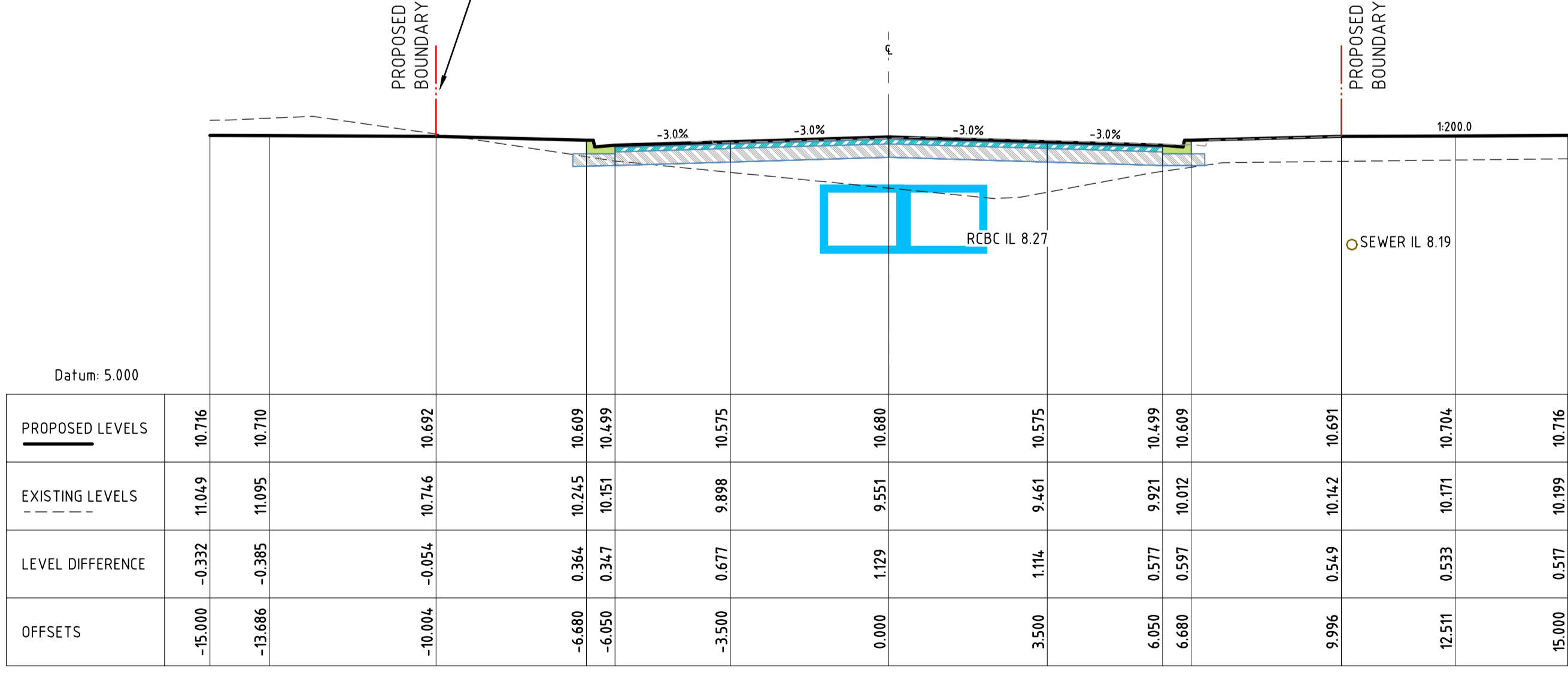


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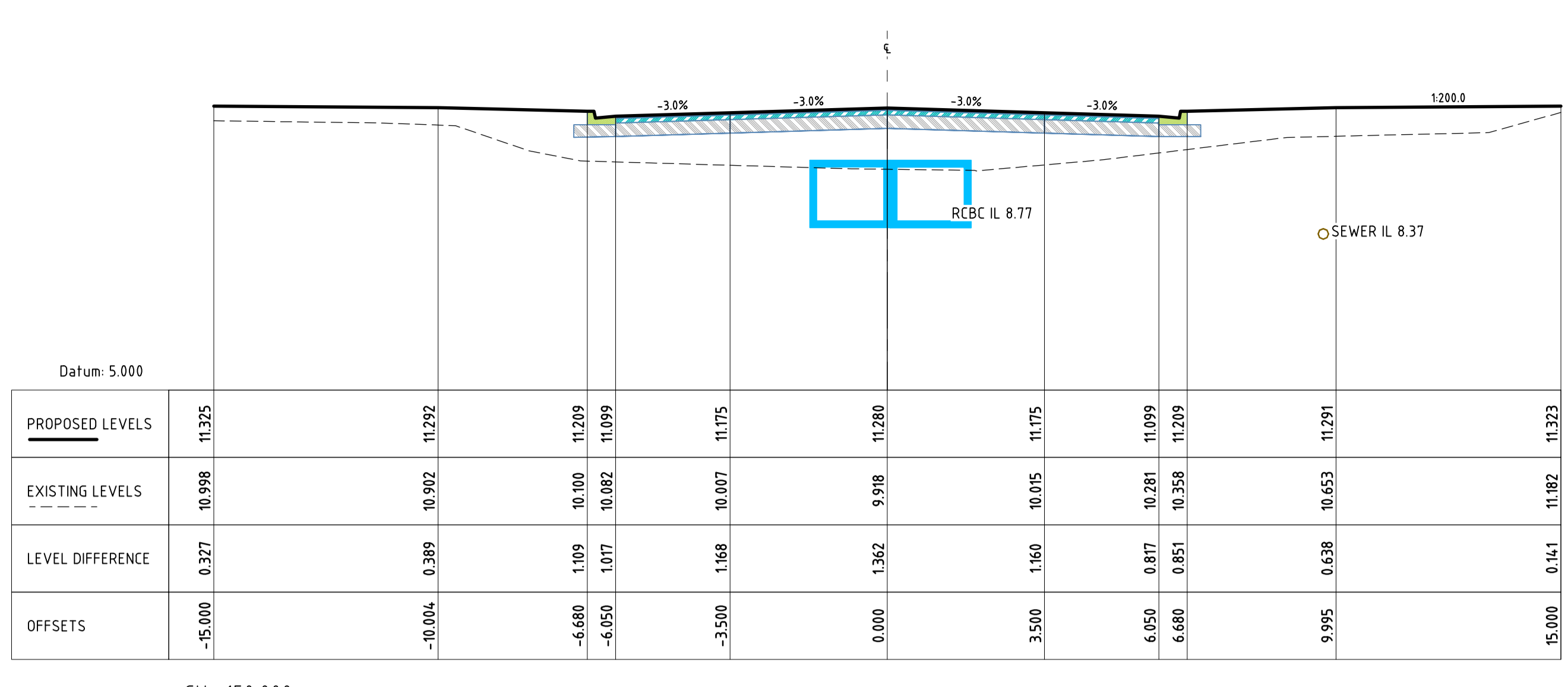


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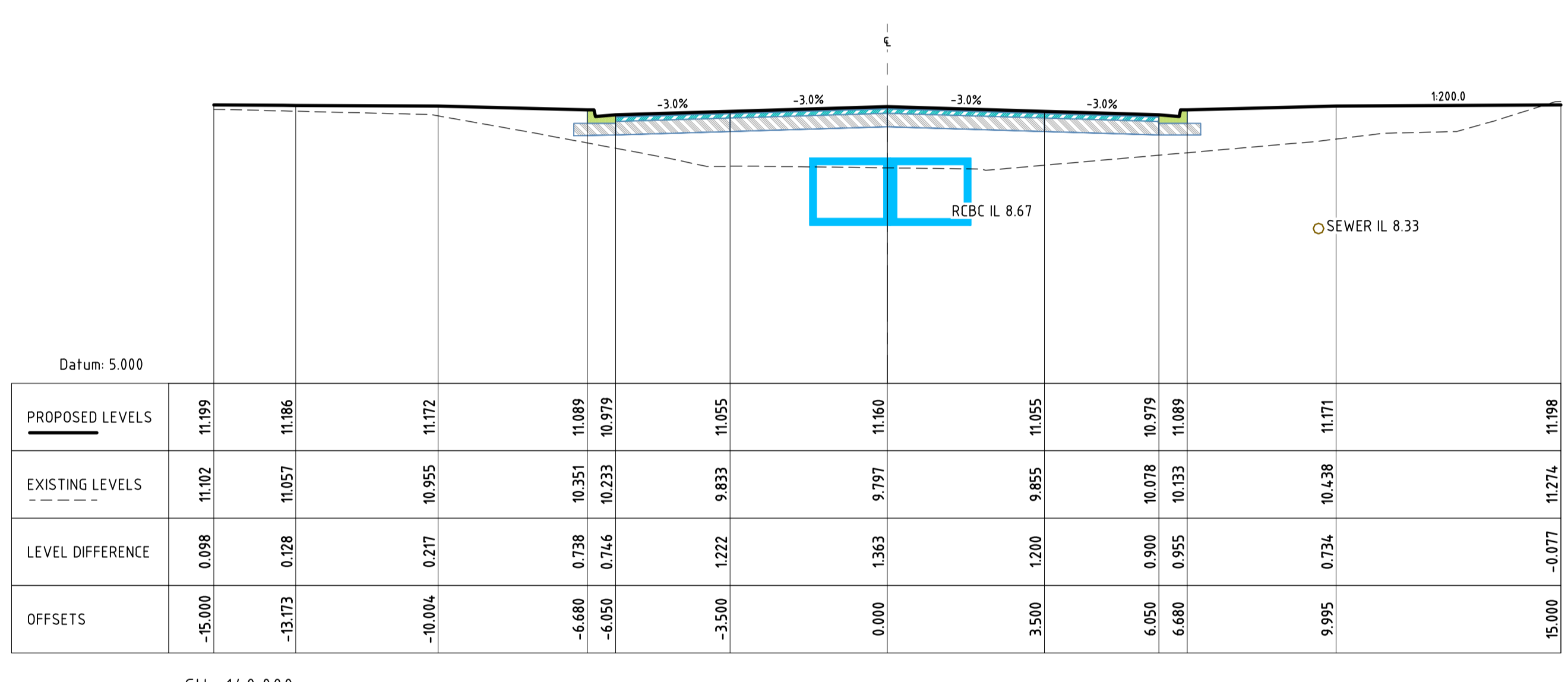
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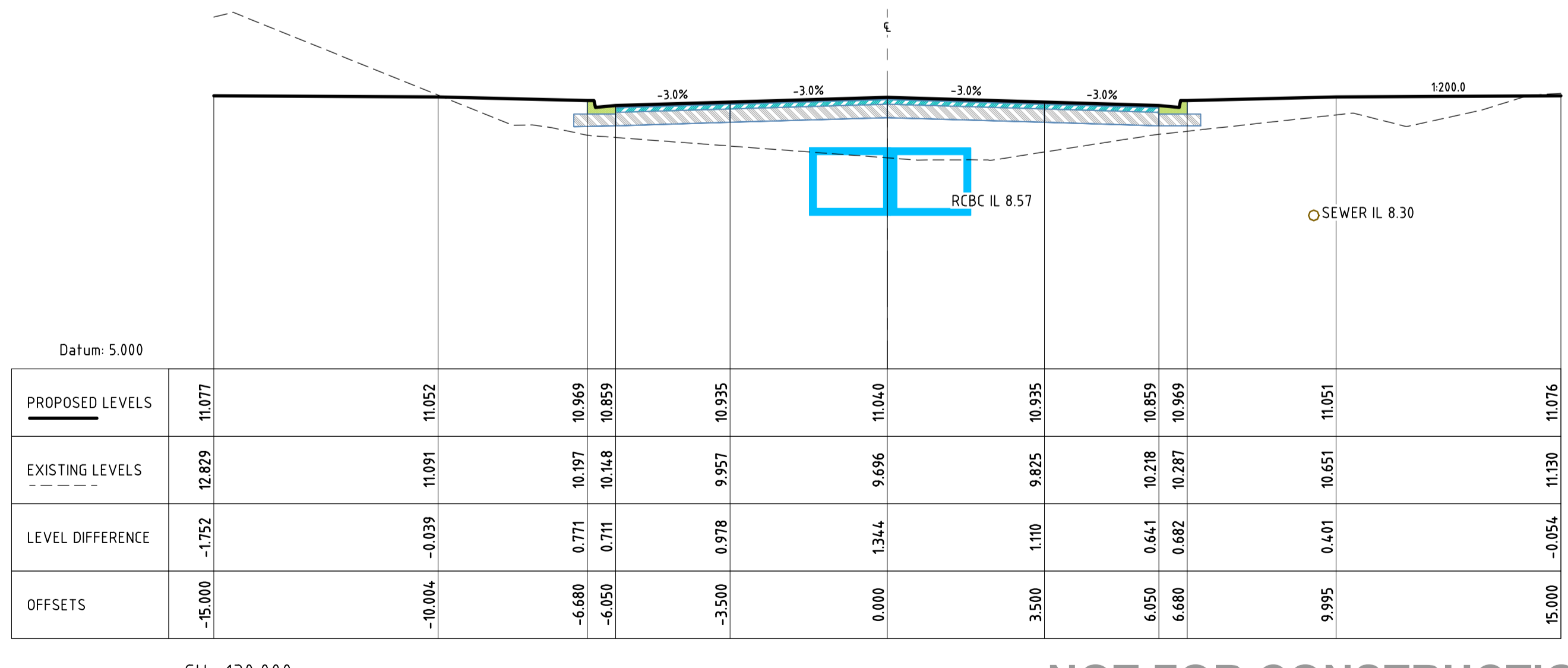
CH: 100.000



CH: 150.000



CH: 140.000



CH: 130.000

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY	KT			20.03.23	
2	PRELIMINARY	KT			14.04.23	
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VERT: 1:100@A1
HORIZ: 1:100@A1

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PROJECT
PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

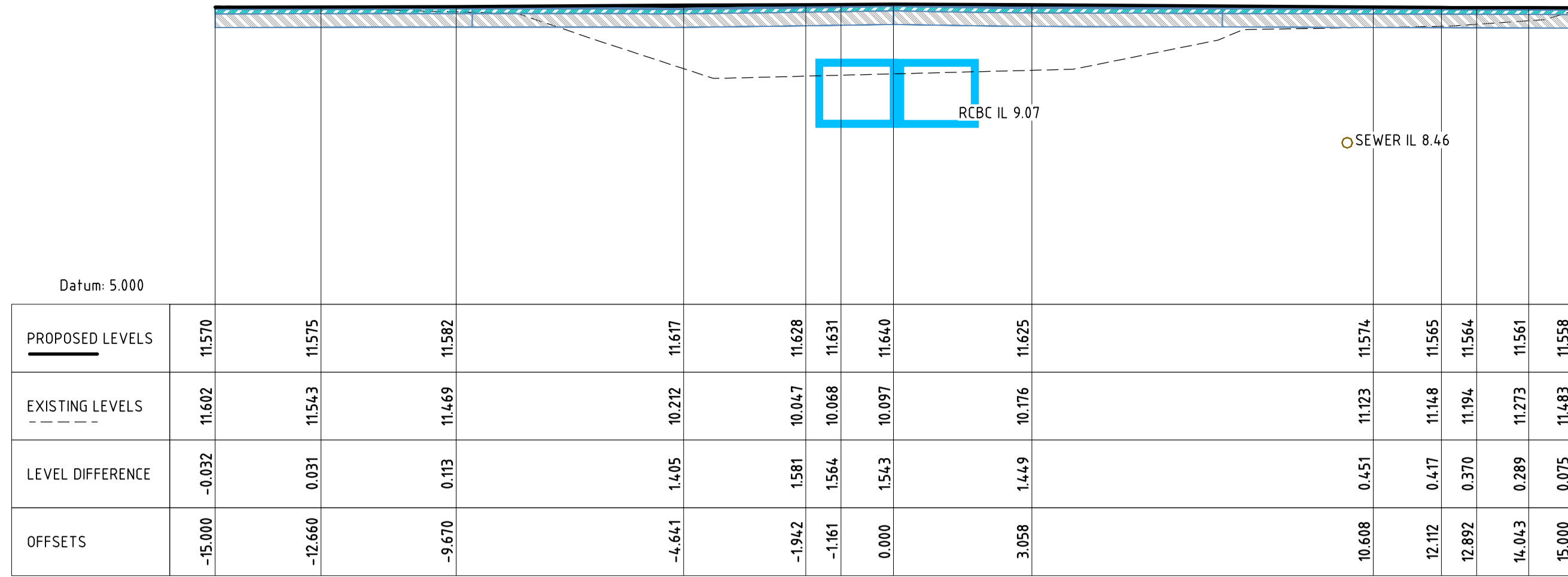
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CROSS SECTIONS
DONALDSON STREET - SHEET 3

JOB NUMBER
NL180808

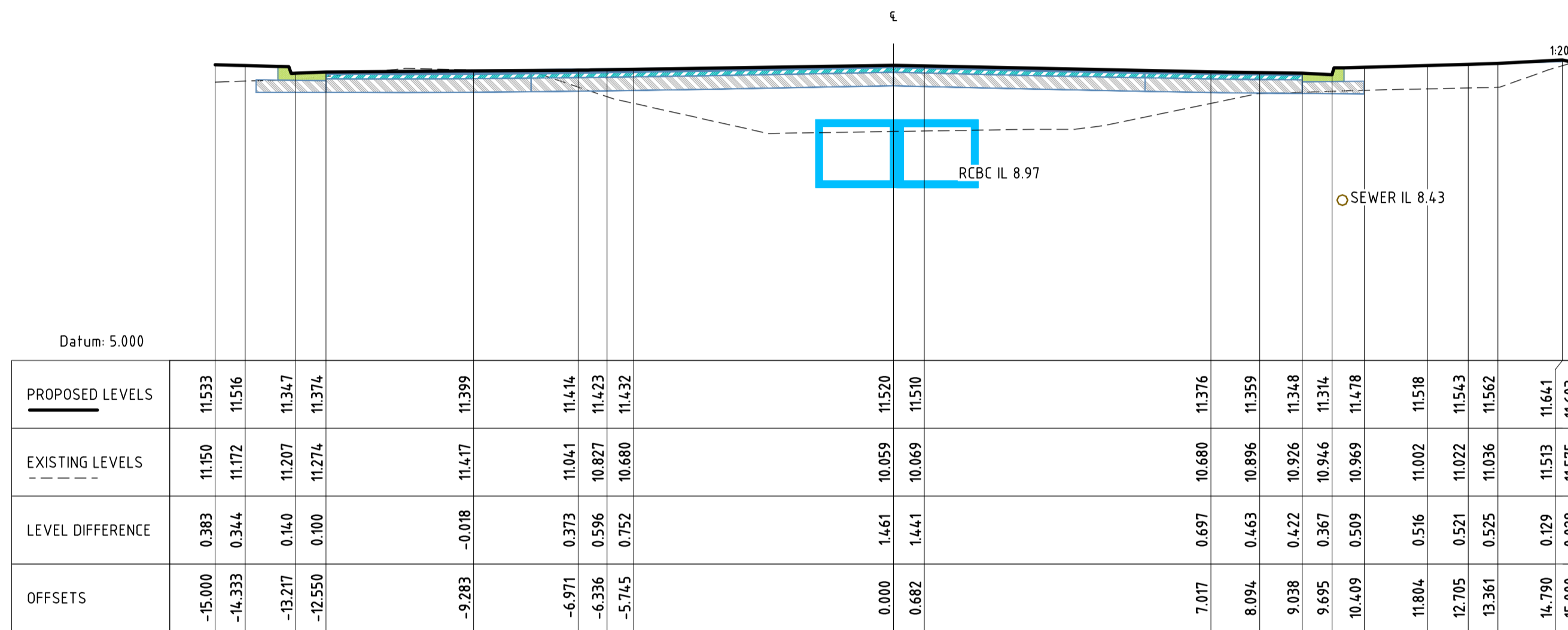
DRAWING NUMBER C13.22	REVISION A
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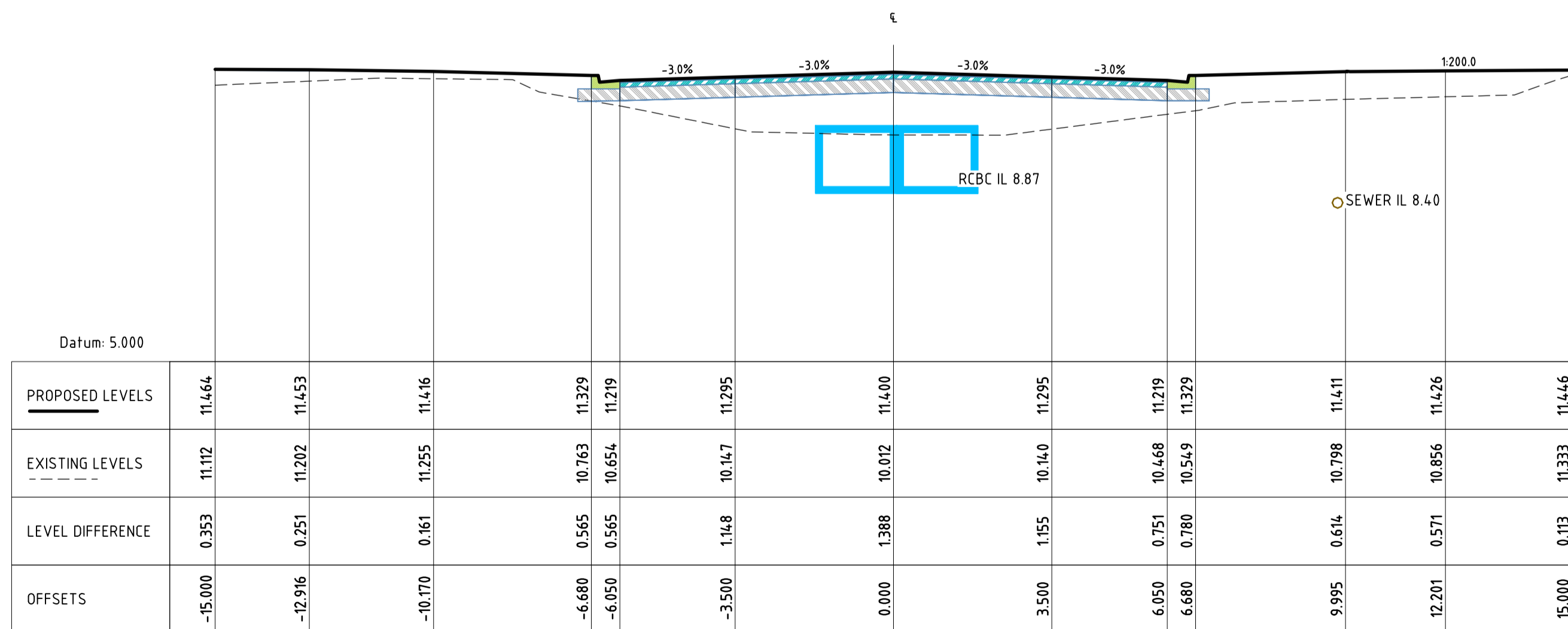
DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SÜCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:



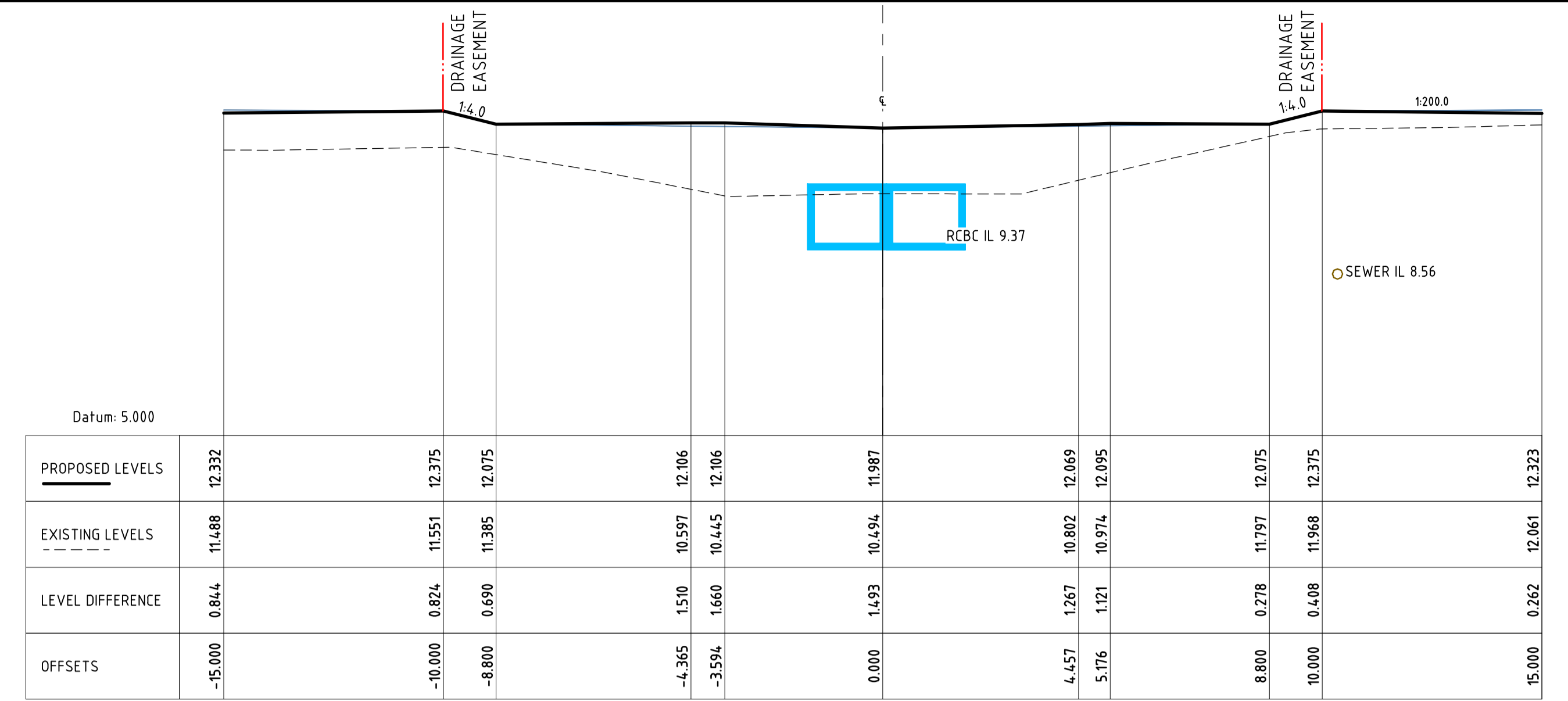
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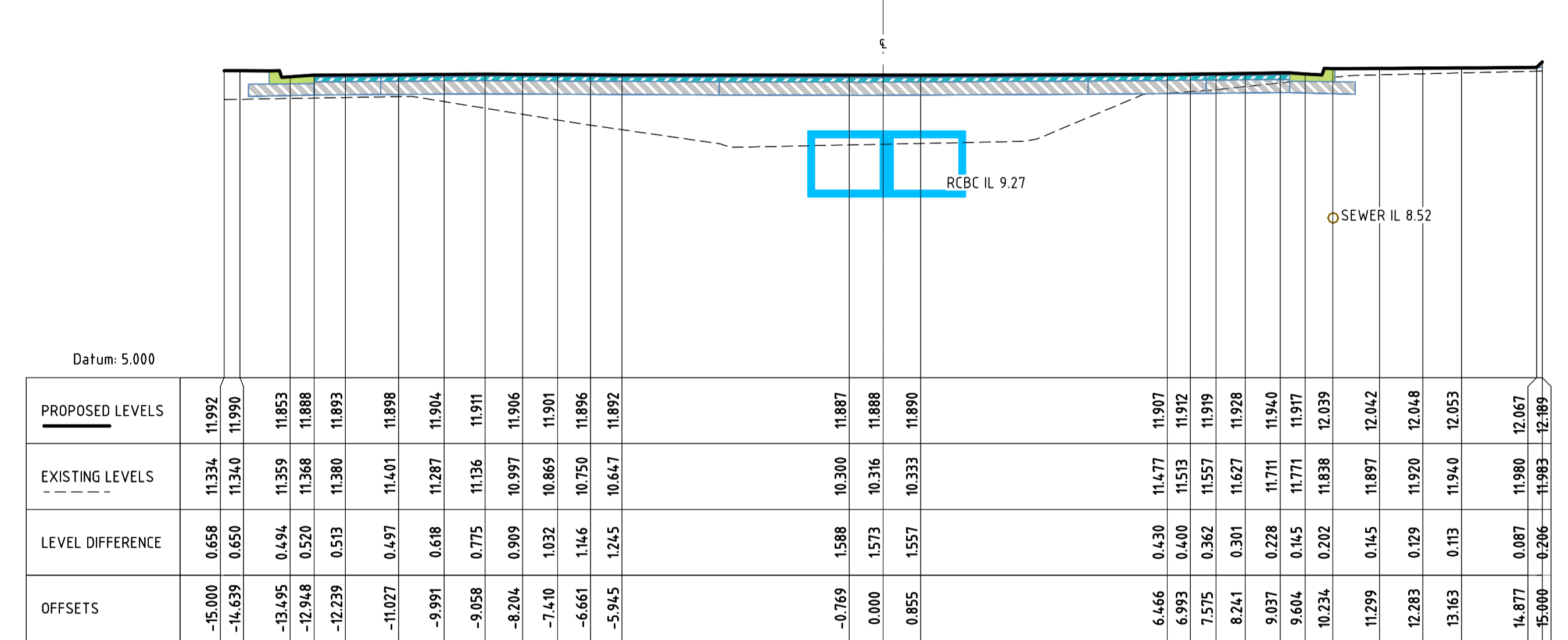
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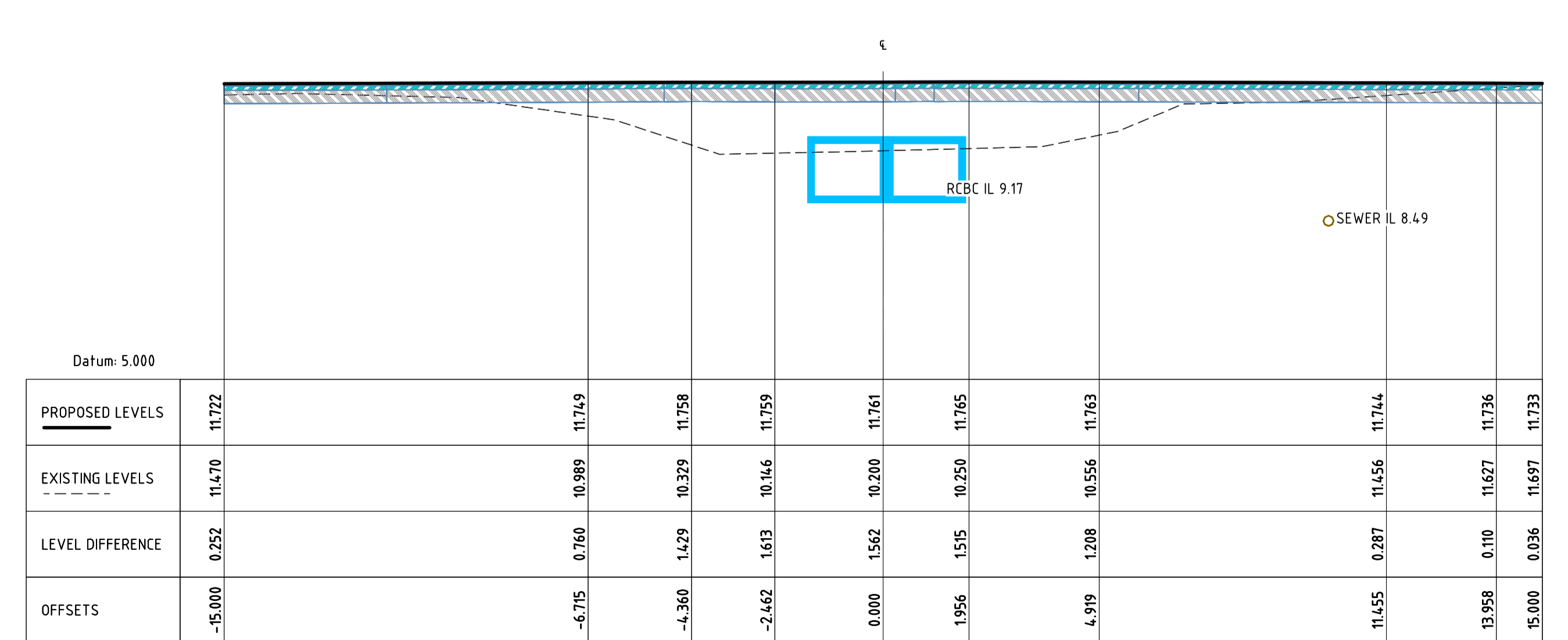
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CH: 210.000



CH: 200.000



CH: 190.000

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY		KT		14.04.23
A	DEVELOPMENT APPLICATION		KT	RS	2.05.23

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VERT 1:100@A1
HORIZ 1:100@A1

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PROJECT
PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

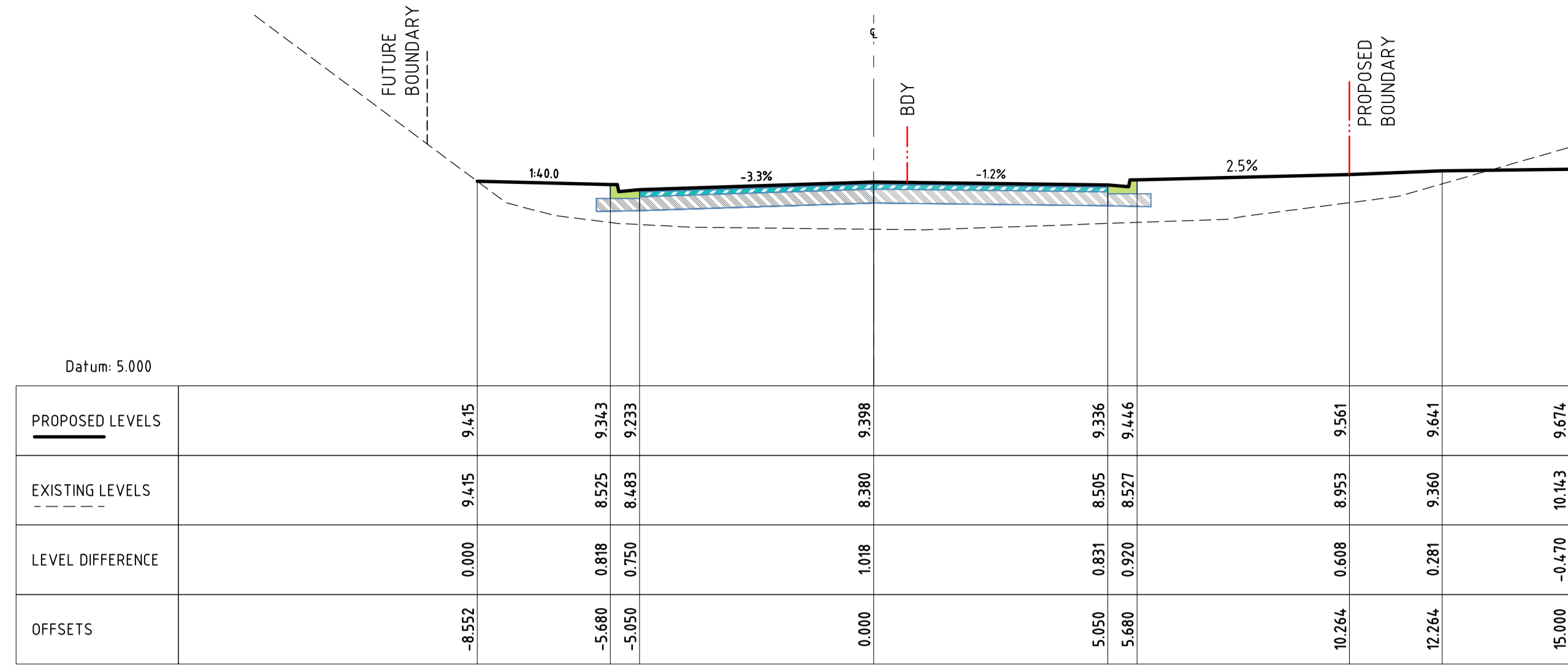
DRAWING TITLE
CROSS SECTIONS
DONALDSON STREET - SHEET 4

JOB NUMBER
NL180808

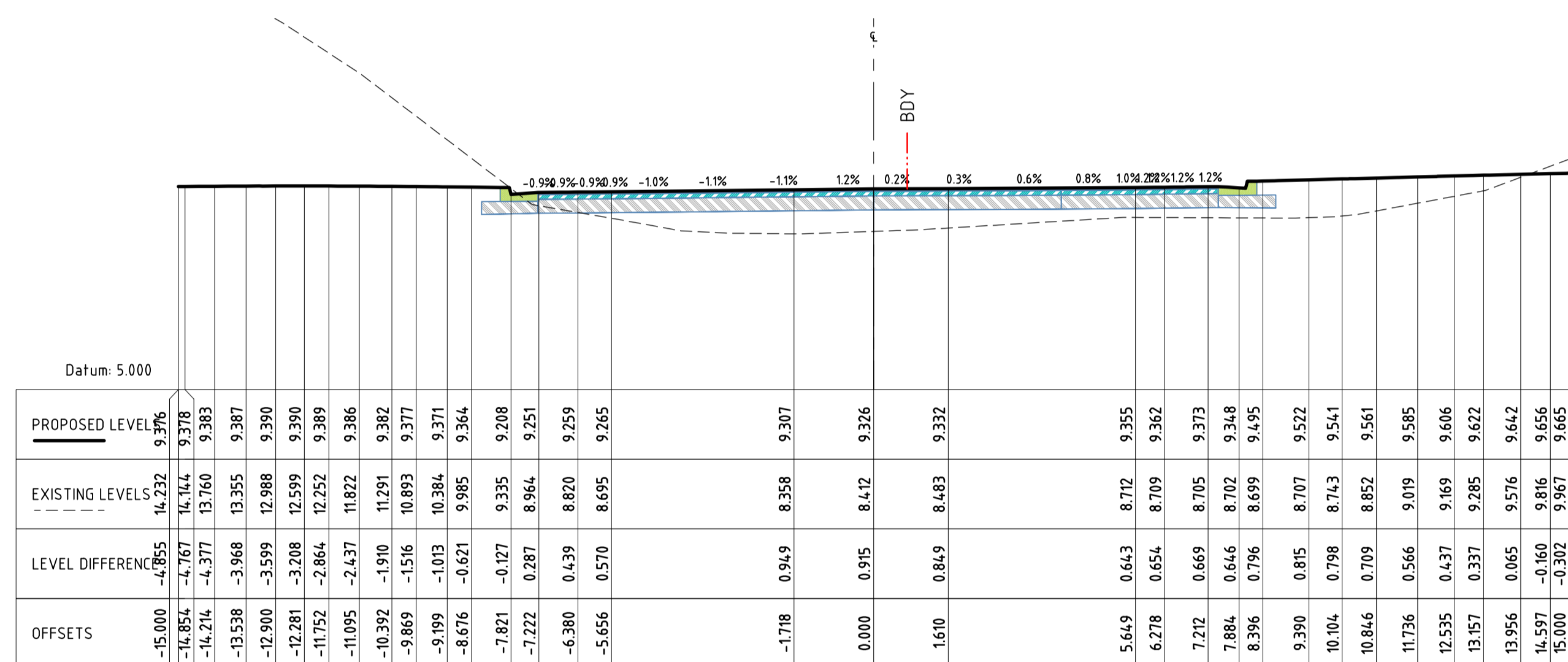
DRAWING NUMBER	REVISION
C13.23	A

DRAWING SHEET SIZE = A1

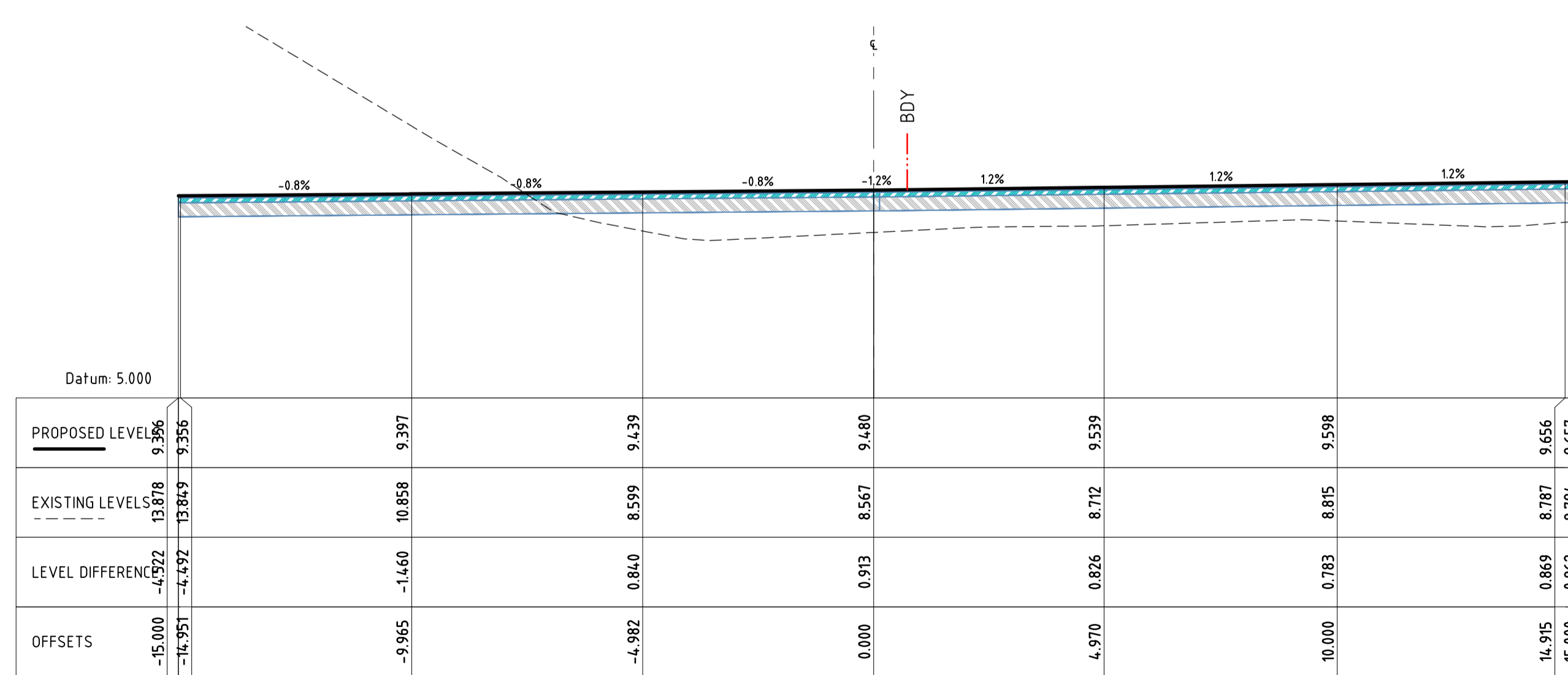
DRAWN: KATHLEEN TURTON | DESIGNED: ROBERT SÜCKLING | JOB MANAGER: DANIEL HOLLAND | VERIFIER:



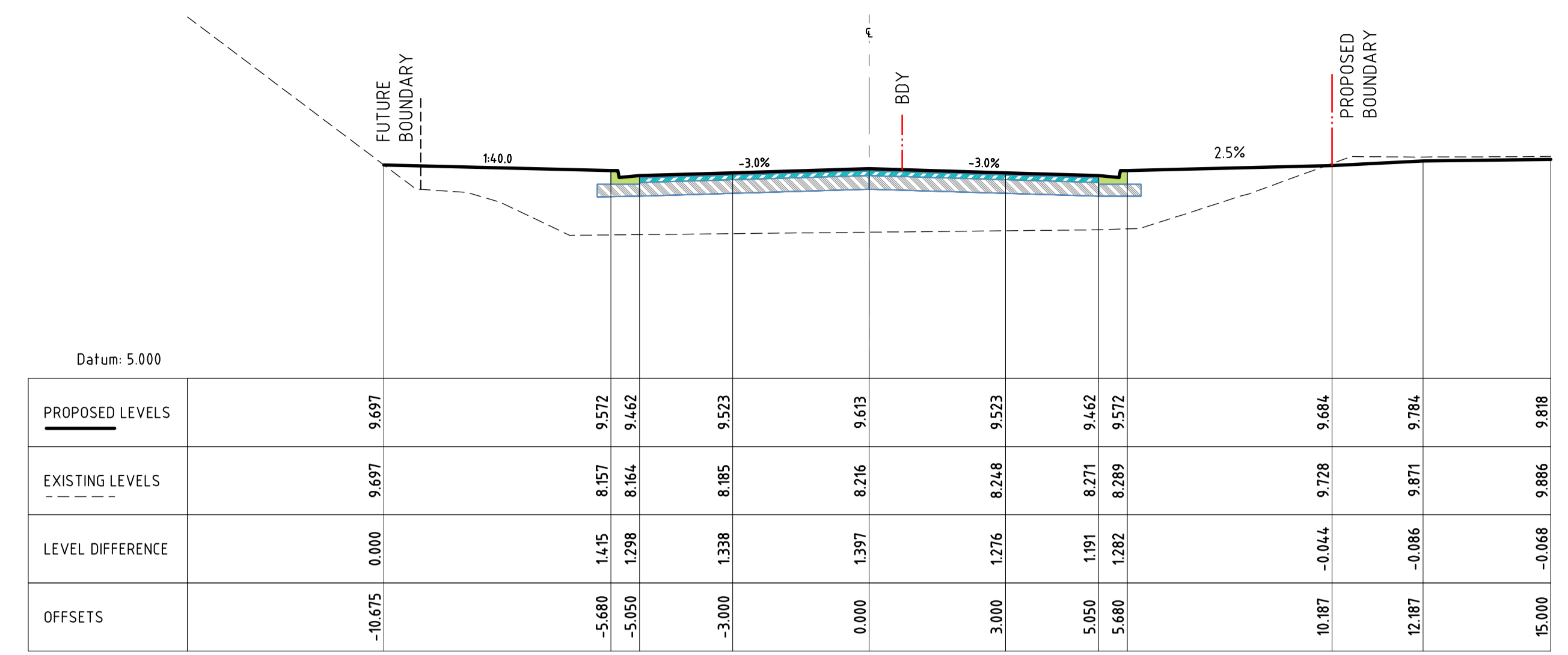
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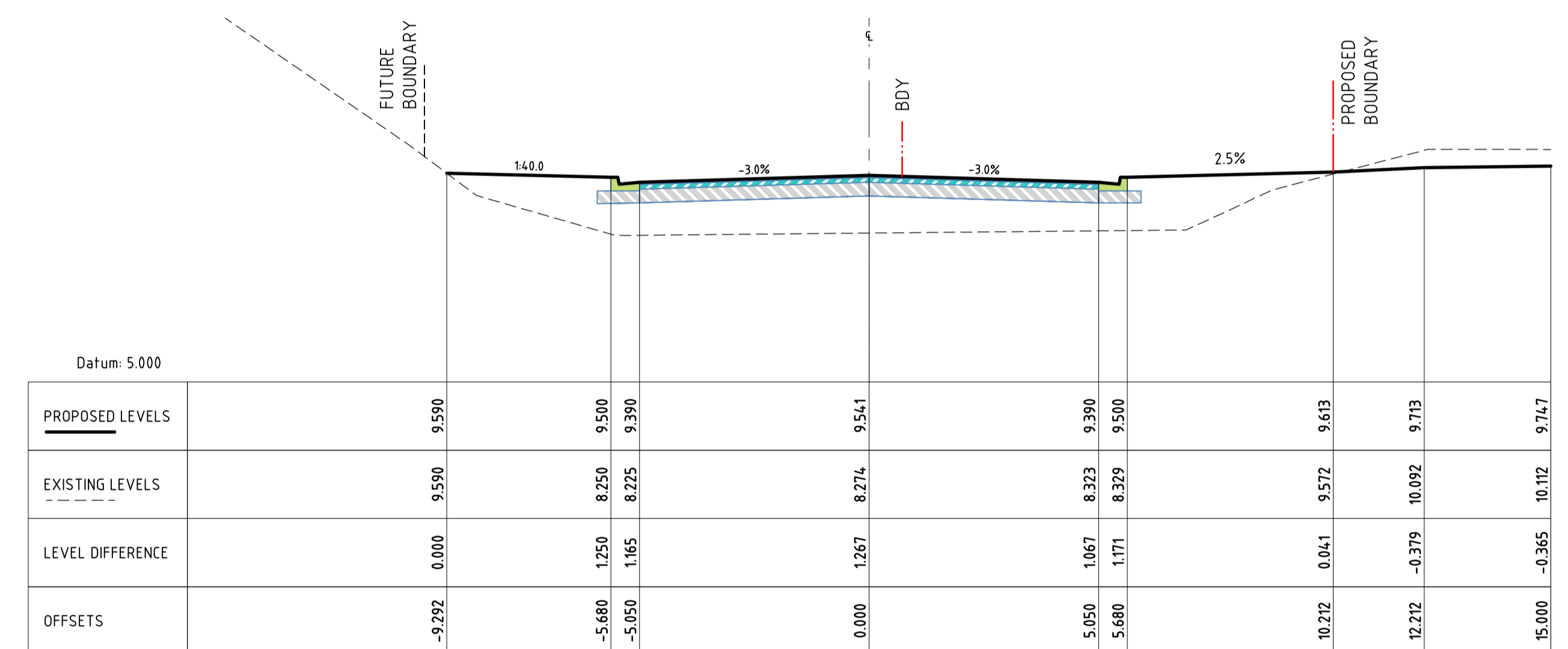
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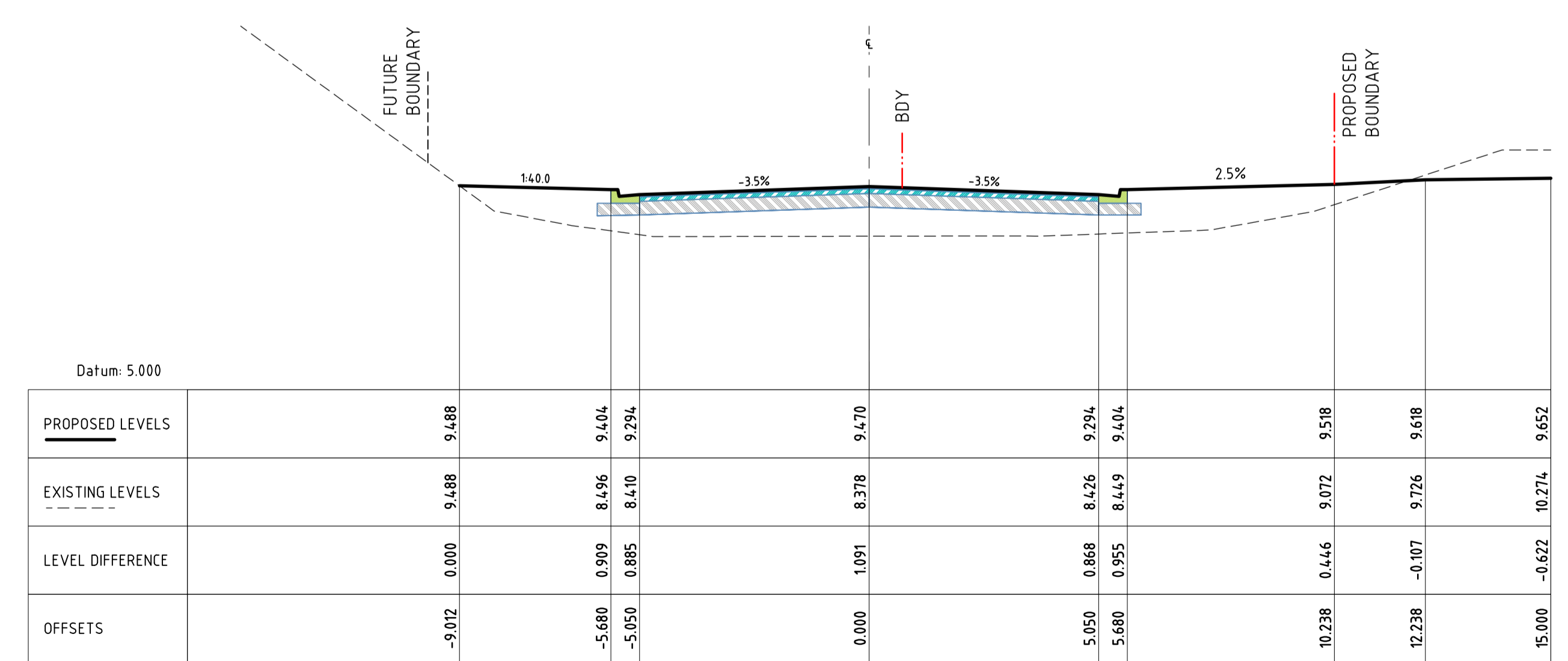
CH: 0.000



CH: 50.000



CH: 40.000



CH: 30.000

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

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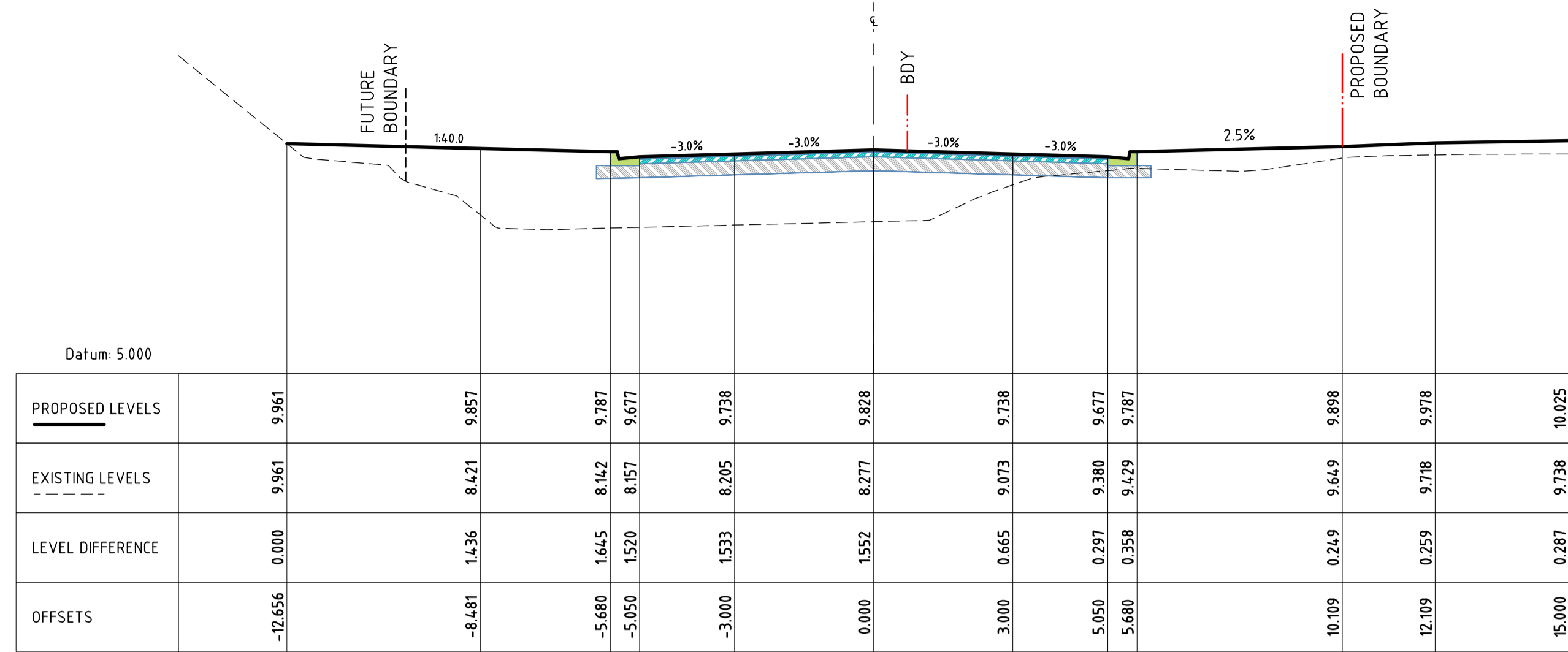
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Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

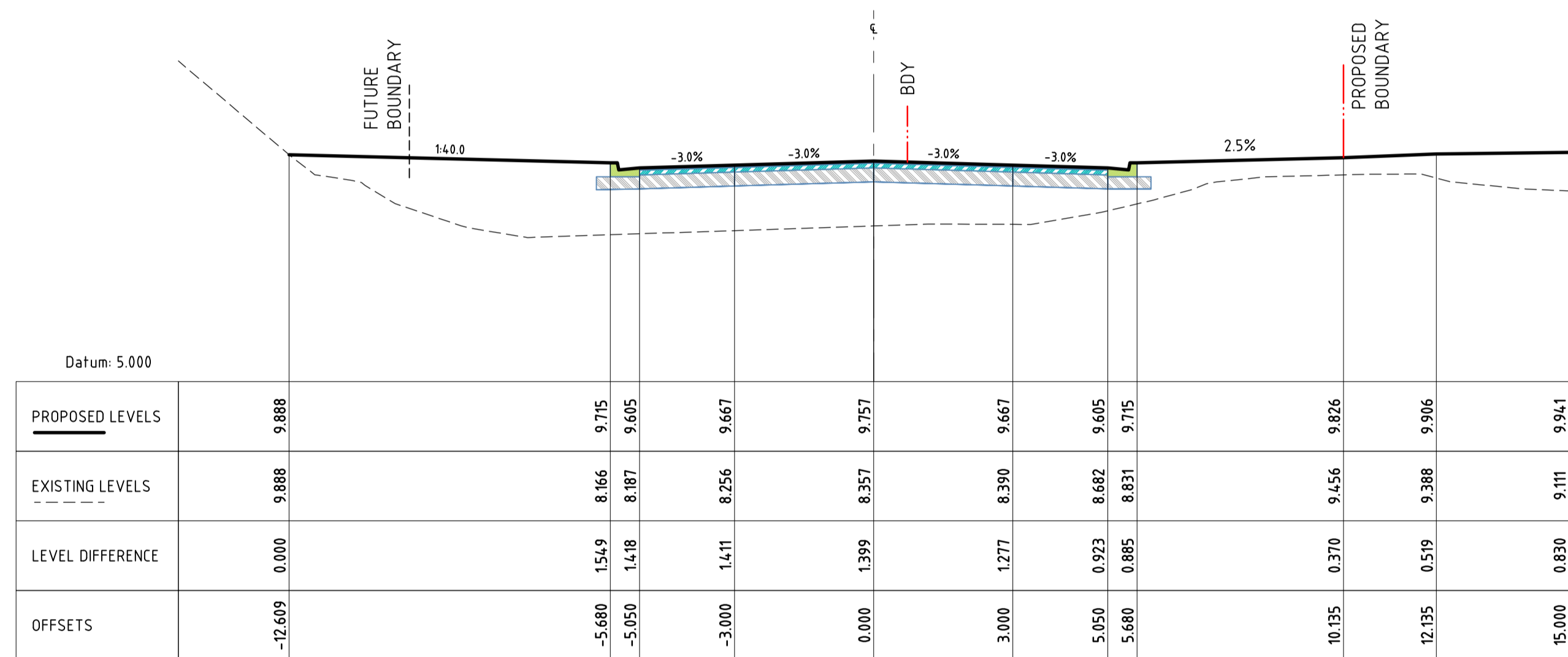
DRAWING TITLE
**CROSS SECTIONS
BRUSSELS ROAD - SHEET 1**

JOB NUMBER NL180808	
DRAWING NUMBER C13.30	REVISION A
DRAWING SHEET SIZE = A1	

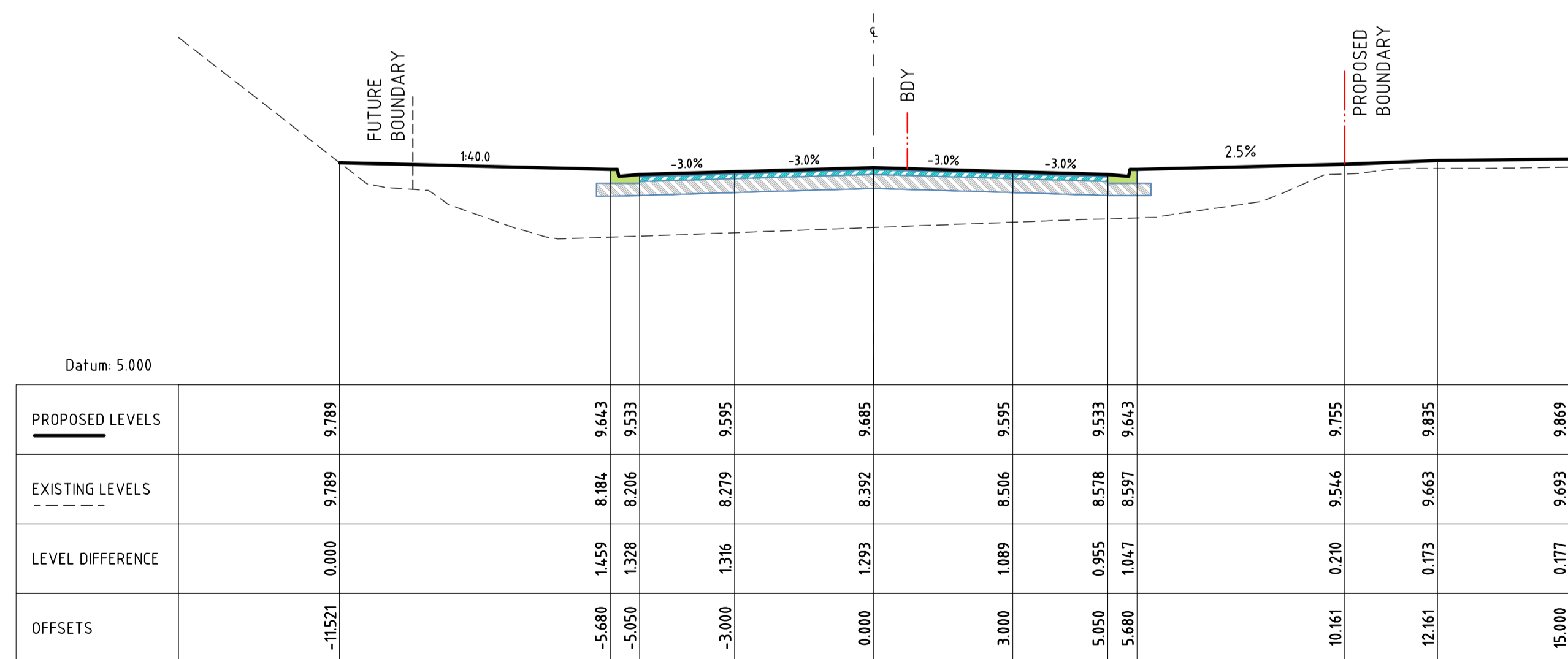
DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SÜCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:



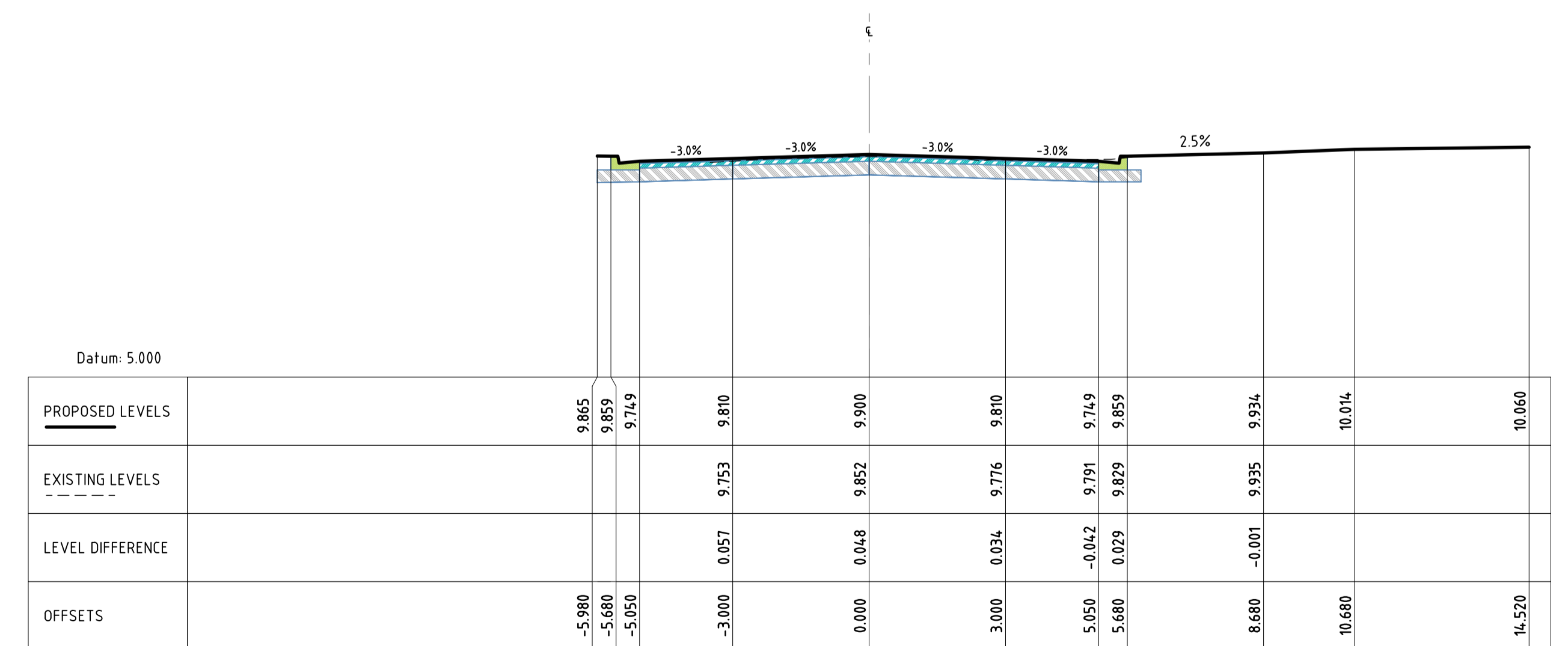
CH: 80.000



CH: 70.000



CH: 60.000



CH: 90.000

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			20.03.23
2	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

CLIENT

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VERT 1:100@A1

HORIZ 1:100@A1

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Ph (02) 4365 1688 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

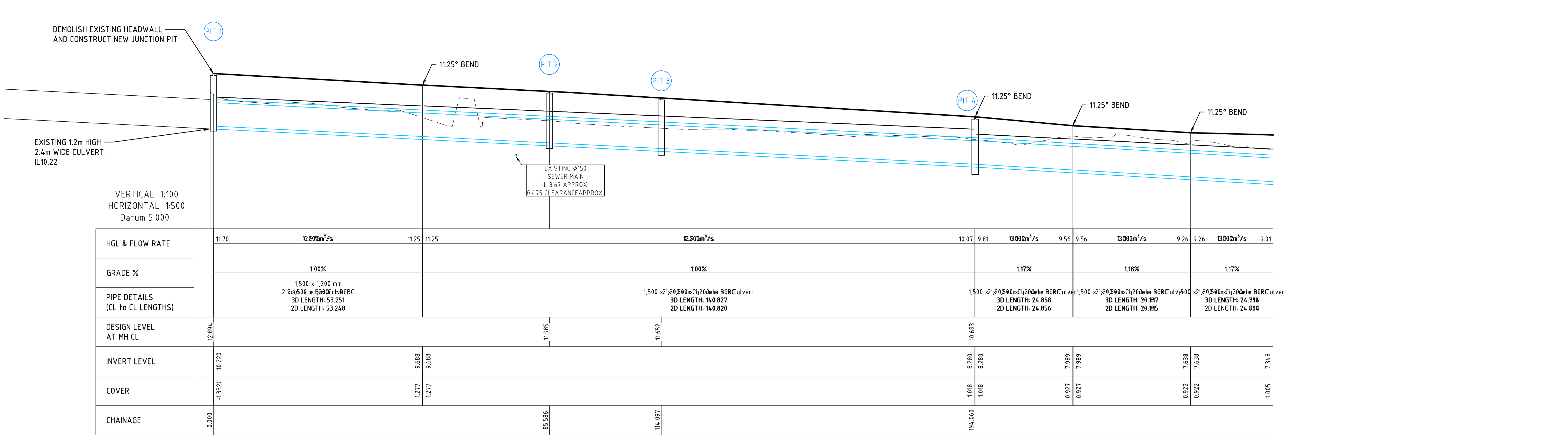
PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

DRAWING TITLE
**CROSS SECTIONS
BRUSSELS ROAD - SHEET 2**

JOB NUMBER
NL180808

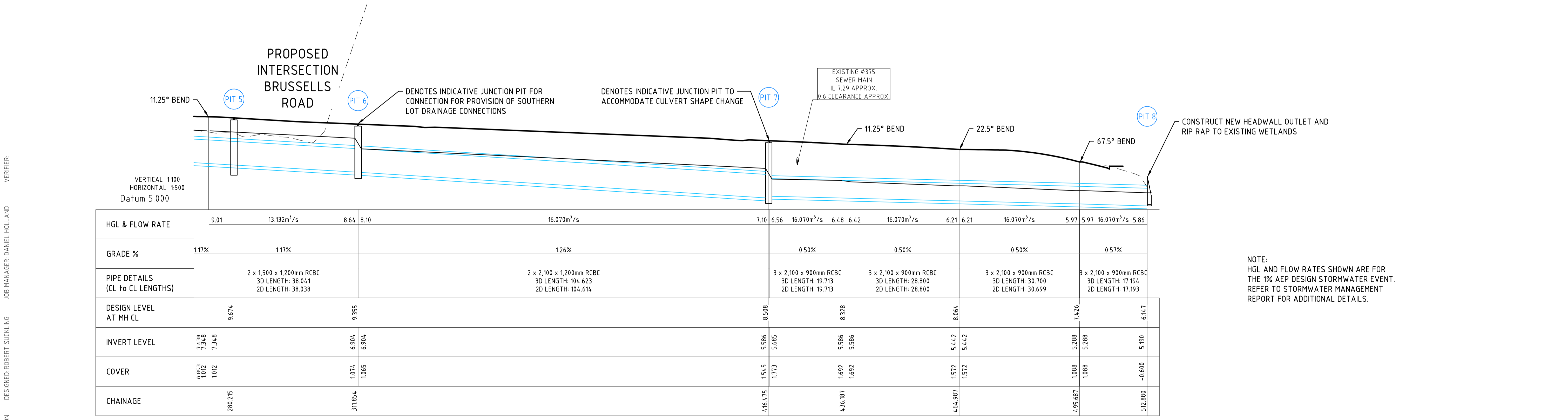
DRAWING NUMBER C13.31	REVISION A
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DRAWING SHEET SIZE = A1



HGL & FLOW RATE	11.70	12.90m ³ /s	11.25	11.25	12.90m ³ /s	10.07	9.81	13.00m ³ /s	9.56	9.56	13.00m ³ /s	9.26	9.26	13.00m ³ /s	9.01
GRADE %		1.00%			1.00%			1.17%			1.16%			1.17%	
PIPE DETAILS (CL to CL LENGTHS)		1,500 x 1,200 mm 2 x 1,500 x 1,200mm RCBC 3D LENGTH: 53.251 2D LENGTH: 53.248			1,500 x 2,100 x 900mm RCBC 3D LENGTH: 140.827 2D LENGTH: 140.820			1,500 x 2,100 x 900mm RCBC 3D LENGTH: 24.858 2D LENGTH: 24.856			1,500 x 2,100 x 900mm RCBC 3D LENGTH: 30.887 2D LENGTH: 30.885			1,500 x 2,100 x 900mm RCBC 3D LENGTH: 24.888 2D LENGTH: 24.888	
DESIGN LEVEL AT MH CL	12.894				11.985			10.693							
INVERT LEVEL	10.220		9.688	9.688			8.280	8.280		7.989	7.989		7.638	7.638	7.348
COVER	-1.332		1.277	1.277			1.018	1.018		0.927	0.927		0.922	0.922	1.005
CHAINAGE	0.000				85.586			114.097							

REINFORCED CONCRETE BOX CULVERT LONG SECTION



HGL & FLOW RATE	9.01	13.132m ³ /s	8.64	8.10	16.070m ³ /s	7.10	6.56	16.070m ³ /s	6.48	6.42	16.070m ³ /s	6.21	6.21	16.070m ³ /s	5.97	5.97	16.070m ³ /s	5.86
GRADE %	1.17%	1.17%			1.26%			0.50%			0.50%			0.50%			0.57%	
PIPE DETAILS (CL to CL LENGTHS)		2 x 1,500 x 1,200mm RCBC 3D LENGTH: 38.041 2D LENGTH: 38.038			2 x 2,100 x 1,200mm RCBC 3D LENGTH: 104.623 2D LENGTH: 104.614			3 x 2,100 x 900mm RCBC 3D LENGTH: 19.713 2D LENGTH: 19.713			3 x 2,100 x 900mm RCBC 3D LENGTH: 28.800 2D LENGTH: 28.800			3 x 2,100 x 900mm RCBC 3D LENGTH: 30.700 2D LENGTH: 30.699			3 x 2,100 x 900mm RCBC 3D LENGTH: 17.194 2D LENGTH: 17.193	
DESIGN LEVEL AT MH CL		9.674		9.355			8.508	8.328	8.328		8.064			7.426			6.147	
INVERT LEVEL	7.538	7.348		6.904	6.904		5.586	5.685	5.586	5.586		5.442	5.442		5.288	5.288		5.190
COVER	0.852	1.012		1.074	1.065		1.545	1.773	1.692	1.692		1.572	1.572		1.088	1.088		-0.600
CHAINAGE		280.215		311.854			416.475	436.187	436.187		466.987		495.687		512.880			

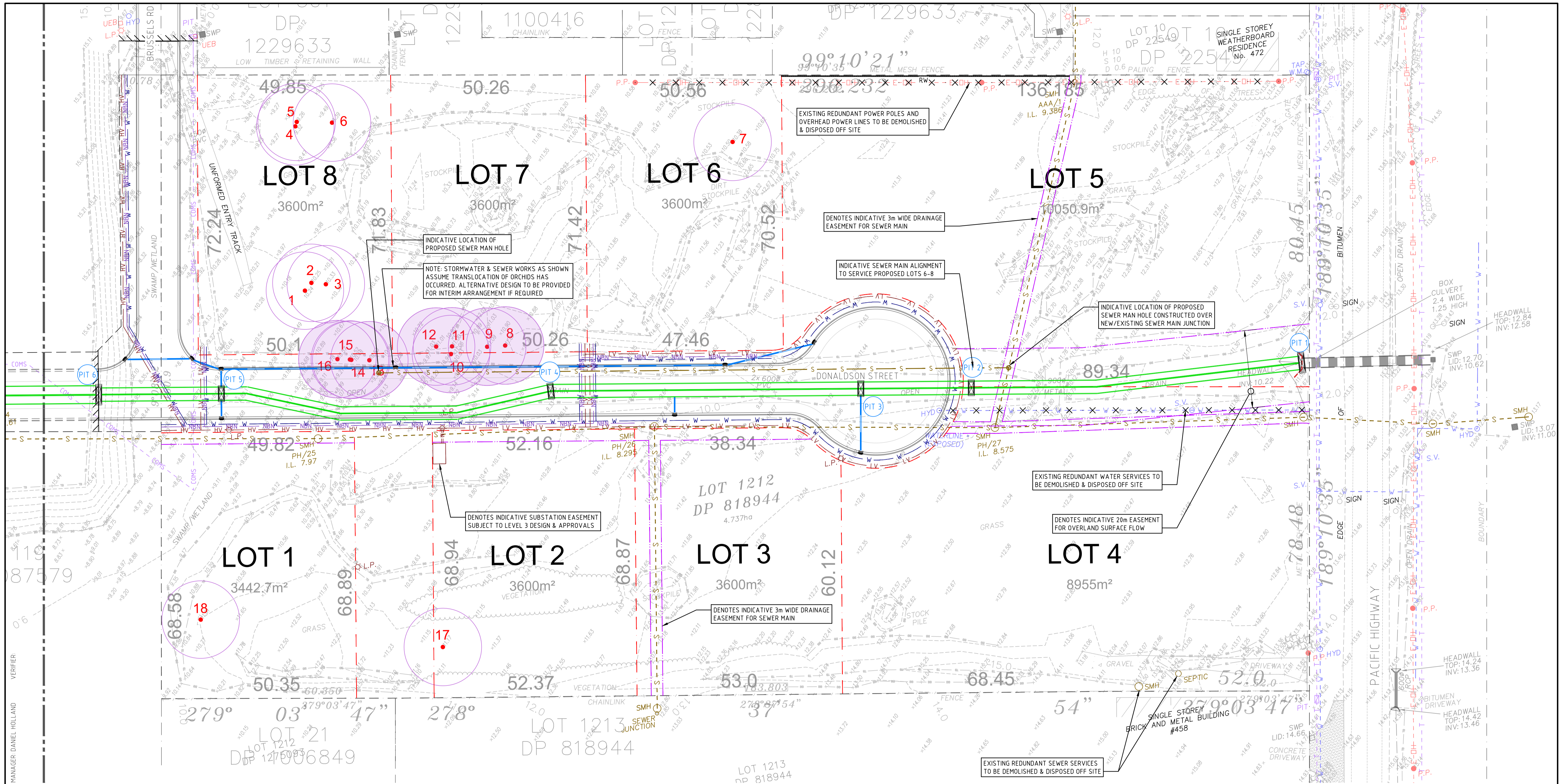
REINFORCED CONCRETE BOX CULVERT LONG SECTION

NOTE:
HGL AND FLOW RATES SHOWN ARE FOR THE 1% AEP DESIGN STORMWATER EVENT. REFER TO STORMWATER MANAGEMENT REPORT FOR ADDITIONAL DETAILS.

DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SUCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.	PROJECT	DRAWING TITLE	JOB NUMBER
1	PRELIMINARY		KT		14.04.23		<p>Central Coast Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250 Ph (02) 4365 1688 Fax (02) 4367 6555 Email centralcoast@northrop.com.au ABN 81 094 433 100</p>	<p>PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG</p>	<p>LONG SECTIONS SHEET 1</p>	<p>NL180808</p>
A	DEVELOPMENT APPLICATION		KT		2.05.23					<p>DRAWING NUMBER</p> <p>C13.50</p>	REVISION A
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED						THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD.	<p>VERT 1:100@A1</p> <p>HORIZ 1:500@A1</p>			<p>DRAWING SHEET SIZE = A1</p>



LEGEND

---	DENOTES EXISTING SITE BOUNDARY LINE	---	DENOTES APPROXIMATE LOCATION OF PROPOSED NBN	- - - E-OH - - -	DENOTES APPROXIMATE LOCATION OF EXISTING (OVERHEAD) ELECTRICITY LINE
- - -	DENOTES PROPOSED LOT BOUNDARY LINE	---	DENOTES APPROXIMATE LOCATION OF PROPOSED WATER	- - - T - - -	DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE
---	DENOTES PROPOSED EASEMENT LINE, REFER TO SURVEY FOR DETAILS	---	DENOTES APPROXIMATE LOCATION OF PROPOSED SEWER MAIN	---	DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE (OBYD)
E - E	DENOTES APPROXIMATE LOCATION OF PROPOSED ELECTRICITY	⊗	DENOTES APPROXIMATE LOCATION OF PROPOSED SEWER MAN HOLE	---	DENOTES APPROXIMATE LOCATION OF EXISTING SEWER MAIN
E-OH	DENOTES APPROXIMATE LOCATION OF PROPOSED ELECTRICITY (OVERHEAD)	⊗	DENOTES EXISTING SERVICE TO BE REMOVED/ABANDONED/DEMOLISHED & DISPOSED OFF SITE	---	
E-UG	DENOTES APPROXIMATE LOCATION OF PROPOSED ELECTRICITY (UNDERGROUND)	⊗	DENOTES EXISTING CONCRETE HEADWALL TO BE RETAINED	---	
HV	DENOTES APPROXIMATE LOCATION OF PROPOSED ELECTRICITY (HIGH VOLTAGE)	⊗		---	
LV	DENOTES APPROXIMATE LOCATION OF PROPOSED ELECTRICITY (LOW VOLTAGE)	⊗		---	
L.P.	DENOTES APPROXIMATE LOCATION OF PROPOSED LIGHT POLE	⊗		---	

LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE ONLY & MAY NOT BE COMPLETE. THE BUILDER IS RESPONSIBLE FOR LOCATING EXISTING INFRASTRUCTURE (CULVERTS, PITS, PIPES, SERVICES, INVERT & COVER LEVELS ETC) PRIOR TO COMMENCING CONSTRUCTION.

NOTE: ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ORIGIN OF LEVELS SSM 132096, RL 9.440

NOTE THAT ORIGINAL DRAWING IS IN COLOUR



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	PRELIMINARY	KT			20.03.23	red eye constructions <small>Commercial/Industrial/Residential/Infrastructure</small>
2	PRELIMINARY	KT			14.04.23	
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23	

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PLANS: 1:500 @ 10 5 10 15 20 25m

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Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1688 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

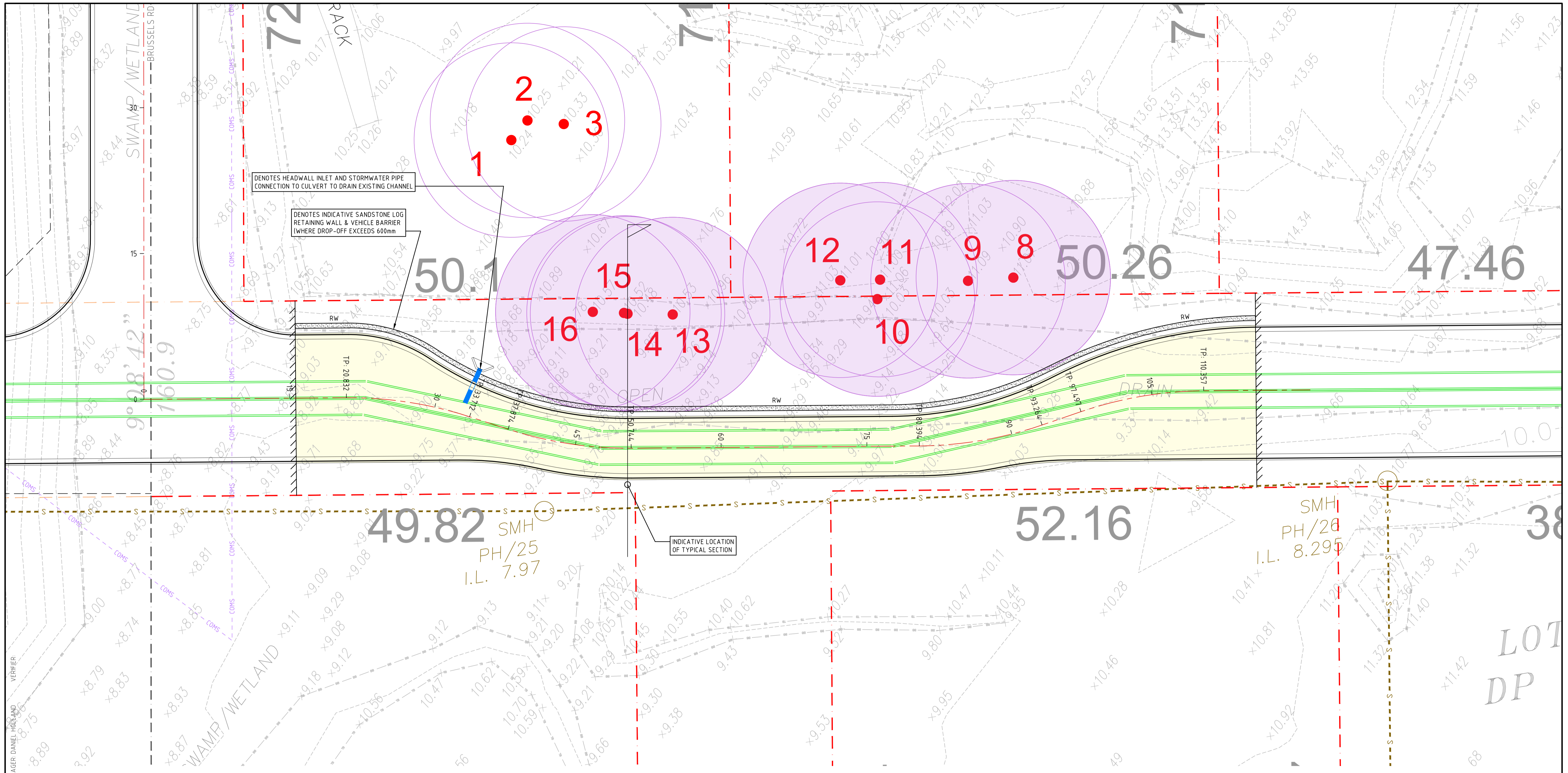
PROJECT
PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE
SERVICES COORDINATION PLAN
SHEET 1

JOB NUMBER
NL180808

DRAWING NUMBER C14.01	REVISION A
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DRAWING SHEET SIZE = A1



DENOTES HEADWALL INLET AND STORMWATER PIPE CONNECTION TO CULVERT TO DRAIN EXISTING CHANNEL

DENOTES INDICATIVE SANDSTONE LOG RETAINING WALL & VEHICLE BARRIER (WHERE DROP-OFF EXCEEDS 600mm)

INDICATIVE LOCATION OF TYPICAL SECTION

LEGEND

<ul style="list-style-type: none"> DENOTES EXISTING SITE BOUNDARY LINE DENOTES PROPOSED LOT BOUNDARY LINE DENOTES PROPOSED EASEMENT LINE, REFER TO SURVEY FOR DETAILS DENOTES LIMIT OF WORKS EXTENTS DENOTES EXISTING SURFACE LEVEL DENOTES EXISTING CONTOURS DENOTES DESIGN CONTOURS DENOTES ALIGNMENT CONTROL LINE & CHAINAGE, REFER TO LONG SECTION 	<ul style="list-style-type: none"> DENOTES BARRIER KERB & CHANNEL IN ACCORDANCE WITH CENTRAL COAST COUNCIL STANDARD DRAWING S00501 DENOTES EXISTING BARRIER KERB & CHANNEL TO BE RETAINED DENOTES FUTURE BARRIER KERB & CHANNEL DENOTES TRAFFICABLE AC PAVEMENT DENOTES SANDSTONE LOG RETAINING WALL DENOTES LOCATION OF EXISTING ORCHID/ID NUMBER & 10m PROTECTION/EXCLUSION RADIUS 	<ul style="list-style-type: none"> DENOTES EXISTING CONCRETE HEADWALL TO BE RETAINED DENOTES STORMWATER LINE DENOTES EXISTING STORMWATER PIPE TO BE RETAINED 	<ul style="list-style-type: none"> DENOTES APPROXIMATE LOCATION OF EXISTING (OVERHEAD) ELECTRICITY LINE DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE DENOTES APPROXIMATE LOCATION OF EXISTING TELECOMMUNICATION LINE (DBYD) DENOTES APPROXIMATE LOCATION OF EXISTING WATER MAIN DENOTES APPROXIMATE LOCATION OF EXISTING SEWER MAIN
--	--	--	--

LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE ONLY & MAY NOT BE COMPLETE. THE BUILDER IS RESPONSIBLE FOR LOCATING EXISTING INFRASTRUCTURE (CULVERTS, PITS, PIPES, SERVICES, INVERT & COVER LEVELS ETC) PRIOR TO COMMENCING CONSTRUCTION.

THE BUILDER SHALL ALLOW TO MODIFY ALL EXISTING SERVICE COVERS TO MATCH THE NEW PAVEMENTS, IN ACCORDANCE WITH THE RELEVANT AUTHORITIES REQUIREMENTS.

PROVIDE TEMPORARY TRAFFIC CONTROL IN ACCORDANCE WITH STATE & FEDERAL STATUTORY REQUIREMENTS AND LOCAL COUNCIL SPECIFICATIONS/REQUIREMENTS

NOTE: ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). ORIGIN OF LEVELS SSM 132096, RL 9.440

NOTE THAT ORIGINAL DRAWING IS IN COLOUR



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY		KT		20.03.23
2	PRELIMINARY		KT		14.04.23
A	DEVELOPMENT APPLICATION		KT	RS	2.05.23

CLIENT

red eye constructions

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Central Coast

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Email centralcoast@northrop.com.au ABN 81 094 433 100

PLANS1: 200@A10

0 2 4 6 8 10m

PROJECT

PROPOSED SUBDIVISION

LOT 1212 DP 818944

460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE

INTERIM WORKS

GENERAL ARRANGEMENT PLAN

JOB NUMBER

NL180808

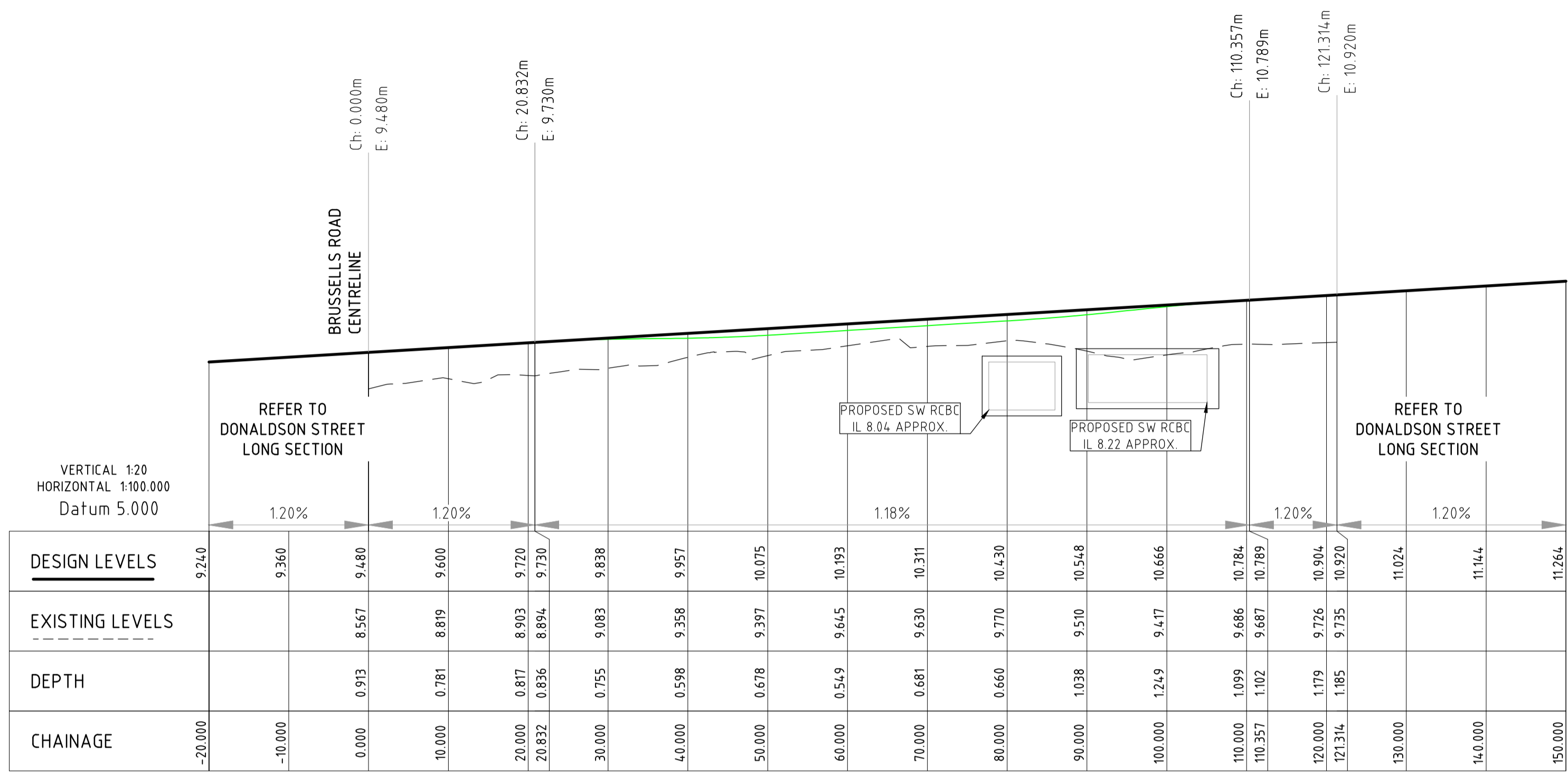
DRAWING NUMBER

C40.01

REVISION

A

DRAWING SHEET SIZE = A1



CL-INTERIM DONALDSON LONG SECTION

DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SÜCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

CLIENT

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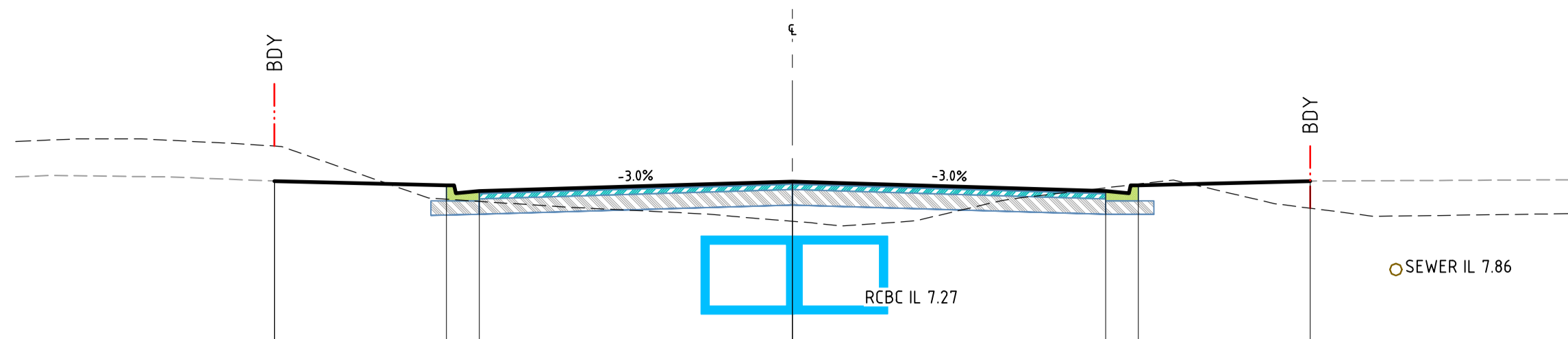
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1668 Fax (02) 4367 6656
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

DRAWING TITLE
**INTERIM WORKS
LONG SECTIONS
SHEET 1**

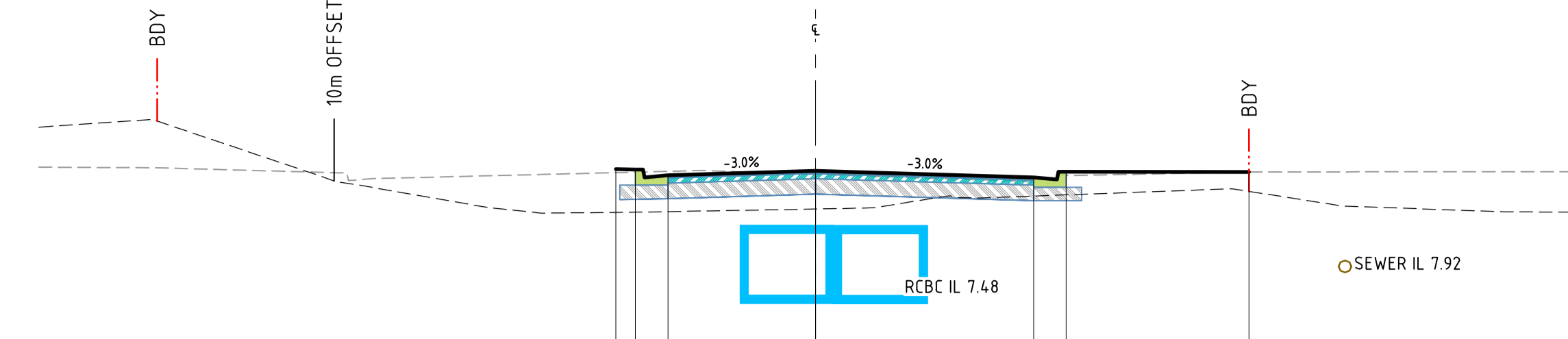
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DRAWING NUMBER C40.09	REVISION A
DRAWING SHEET SIZE = A1	

DRAWN: KATHLEEN TURTON DESIGNED: ROBERT SUCKLING JOB MANAGER: DANIEL HOLLAND VERIFIER:



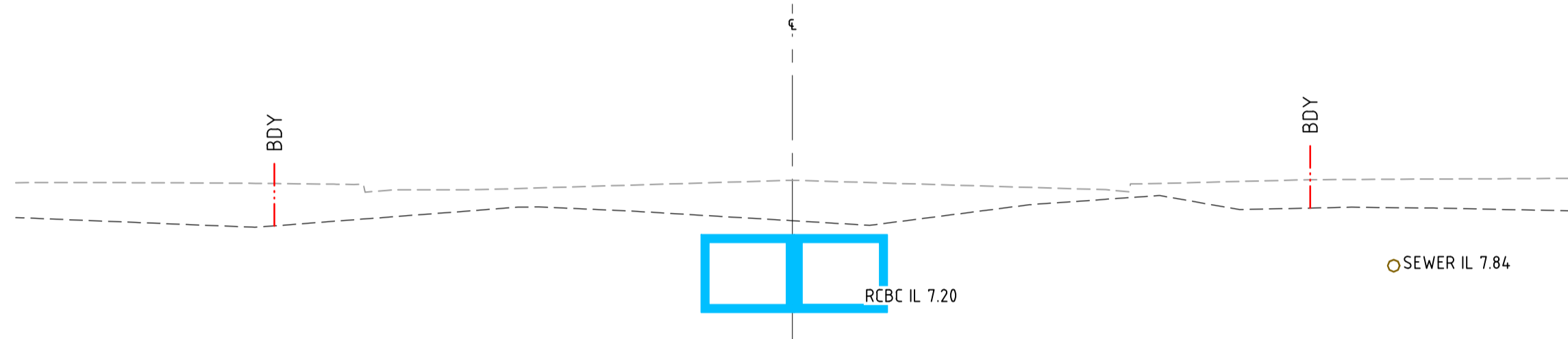
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PROPOSED LEVELS		9.685	9.685	9.602	9.492	9.673	
EXISTING LEVELS		10.361	10.361	9.334	9.293	8.909	
LEVEL DIFFERENCE		-0.676	-0.676	0.267	0.199	0.765	
OFFSETS		-10.003	-10.000	-6.680	-6.046	0.000	9.997

CH: 16.108



Datum: 5.000							
PROPOSED LEVELS		9.916	9.907	9.756	9.866	9.862	
EXISTING LEVELS		9.081	9.084	9.396	9.419	9.487	
LEVEL DIFFERENCE		0.835	0.822	0.360	0.447	0.376	
OFFSETS		-3.857	-3.480	4.211	4.841	8.371	

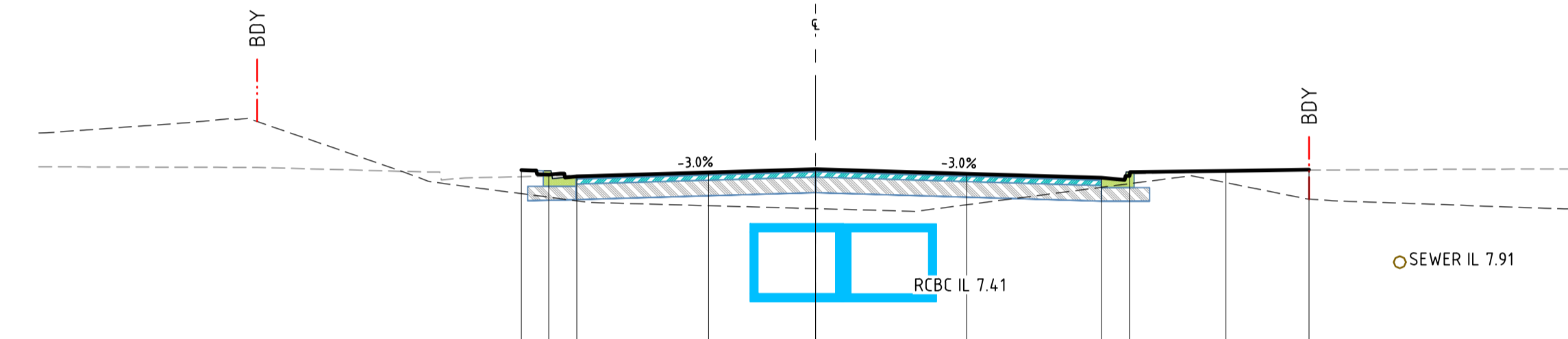
CH: 33.712



Datum: 5.000							
PROPOSED LEVELS							
EXISTING LEVELS							
LEVEL DIFFERENCE							
OFFSETS							

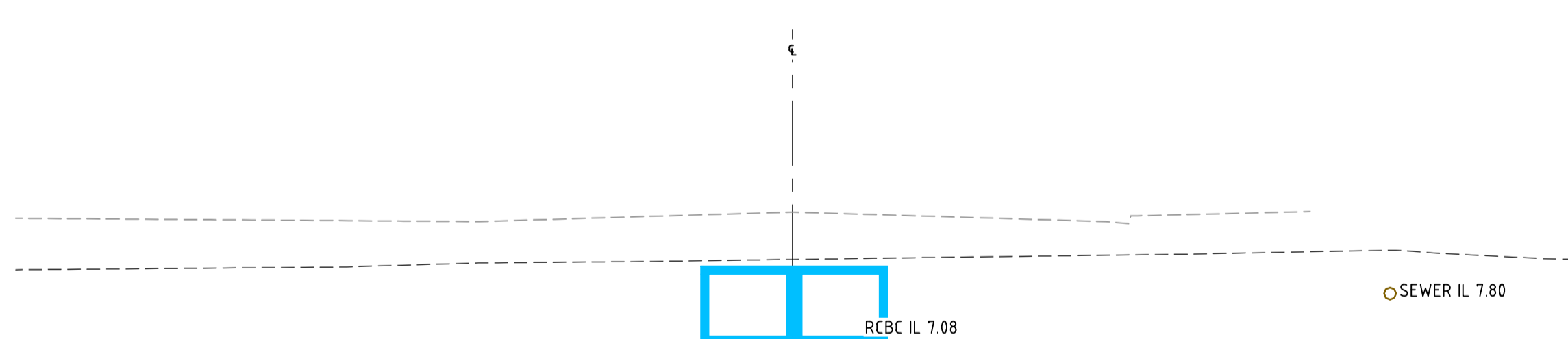
REFER TO DONALDSON STREET CROSS SECTIONS

CH: 10.000



Datum: 5.000							
PROPOSED LEVELS		9.795	9.710	9.675	9.751	9.813	9.726
EXISTING LEVELS		9.342	9.773	9.203	9.109	9.052	9.127
LEVEL DIFFERENCE		0.454	0.436	0.471	0.641	0.760	0.599
OFFSETS		-5.679	-5.152	-4.611	-2.066	0.000	2.915

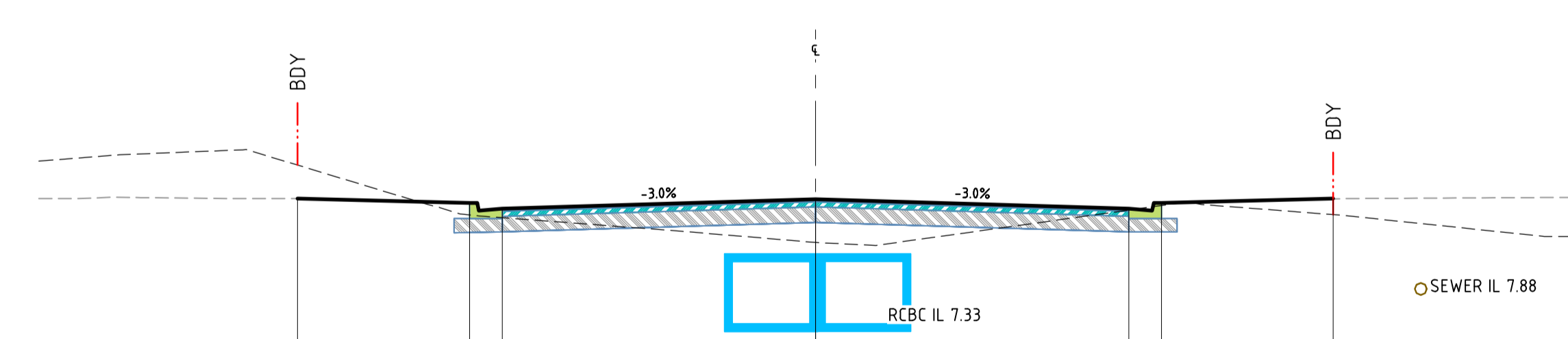
CH: 27.852



Datum: 5.000							
PROPOSED LEVELS							
EXISTING LEVELS							
LEVEL DIFFERENCE							
OFFSETS							

REFER TO DONALDSON STREET CROSS SECTIONS

CH: 0.000



Datum: 5.000							
PROPOSED LEVELS		9.742	9.658	9.548	9.730	9.548	9.658
EXISTING LEVELS		10.388	9.426	9.374	8.894	9.520	9.608
LEVEL DIFFERENCE		-0.647	0.232	0.175	0.836	0.028	0.050
OFFSETS		-10.003	-6.680	-6.050	0.000	6.050	6.680

CH: 20.832

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			20.03.23
2	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

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VERT 1:100@A1
HORIZ 1:100@A1

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Ph (02) 4365 1688 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

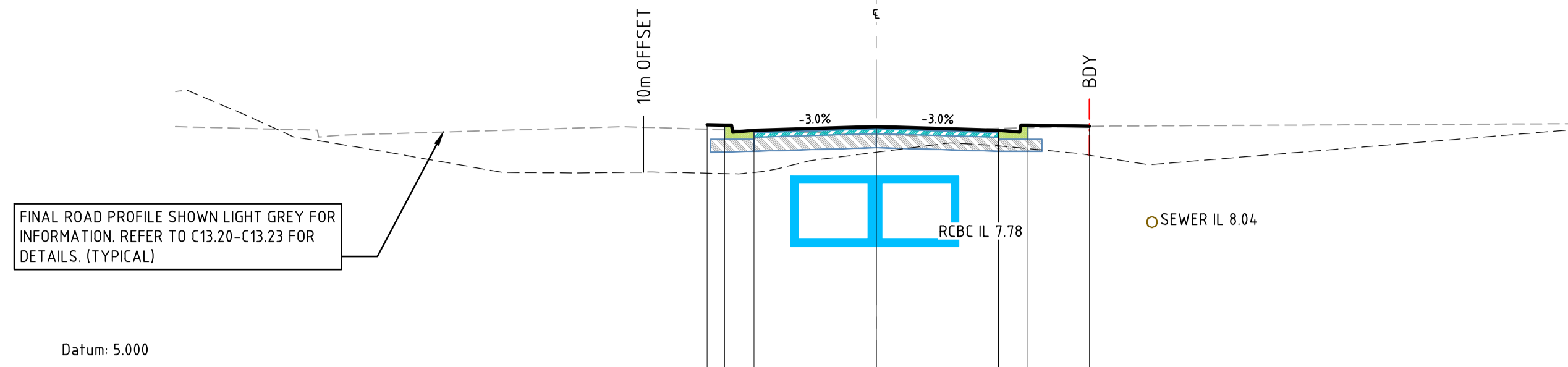
PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

DRAWING TITLE
**INTERIM WORKS
CROSS SECTIONS
DONALDSON STREET - SHEET 1**

JOB NUMBER	
NL180808	
DRAWING NUMBER	REVISION
C40.10	A

DRAWING SHEET SIZE = A1

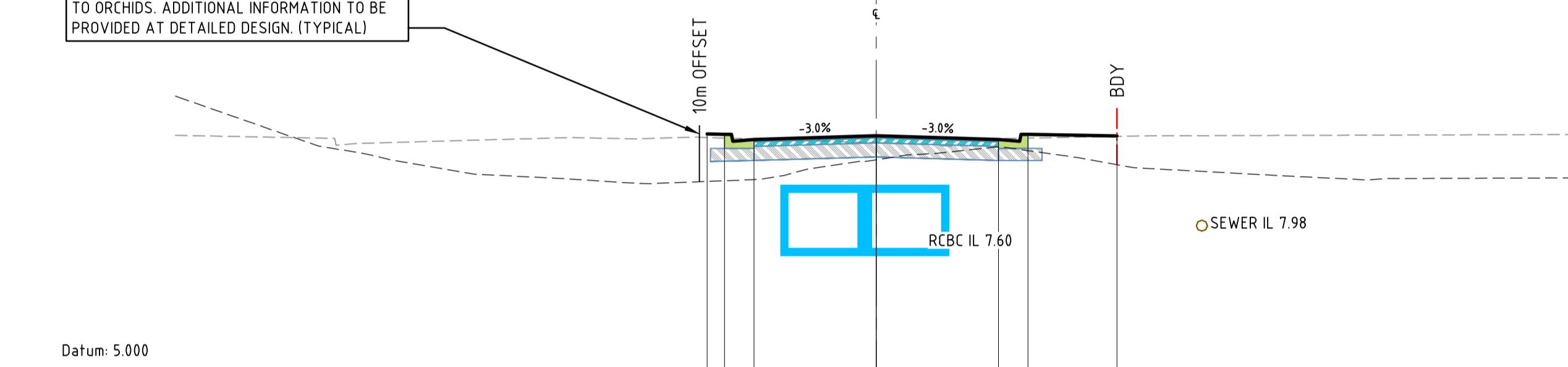
FINAL ROAD PROFILE SHOWN LIGHT GREY FOR INFORMATION. REFER TO C13.20-C13.23 FOR DETAILS. (TYPICAL)



PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.234	9.196	1.038	-3.618
10.225	9.188	1.037	-3.248
10.115	9.212	0.902	-2.618
10.193	9.645	0.549	0.000
10.115	9.782	0.332	2.618
10.225	9.722	0.502	3.248
10.205	9.581	0.624	4.565

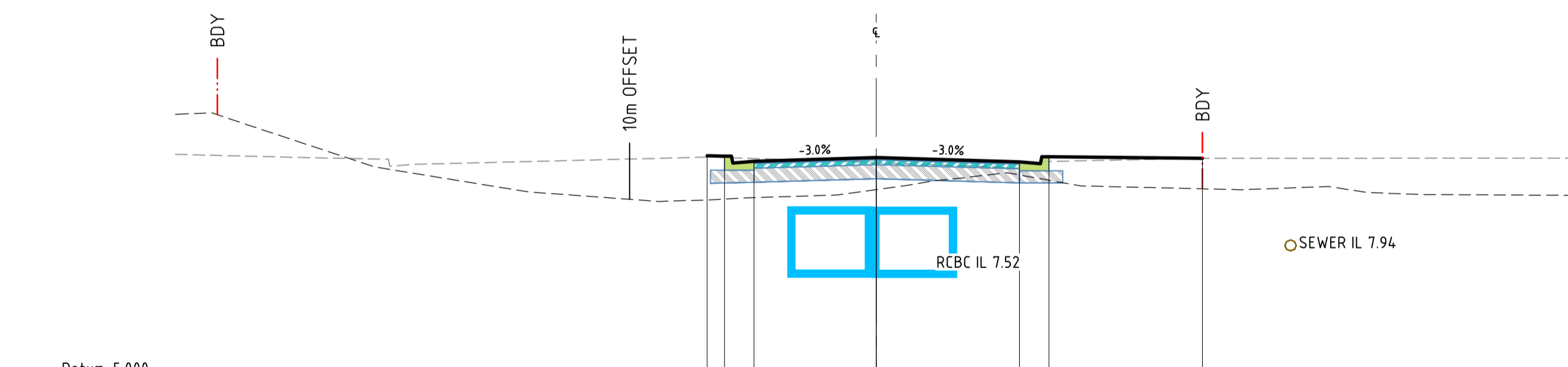
CH: 60.000

PROPOSED RETAINING WALL TO BE INSTALLED ALONG EDGE OF ROAD TO MAINTAIN CLEARANCE TO ORCHIDS. ADDITIONAL INFORMATION TO BE PROVIDED AT DETAILED DESIGN. (TYPICAL)



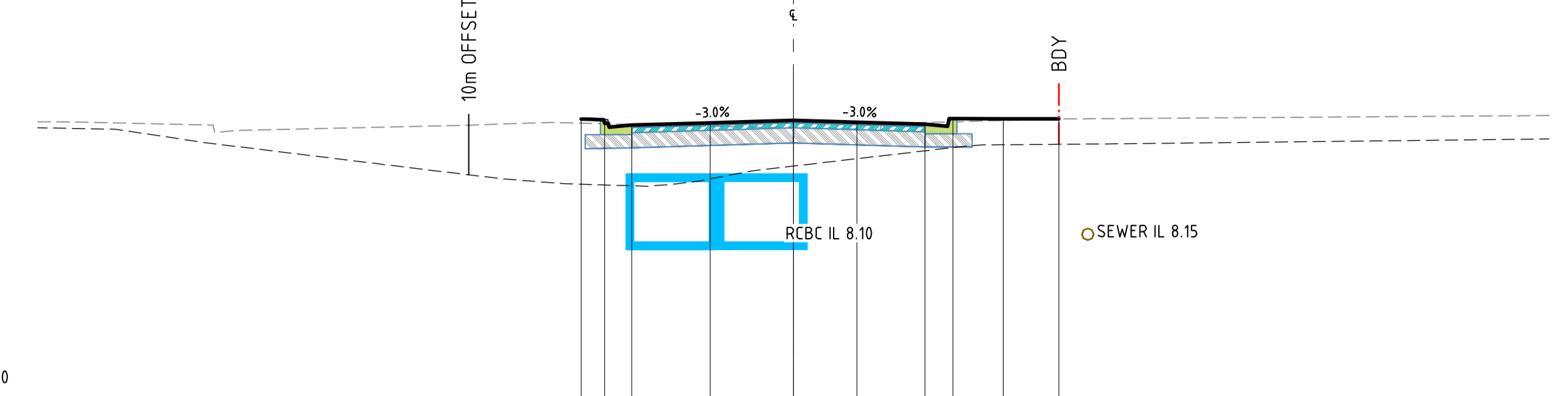
PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.048	9.032	1.016	-3.618
10.039	9.046	0.993	-3.248
9.929	9.072	0.857	-2.618
10.008	9.494	0.513	0.000
9.929	9.771	0.158	2.618
10.039	9.691	0.348	3.248
10.007	9.390	0.616	5.153

CH: 44.309



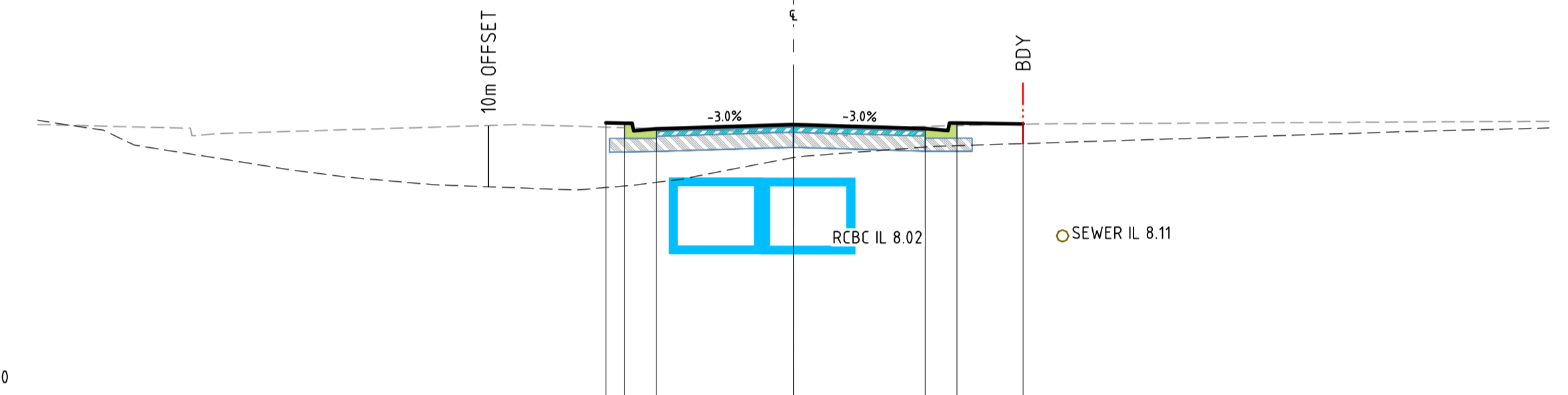
PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
9.972	9.027	0.945	-3.618
9.963	9.046	0.917	-3.248
9.853	9.077	0.776	-2.618
9.931	9.247	0.684	0.000
9.840	9.561	0.279	3.064
9.950	9.448	0.501	3.694
9.915	9.264	0.651	6.983

CH: 37.874



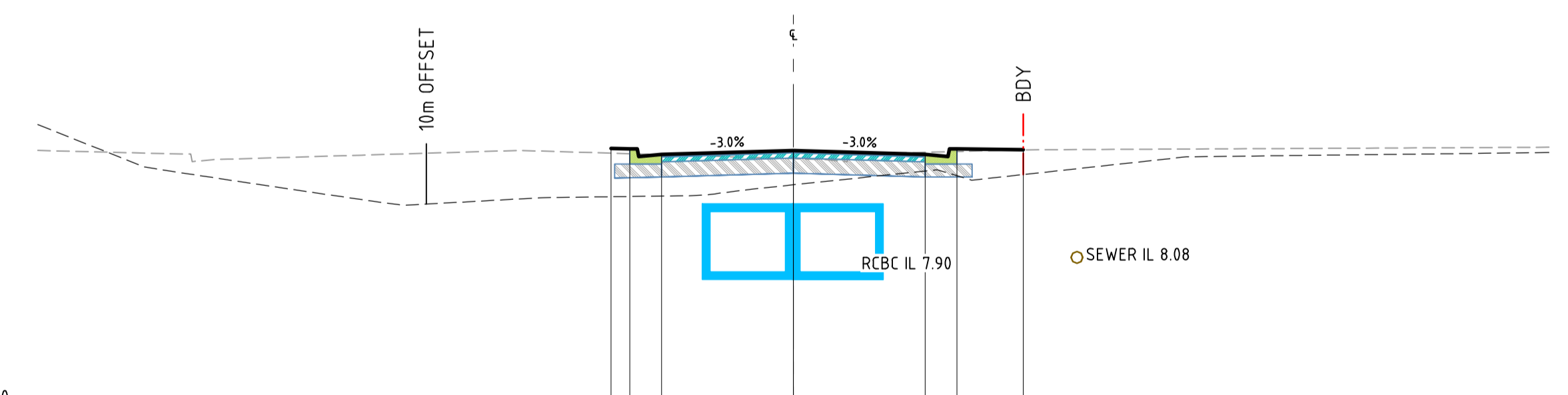
PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.542	9.251	1.291	-4.210
10.457	9.236	1.221	-3.748
10.422	9.219	1.204	-3.208
10.469	9.357	1.112	-1.649
10.518	9.610	0.908	0.000
10.481	9.756	0.724	1.262
10.440	9.919	0.527	2.612
10.550	9.977	0.572	3.167
10.548	10.033	0.515	4.168
10.546	10.042	0.504	5.271

CH: 87.507



PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.472	9.186	1.286	-3.722
10.463	9.217	1.245	-3.349
10.353	9.289	1.063	-2.719
10.434	9.779	0.655	0.000
10.356	9.989	0.366	2.618
10.466	10.018	0.448	3.248
10.450	10.058	0.392	4.560

CH: 80.394



PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.352	9.393	0.959	-3.618
10.343	9.398	0.945	-3.248
10.233	9.406	0.827	-2.618
10.311	9.630	0.681	0.000
10.233	9.904	0.328	2.618
10.343	9.810	0.533	3.248
10.325	9.833	0.492	4.562

CH: 70.000

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	PRELIMINARY	KT			20.03.23
2	PRELIMINARY	KT			14.04.23
A	DEVELOPMENT APPLICATION	KT		RS	2.05.23

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Central Coast
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Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT
**PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG**

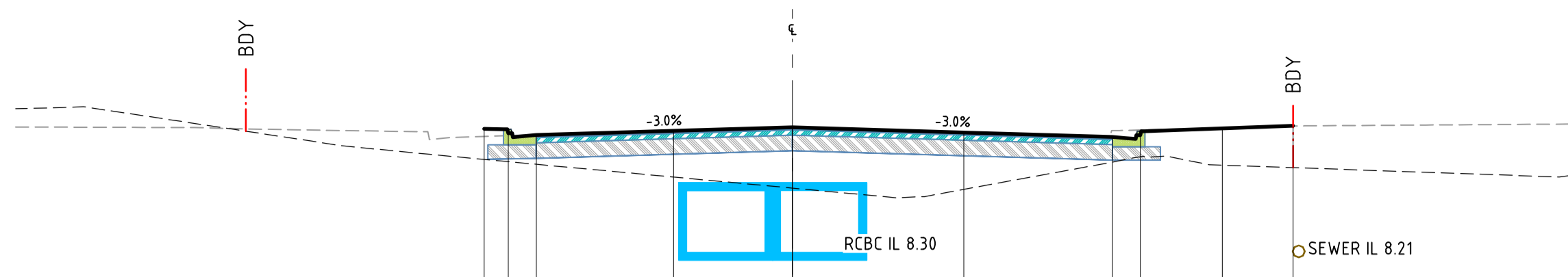
DRAWING TITLE
**INTERIM WORKS
CROSS SECTIONS
DONALDSON STREET - SHEET 2**

JOB NUMBER
NL180808

DRAWING NUMBER C40.11	REVISION A
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DRAWING SHEET SIZE = A1

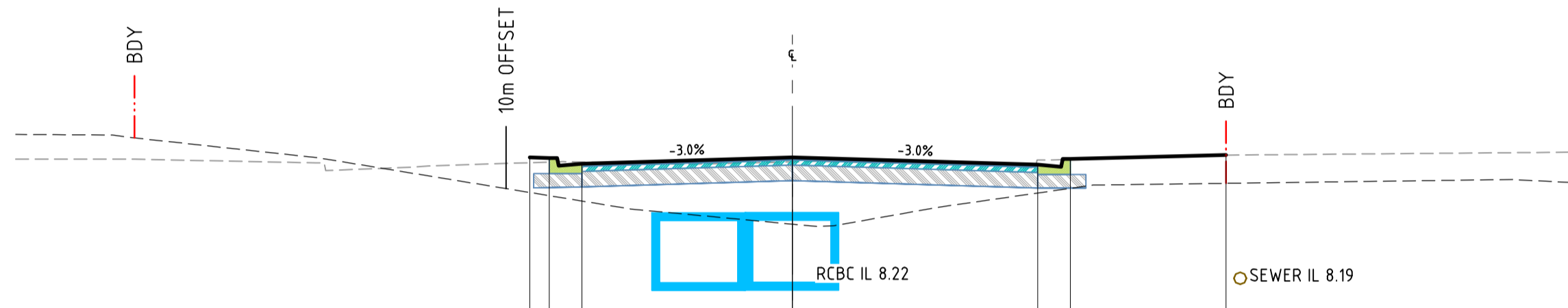
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Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.690	10.099	0.591	-5.953
10.605	10.055	0.550	-5.486
10.570	10.005	0.566	-4.946
10.650	9.758	0.892	-2.296
10.719	9.544	1.175	0.000
10.619	9.519	1.100	3.310
10.534	10.048	0.486	6.179
10.569	10.148	0.421	6.719
10.698	9.988	0.710	8.300
10.749	9.940	0.809	9.667

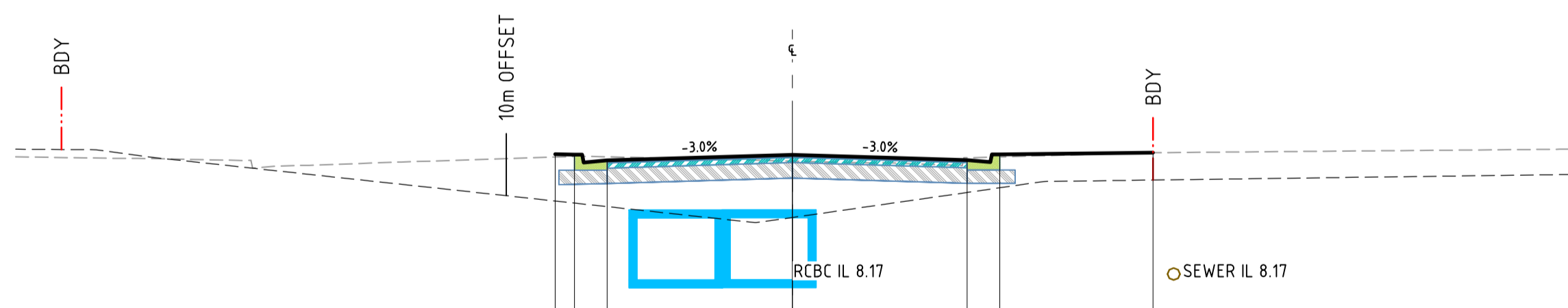
CH: 104.464



Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.634	9.958	0.676	-5.070
10.625	9.896	0.729	-4.694
10.515	9.793	0.722	-4.064
10.636	9.545	1.291	0.000
10.494	9.948	0.547	4.739
10.604	10.038	0.566	5.369
10.682	10.195	0.547	8.376

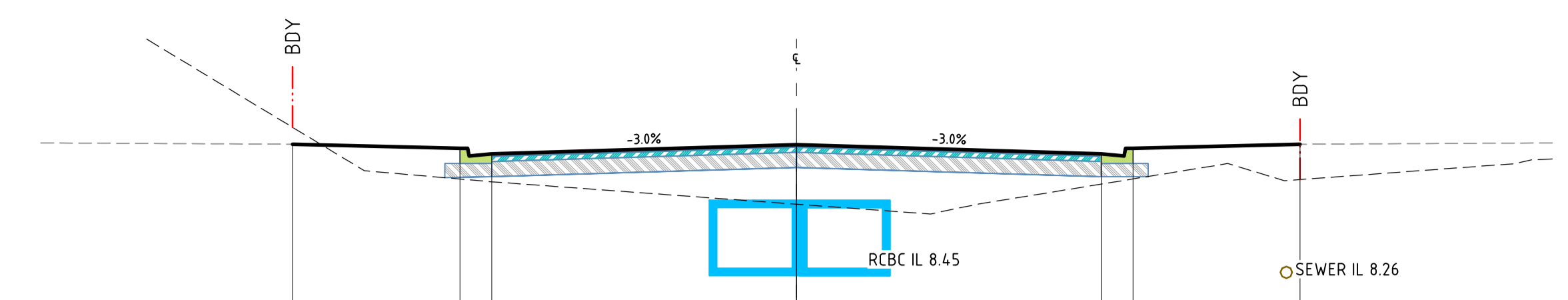
CH: 97.497



Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.598	9.694	0.904	-4.581
10.589	9.654	0.935	-4.209
10.479	9.585	0.894	-3.579
10.586	9.375	1.211	0.000
10.485	9.858	0.627	3.373
10.595	9.949	0.647	4.003
10.629	10.099	0.530	6.966

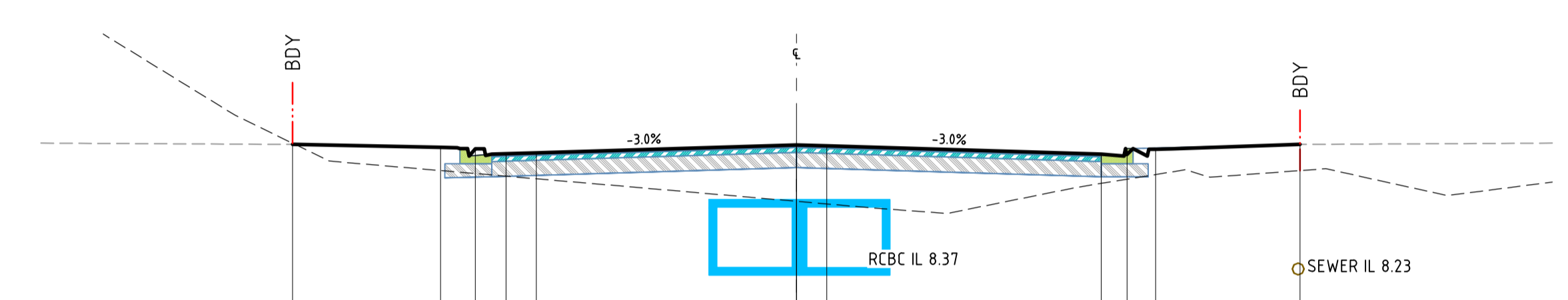
CH: 93.264



Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.916	11.251	-0.335	-10.004
10.833	10.225	0.608	-6.680
10.723	10.170	0.553	-6.050
10.904	9.726	1.179	0.000
10.723	10.124	0.598	6.050
10.833	10.227	0.606	6.680
10.916	10.215	0.700	9.995

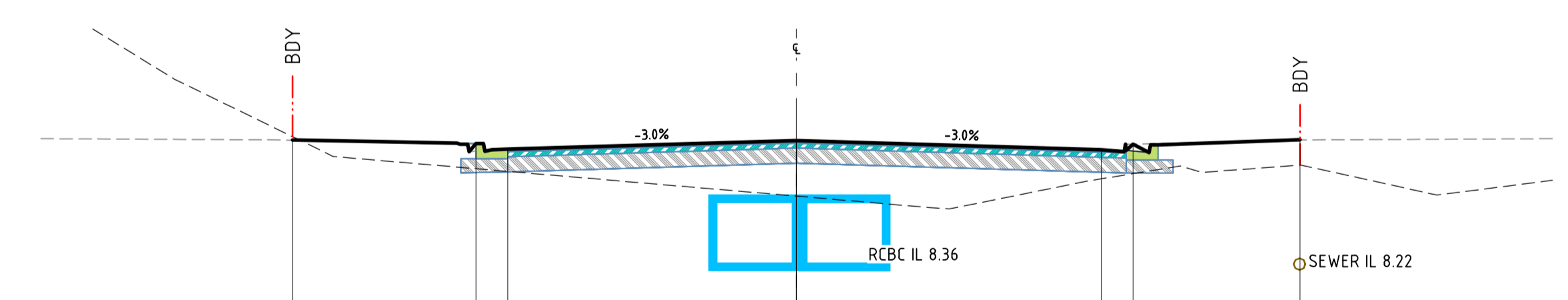
CH: 120.000



Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.812	10.836	-0.024	-10.004
10.754	10.292	0.461	-7.065
10.722	10.234	0.488	-6.318
10.627	10.181	0.446	-5.765
10.645	10.190	0.515	-5.165
10.800	9.683	1.117	0.000
10.782	9.651	1.151	0.600
10.618	10.039	0.580	6.050
10.616	10.121	0.495	6.559
10.715	10.213	0.502	7.126
10.814	10.292	0.521	9.996

CH: 111.314



Datum: 5.000

PROPOSED LEVELS	EXISTING LEVELS	LEVEL DIFFERENCE	OFFSETS
10.800	10.866	-0.066	-10.004
10.726	10.230	0.496	-6.364
10.616	10.177	0.440	-5.734
10.789	9.687	1.102	0.000
10.607	10.029	0.578	6.050
10.717	10.131	0.586	6.680
10.802	10.301	0.502	9.996

CH: 110.357

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Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT

PROPOSED SUBDIVISION
LOT 1212 DP 818944
460 PACIFIC HIGHWAY, WYONG

DRAWING TITLE

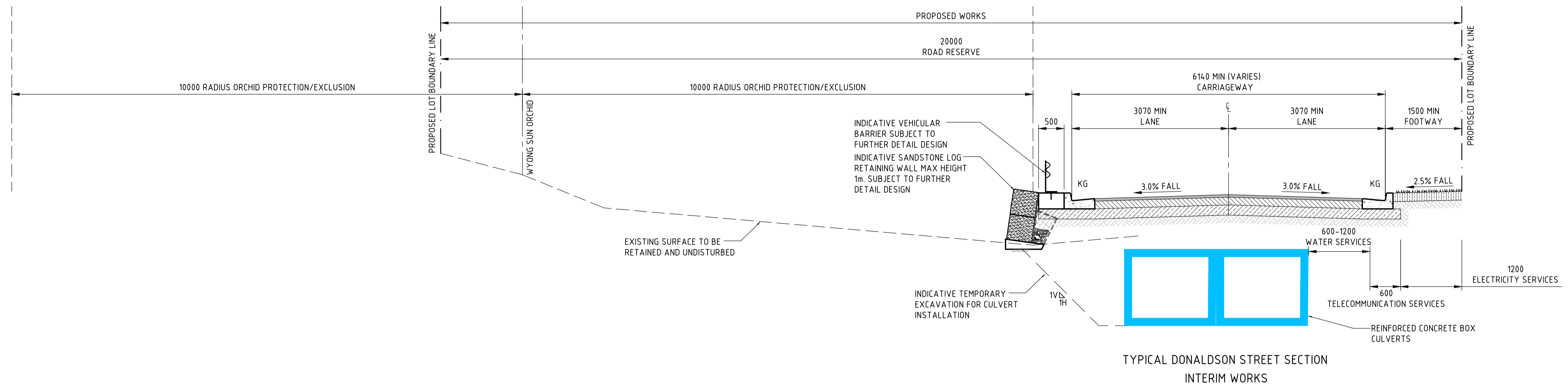
INTERIM WORKS
CROSS SECTIONS
DONALDSON STREET - SHEET 3

JOB NUMBER

NL180808

DRAWING NUMBER	REVISION
C40.12	A

DRAWING SHEET SIZE = A1



TYPICAL DONALDSON STREET SECTION
INTERIM WORKS

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A	DEVELOPMENT APPLICATION	KT		RS	2.05.23		<p>Central Coast Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250 Ph (02) 4365 1688 Fax (02) 4367 6555 Email centralcoast@northrop.com.au ABN 81 094 433 100</p>	<p>PROPOSED SUBDIVISION LOT 1212 DP 818944 460 PACIFIC HIGHWAY, WYONG</p>	<p>INTERIM WORKS SITE SECTIONS - SHEET 1</p>	<p>NL180808</p>
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Environmental Management Plan



red eye
constructions & interiors

Red Eye Constructions Pty Ltd as Trustee for the Red Eye Constructions Trust
ABN 25 217 473 025
Builder Licence No – 190282C

www.redeyeconstructions.com.au

THIS DOCUMENT MUST BE AVAILABLE ON THE WORKSITE

[PROJECT / FACILITY NAME]

ENVIRONMENTAL MANAGEMENT PLAN

PROJECT NO. [XXX]


Environmental Management Plan				
Document Number: 01-HSE-07-0265				
4	03/05/2023	Updates due to implementation of Procure and general improvement	Liam Beeton	L.Beeton
3	02.05.22	Updated to align to principles of ISO 14001 & requirements of current legislation	Liam Beeton	L.Beeton
2	19.04.17	Updated for Waste sorting and tracking	Alan fuller	
1	7/03/16	Updated for Online HSE Reporting		
0	22/12/15	Issued for Approval		
REVISION	DATE	DESCRIPTION	PREPARED	APPROVED

TABLE OF CONTENTS

1.	INTRODUCTION.....	4
1.1	Overview.....	4
1.2	Scope.....	4
1.3	Purpose.....	5
1.4	Definitions and Interpretations.....	5
2.	REFERENCE DOCUMENTS.....	7
2.1	Legislation.....	7
2.2	Specifications.....	8
2.3	Company Documents.....	8
2.4	Plans.....	8
3.	CONSTRUCTION SCOPE OF WORK.....	8
4.	CLIENT OR CONTRACTUAL SPECIFIC REQUIREMENTS.....	9
5.	POLICY.....	9
6.	ENVIRONMENTAL MANAGEMENT PLAN.....	9
6.1	Context.....	9
6.2	Leadership and Commitment.....	10
6.3	Performance Objectives.....	11
7.	ISSUE, REVISION AND REVIEW – DOCUMENT AND DATA CONTROL.....	12
8.	STRUCTURE AND RESPONSIBILITY.....	13
8.1	Project Organisation Structure.....	13
8.2	Director(s).....	13
8.3	Site Supervisor and Project Manager.....	14
8.4	Health, Safety & Environment (HSE) Manager (Or person(s) fulfilling this role).....	14
8.5	Workers.....	15
8.6	Visitors.....	15
9.	NEEDS AND EXPECTATIONS.....	15
10.	ENVIRONMENTAL ASPECTS & IMPACTS.....	16
10.1	Environmental Aspects.....	16
11.	LEGAL REQUIREMENTS – PERMITS, APPROVALS & COMPLIANCE OBLIGATIONS.....	17
12.	SUPPORT.....	18
12.1	Competence, Awareness and Training.....	18
12.2	Communication.....	19

12.3	Internal Communication.....	19
12.4	External Communication	19
12.5	Training Competencies & Licenses	20
13.	ENVIRONMENTAL RISK MANAGEMENT	21
13.1	Hazard Identification	21
13.2	Hierarchy of Control	21
13.3	Environmentally Safe Systems of Work.....	22
13.4	Operational Planning and Control.....	22
13.5	Outsourced Processes	22
13.6	Monitor & Review	23
14.	WORK AND WORK ENVIRONMENT	26
14.1	Emergency Preparedness and Response.....	26
14.2	Stormwater & Erosion Control.....	27
14.3	Air Quality	29
14.4	Noise Control	29
14.5	Waste Management.....	30
14.6	Hazardous Substances	31
15.	COMMUNICATION & CONSULTATION.....	32
16.	INCIDENT MANAGEMENT, REPORTING & INVESTIGATION	33
17.	NON-CONFORMANCE, CORRECTIVE ACTIONS & CONTINUAL IMPROVEMENT	33
18.	ENVIRONMENTAL REPORTING	34
18.1	Performance Measurement – Lead Indicators.....	34
18.2	Performance Measurement – Lag Indicators.....	34
18.3	System Audits & Management Review.....	34

1. INTRODUCTION

1.1 Overview

This document describes how the Environment relating to the construction of **[Enter Project / Facility Name]** intends to be managed. Details of the management along with each specific management activities are described with consideration to achieving the objectives for Work Health & Safety, Quality, and Environment.

Red Eye Constructions is committed to a workplace free from Environmental incidents and has a proactive approach to the environment utilising a robust Environmental Management System.

The Company's Environmental Management System (EMS) has been developed to meet obligations set down in Environmental legislation and has also been developed in accordance with principles of: **ISO 14001/2015 "Environmental Management Systems"**.

Implementation and ongoing application of the EMS ensures environmental risks are identified and controlled by applying environmentally safe systems of work across all **Red Eye Constructions** activities.

This enables **Red Eye Constructions** to deliver on the principals requirements as evidenced by the implementation and participation in management reviews and the long-term relationship with principals providing return work.

1.2 Scope

This plan applies to all **Red Eye Constructions** workers, and any other persons working for, or on behalf of **Red Eye Constructions** and its associated operations. Consistent with **Red Eye Constructions** Environmental Policy, the intended outcomes of this EMP include:

- Enhancement of environmental performance in the Workplace.
- Fulfilment of the Workplace compliance obligations.
- Achievement of the Workplace's environmental objectives.

This EMP enables **Red Eye Constructions** to manage its environmental responsibilities in a systematic manner and contribute to the environmental pillar of sustainability. This EMP is applicable to all **Red Eye Constructions** and applies to the environmental aspects of the company's activities, products, and services that **Red Eye Constructions** determines it can either control or influence considering a life cycle perspective. Review of **Red Eye Constructions** EMP, policies and management plans shall occur on a yearly basis, however a review may be completed earlier if required due to change in legislation or after a near miss or incident has occurred, as part of the company continuous improvement commitments. Where revision is necessary, the HSE Manager (or person(s) fulfilling the role), shall revise this **Environmental Management Plan** and approve all changes prior to issue.

This plan applies to all activities relating to **Red Eye Constructions** which involves – General Construction, Fit-Outs, & Renovations. This Plan has been developed for the construction of **[Enter Project / Facility Name]**, namely:

- Construction Scope of Works
- Construction Schedule
- Quality Management
- **Work Health and Safety** Management

- Environmental Management
- Human Resources & Industrial Relations
- Site Establishment
- Communication & Reporting

This document sets out the Environmental Management strategy to be adopted by **Red Eye Constructions**. This document is not designed to replace the obligations placed upon **Red Eye Constructions** by environmental legislation but will be used to provide verification of the actions of **Red Eye Constructions** in relation to these requirements. This document and subsequent additions/revisions will be made available to the workforce and relevant stakeholders.

1.3 Purpose

Red Eye Constructions applies and improves its Environment Management Plan (EMP) to consistently satisfy customer needs, meet regulatory requirements, as well as to improve the management and environmental performance of the company. This plan provides an overview of the documented processes, procedures, supporting documentation and resources required to fully implement an Environment Management System to meet the requirements of the client, regulatory bodies, ISO 14001 and maintain a proactive, planned, and driven approach to Workplace Health and Safety, Quality, and the Environment. The purpose of this plan is to define in broad perspective, the EMP for this workplace, define the responsibilities of personnel, and establish procedures for activities comprising the Environment Management System. The focus being continual improvement and consistently meeting or exceeding our clients' requirements and legislative compliance.

This plan defines the "Approach" to the works to ensure:

- Compliance with applicable environmental legislative standards and the project specific documentation;
- Alignment with core elements of ISO 14001/2015;
- The requirements of **Principal** are fully understood and satisfied;
- That construction practices are implemented to ensure the environmental safety of both construction and operation personnel;
- Continual improvement of construction practices are achieved through objective assessments of performance and effectiveness;
- Ensure an environmentally workplace by systematically identifying and documenting hazards, assessing, and controlling these risks in order to minimise construction related incidents.

1.4 Definitions and Interpretations

The following definitions and interpretations are applicable to this Plan:

Term	Meaning
ITP	Inspection & Test Plan
Red Eye Constructions	Red Eye Constructions Pty Ltd as Trustee for the Red Eye Constructions Trust
SWMS	Safe Work Method Statement

Term	Meaning
EMS	Environment Management System
Personnel	<i>Red Eye Constructions</i> Workers, contractors, visitors, or customer.
Worker	A permanent or fixed term worker is a person who is employed by Red Eye Constructions in a permanent or fixed term basis and conducts work on a Red Eye Constructions site or premises.
Contractor	<p>A contractor is a person who is employed by an organisation that contracts their services to Red Eye Constructions.</p> <p>They are on site to conduct activities of a medium to high risk nature, where loss or damage to personnel is known to have occurred (e.g. maintenance contractors, minor renovations) or commonly occurs (e.g. welding, electrical). There may be specific risks associated with this type of contractor requiring specific controls.</p> <p>Personnel that would be classified as contractors are those who are involved in:</p> <ul style="list-style-type: none"> ▪ Major contracts for long period on site ▪ Medium contracts for a short period of time ▪ Minor contracts for short periods of time ▪ Labour hire contracts which involves labour hire with management organising and managing the work task ▪ Restricted site work where access to site is brief and restricted.

Term	Meaning
Visitor	<p>A visitor is a short stay person that is allowed access to identified areas only and must be under Direct Supervision at all times by a fully inducted person (either worker or contractor). They do not perform work or give directions as identified by the site Training, Competency guidelines.</p> <p>They are on site to conduct activities of a sedentary and low risk nature and where loss or damage to personnel is highly unlikely to occur.</p> <p>Managers are responsible for the activity being undertaken and shall determine if the person/s is to be classified as a visitor. Personnel that would be classified as visitors include those entering an Red Eye Constructions premise or site:</p> <ul style="list-style-type: none"> ▪ for meetings ▪ to inspect a task for the purpose of tendering. ▪ from enforcement agencies for the purpose of inspection of work or site area. ▪ for a tour of the operations for educational purposes. ▪ for the purposes of supplying technical advice / conducting audits. ▪ For office related work (E.g. office contractor, photocopy repairer) ▪ For the purposes of deliveries & pickup

2. REFERENCE DOCUMENTS

This *Environment Management Plan* is based on the following documents:

2.1 Legislation

Relevant Legislation	Tick if applicable
Environment Protection and Biodiversity Conservation Act 1999	<input checked="" type="checkbox"/>
Protection of the Environment Operations Act 1997	<input checked="" type="checkbox"/>
Protection of the Environment Operations (Waste) Regulation 2014	<input checked="" type="checkbox"/>
Biosecurity Regulation 2017	<input checked="" type="checkbox"/>
Soil Conservation Act 1938	<input checked="" type="checkbox"/>
Water Management Act 2000	<input checked="" type="checkbox"/>
Biodiversity Conservation Act 2016	<input checked="" type="checkbox"/>
National Parks and Wildlife Act 1974	<input checked="" type="checkbox"/>
Heritage Act 1977	<input checked="" type="checkbox"/>
Contaminated Land Management Act 1997	<input checked="" type="checkbox"/>
Protection of the Environment Operations (General) Regulation 2021	<input checked="" type="checkbox"/>

Environmentally Hazardous Chemicals Act 1985	<input checked="" type="checkbox"/>
Dangerous Goods (Road and Rail Transport) Act 2008	<input checked="" type="checkbox"/>
Local Government Act 1993	<input checked="" type="checkbox"/>
Local Government (General) Regulation 2021	<input checked="" type="checkbox"/>
Pesticides Act 1999	<input checked="" type="checkbox"/>
Protection of the Environment Operations (Noise Control) Regulation 2017	<input checked="" type="checkbox"/>
Environmental Planning and Assessment Act 1979	<input type="checkbox"/>
Environmental Planning and Assessment Regulation 2021	<input type="checkbox"/>
Ozone Protection Act 1989	<input type="checkbox"/>

2.2 Specifications

- [Enter Contract Details, e.g. AS2124-1992 Contract No. 13-37]

2.3 Company Documents

- Policies.
- Induction Procedure.
- Safe Work Method Statement (SWMS) Procedure.
- Incident Management Procedure.

2.4 Plans

- WHS Management Plan.
- Environmental Management Plan.
- Waste Management Plan.
- Emergency Response Management Plan.
- Traffic Management Control Plan (Where required).
- Asbestos Management Plan (Where required).

3. CONSTRUCTION SCOPE OF WORK

The site is located at [Enter Site Address]

The Scope of Work involves the design & construction of [Enter Details].

The works consist of the following sub trades and will employ a peak workforce of approximately [X] workers.

Subcontracted works: **Red Eye Constructions** has been engaged as the Principal Contractor, **Red Eye Constructions** will subcontract the following trades to undertake the works:

- Structural Steel.
- Concrete & Formwork.
- Masonry – brickwork.
- External wall cladding.

- Metal roofing.
- Internal Wall and Ceiling Lining.
- Joinery Services.
- Electrical Services.
- Windows and Doors, including Sunscreens / Balustrades.
- Hydraulic Services, including sewer encasement.
- Communications.
- Floor Finishes.
- Tiling - Floor & Wall.
- Painting.
- INSERT MORE AS APPLICABLE

Red Eye Constructions as the principal contractor intends to subcontract all or part of the works identified in the above sub trade list. Specific details on the proposed construction methodology for each of the activities are provided in **Safe Work procedures (SWP's)** and **Safe Work Method Statements (SWMS)**.

4. CLIENT OR CONTRACTUAL SPECIFIC REQUIREMENTS

Client specific requirements are included in the contractual documents. Where client specific requirements vary from this plan, the plan is to be updated to reflect the specific requirements. This plan will refer to **Red Eye Constructions** documents and where generally required to using client documents, 'or equivalent' is stated to cover the use of client versions where they are indeed equivalent or of a higher standard.

5. POLICY

Red Eye Constructions senior management have endorsed and approve the **Red Eye Constructions** Environment Policy. The company will operate in accordance with the **Red Eye Constructions** Environment Policy. It provides a framework for setting objectives and an overview of the company's system which is aligned to current legislation and developed in accordance with the ISO 14001 standard. The Environmental Policy outlines **Red Eye Constructions** commitment to the protection of the environment, maximising recycling, preventing pollution and identification of potential environmental risks and their adverse environmental impacts because of the works conducted by the company, and other specific commitments relevant to the context of **Red Eye Constructions**. The Environment Policy is maintained as documented information, communicated within the company, and is available to all interested parties. A current copy of the Environment Policy is always available in hard copy at the main office and site office.

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1 Context

The environmental management is to be governed by this **Environment Management Plan** which shall comply to the **Red Eye Constructions** company **Policy** outlined in **Section 5. Red Eye Constructions** have determined external and internal issues that are relevant to the company's purpose and that affect

its ability to achieve the intended outcomes of the EMP, including protection of the environment compliance to all applicable legislation and alignment to the ISO 14001 principles. An overview of the specific external and internal issues that are relevant is provided below.

- environmental aspects related to climate, air quality (dust, release of hazardous fibres/particles and emissions from plant), noise and vibration, water quality and usage (includes both surface and groundwater), land use and the potential associated impacts such as soil erosion, and pollution, existing contamination on site, natural resource availability, waste management, use of energy, cultural heritage, flora/fauna, and biodiversity.
- external cultural, social, political, legal, regulatory, financial, technological, economic, natural, and competitive circumstances.

Red Eye Constructions provide services to a wide range of industries, working either as a Subcontractor or Principal Contractor directly in NSW.

Internal Stakeholders

- **Red Eye Constructions** Management.
- Workers and Subcontractors.

External Stakeholders

- Regulators and Governmental agencies (NSW RMS, SafeWork NSW, NSW EPA etc.).
- Customers.
- Community adjacent to, and effected by, **Red Eye Constructions** activities.
- End users.
- Suppliers and subcontractors

Environmental legislation and regulation are changing constantly. It is essential that **Red Eye Constructions** keep abreast of relevant federal, state, and local government requirements to ensure that its control strategies can achieve the necessary level of legal compliance. This includes receiving information in regard to these changes, which **Red Eye Constructions** shall receive notification of via email from Red Insight who shall receive the newsletter updates.

Legal and other requirements peculiar to the project shall be consistent with, and aligned against, those that are identified within **Red Eye Constructions** corporate EMS.

6.2 Leadership and Commitment

Red Eye Constructions management demonstrate leadership and commitment with respect to the EMS by:

- taking accountability for the effectiveness of the EMS at **Red Eye Constructions** worksites.
- ensuring that the Environment Policy and environmental objectives are established and are compatible with the strategic direction and the context of the workplace.
- ensuring the integration of EMS requirements into the **Red Eye Constructions** business processes.
- ensuring that the resources needed for the EMS are available.

- communicating the importance of effective environmental management to all project stakeholders including conforming to the EMS requirements.
- ensuring that the EMP achieves its intended outcomes through continuous improvement practices such as review of policy and procedures, monitoring of processes and analysis of objectives or targets.
- directing, educating, training, and supporting personnel to contribute to the effectiveness of the EMS.
- promoting continual improvement toward company processes and environmental awareness.
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

6.3 Performance Objectives

The objective for *Red Eye Constructions* is to:

- Provide a System of management which shall provide and maintain an environmentally safe workplace and systems of work.
- Identify and manage the risks to our worker's and encourage behaviour that reduces environmental incidents in the workplace.
- To conform to the requirements of the Plan and achieve the performance targets (Lead and Lag indicators).

Red Eye Constructions recognises that legislative compliance is the minimum performance standard we will operate under.

Category	Objective	Target
Contract Requirements	Full compliance with all environmental requirements	All necessary approval and licences obtained
		No contractual non-conformance notices
		No DECC infringement notices
		No notices from other regulatory authorities
Environmental Management	Integration of EMP with Project Management	In accordance with ISO 14001
	Continual improvement	Elimination of audit non-conformances
Prevention of Pollution	Stormwater discharges to comply with the requirements of DECC	Total suspended solids <50 mg/L, Oil and Grease <10 mg/L, pH 6.5 – 9.0, Schedule 2 Clean Water Regulations.
	Minimal impact of air quality	Vehicle and plant exhaust emissions to comply with Regulations e.g. No. visible exhaust emissions for longer than 10 seconds.
		No burning of rubbish or other material on site.

		No visible dust leaving the site and /or dust fallout levels in site dust gauges when deployed not to exceed: 5 grams/m ² /month at non-residential areas 0.26 grams/m ² /day at all areas.
	Noise & Vibration Management	All internal combustion engines have approved mufflers.
Waste Management	Implementation of a waste recycling scheme	Establish a contract with a waste collection company which includes separation of waste for recycling

Lag Indicator	
Objective	Reduce environmental impacts of <i>Red Eye Constructions</i> operations.
Target	No incidents recorded
Indicator	Number of incidents per year (includes - Class 1, 2 & 3)
Lead Indicator	
Objective	Maintain regulatory compliance and improve environmental performance within <i>Red Eye Constructions</i> .
Target	Ensure all workers and relevant stakeholders are inducted and implement <i>Red Eye Constructions</i> Environmental Management System whilst on site.
Indicator	Number of workers and other relevant stakeholders who receive HSE inductions, participate in toolbox talks and attend meetings.

7. ISSUE, REVISION AND REVIEW – DOCUMENT AND DATA CONTROL

Red Eye Constructions is responsible for the following:

- Developing the Environment Management Plan;
- Maintaining an up-to-date version of this plan. A record of revisions that occur will be kept in the Record of Revision table;
- Maintaining a register of people to whom this plan is issued using the Distribution List table;

The EMP is a 'live' and 'working' document. The manager or a delegate is to conduct regular reviews of the EMP at intervals of not less than six-monthly and ensure that the EMP is formally reviewed and updated at least annually, or earlier as change requirements dictate.

Thus, this plan is to be reviewed annually or;

- When there is a significant change in works, or
- Following incident investigation requiring change, or
- Following audit findings requiring change.

Details of the review are to be recorded in the Revisions Table, including any amendments made.

Records may be created and stored in paper or electronic form. Electronic creation and storage will be practiced wherever practical.

Red Eye Constructions EMS includes:

- documented information required by the standard.
- documented information determined by **Red Eye Constructions** as being necessary for the effectiveness of the EMS.

Documented information required by the EMS and by the Standards shall be controlled to ensure:

- it is available and suitable for use, where and when it is needed.
- it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity)

For the control of documented information, **Red Eye Constructions** shall address the following activities as applicable:

- distribution, access, retrieval, and use
- storage and preservation, including preservation of legibility.
- control of changes (e.g., version control)
- retention and disposition

Documented information of extended origin determined by **Red Eye Constructions** to be necessary for the planning and operation of the EMS shall be identified, as appropriate, and controlled.

8. STRUCTURE AND RESPONSIBILITY

8.1 Project Organisation Structure

The Project Organisation Structure shall be posted on the Site Office / Lunchroom wall.

8.2 Director(s)

The Directors responsibilities are to ensure that the environmental objectives of the company are achieved. This includes:

- Ensuring workers are trained in environmental awareness, responsibilities, instructions, and procedures.
- Ensuring incidents are investigated and corrective/preventative action is undertaken.
- Ensuring operations comply with relevant legislation.
- Reviewing operations and implementing strategies to reduce impacts from the works.
- Reviewing complaints received to determine if trends are being identified.
- Ensuring site environment performance objectives and targets are achieved.
- Communicating the importance of the EMP to workers.

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.3 Site Supervisor and Project Manager

The responsibilities are detailed in the relevant role Purpose Statements and these responsibilities are to ensure:

- All risk management processes are implemented and applied to demonstrate risk reduction;
- All work is carried out by competent and authorised persons;
- Compliance with procedures and processes;
- Effective application of the fair and just culture processes;
- Any breaches to procedures are reported.
- Identifying, controlling, and monitoring environmental hazards to reduce the risk of them occurring.
- Monitoring operations and maintenance work to ensure control methods are not damaged during the project.
- Initiating action to prevent incidents.
- Identifying, reporting, and recording incidents and/or near misses.
- Initiating corrective actions and participating in reporting to overcome incidents.

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.4 Health, Safety & Environment (HSE) Manager (Or person(s) fulfilling this role)

The HSE Manager is responsible for:

- Maintaining a leadership and governance role to ensure the principles of the EMS are implemented and adhered to;
- Maintaining, on-going development, implementing and enhancing the EMS including processes and supporting systems;
- Ensuring EMS documents are developed and maintained.
- Identifying key health and safety risks and potential liabilities and ensuring they are assessed and controlled to acceptable standards.
- Interpretation of, and providing advice on relevant Acts, Regulations and Standards;
- Providing expert risk and advice to the site management teams and other personnel at each site;
- Ensuring timely and quality monthly reporting information is provided to the Manager,

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.5 Workers

Workers are responsible for:

- Ensuring the requirements of the EMS (i.e. Policy, Manual, Plans and Procedures) are applied and relevant assessment and/or monitoring activities are identified, carried out and recorded;
- Operating plant for which you are trained, competent and authorised in the manner it was designed;
- Applying risk management processes and following safe systems of work to perform tasks;
- Reporting incidents, injuries, near misses, dangerous events, and issues of non-compliance with procedures to their supervisor;
- Comply with all directions given by the Supervisor; and
- Attending internal and/or external training as directed.
- Understanding any standards and procedures that apply to their work or operations.
- Taking action to minimise or prevent incidents from occurring by reporting damaged control methods and/or hazards as soon as possible to the site supervisor.
- Identify environmental aspects and understand their potential impacts.
- Minimise the impacts on the environment as a result of their work during the project by implementation control measures to mitigate the impacts of environmental aspects relative to **Red Eye Constructions** operations.

Note: this list of workers' responsibilities are communicated to workers during the induction process. Evidence of worker's awareness of their responsibilities are obtained via completed inductions.

8.6 Visitors

The HSEQ related Responsibilities of any person visiting the site include:

- looking after their own safety and health and the safety and health of others;
- demonstrate an acceptable level of safety performance;
- ensure that they carry out their work in compliance with relevant legislation and safe work procedures;
- ensure the work undertaken, is within your competence, qualification, and authorisation;
- report any hazard immediately using a hazard reporting procedure;
- Submit SDS for any hazardous materials used in the work prior to commencing the work;
- Report any accident or injury as soon as possible; and ensure that the work area is kept clean and tidy.

Note: this list of responsibilities are communicated during the induction process. Evidence of awareness of responsibilities are obtained via completed inductions.

9. NEEDS AND EXPECTATIONS

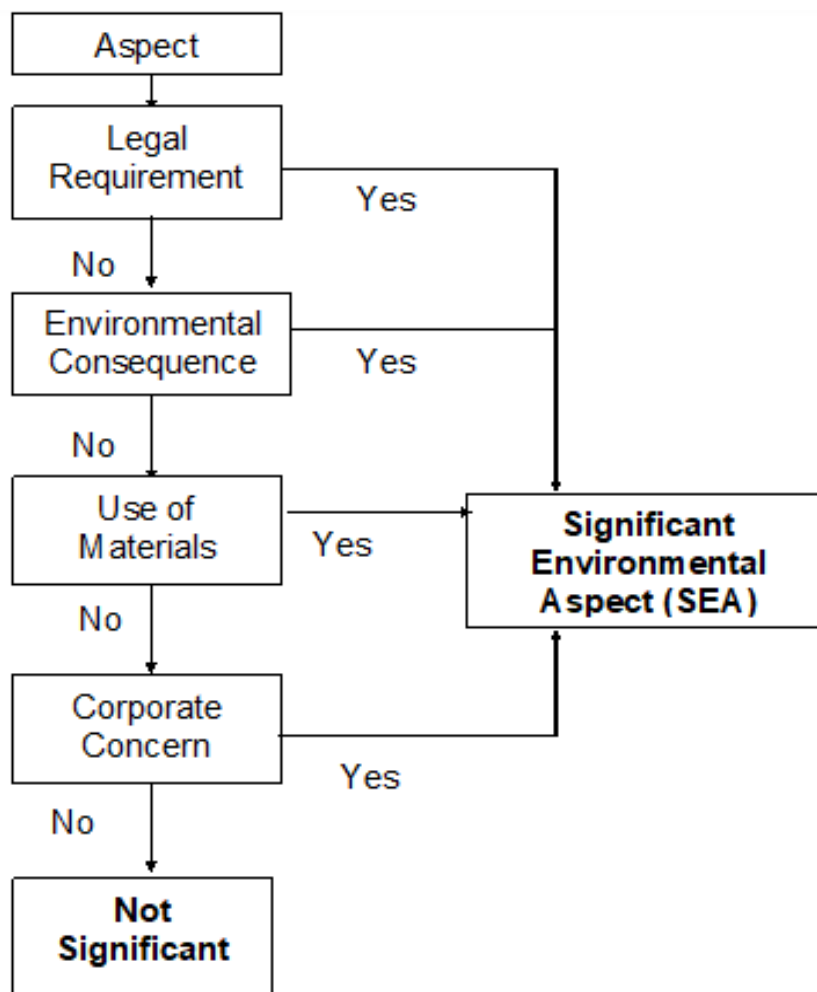
Some needs and expectations are mandatory because they have been incorporated into laws and regulations. **Red Eye Constructions** may also subscribe to voluntary initiatives or adopt the requirements of interested parties. **Red Eye Constructions** shall ensure that the needs and

expectations identified are addressed and communication to the relevant personnel when planning, establishing, and undertaking review of the Environmental Management System. The needs and expectations of relevant parties may include the need for air sampling and testing to be undertaken to report compliance to the EPA in relation to any Asbestos Removal activities undertaken on **Red Eye Constructions** worksites. There may also be compliance obligations established by local councils and expectations from residents adjacent to or near works conducted by **Red Eye Constructions** in relation to noise parameters which must be adhered to, at all times.

10. ENVIRONMENTAL ASPECTS & IMPACTS

10.1 Environmental Aspects

Red Eye Constructions has determined the environmental aspects of its activities, products, and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective. The workplace has determined those aspects that have or can have a significant environmental impact, i.e. significant environmental aspects, by using established criteria.



The identification of the potentially significant environmental impacts, which could eventuate during the construction, works as follows:

Activity	Aspect	Potential Impact
Stormwater & Sediment Controls – Erecting, Dismantling	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air 	<ul style="list-style-type: none"> Noise & Vibration Sediment laden water entering the Stormwater pits. Site material on public roads
Construction	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Energy Use of Space Generation of Waste Energy emitted 	<ul style="list-style-type: none"> Elevated levels of Dust Noise complaints/exceedances Vibration limits exceeded. Pollution to waterways/land Damage historical nature of development. Site material on public roads
Fit out	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Energy Use of Space Generation of Waste Energy emitted 	<ul style="list-style-type: none"> Complaints/ dust & noise pollution, generation of waste - Landfall disposal. Water/Land Pollution Site material on public roads/space
Waste Disposal	<ul style="list-style-type: none"> Generation of Waste Use of Energy Releases to water Releases to land 	<ul style="list-style-type: none"> Conservation of natural resources Damage to surrounding Environment. Pollution to land and waterways Site material on public roads
Landscaping & Excavations	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Space 	<ul style="list-style-type: none"> Sediment run off. Disease/biosecurity transfer from soils/plants Site material on public roads Groundwater/Surface water contamination

11. LEGAL REQUIREMENTS – PERMITS, APPROVALS & COMPLIANCE OBLIGATIONS

Red Eye Constructions has determined the compliance obligations related to its environmental aspects, determined how these obligations apply, and taken these compliance obligations into account when establishing the EMS.

Legal Instrument	Responsibility	Subject
Contract Clauses	Client / subcontract	-
Protection of the Environment Operations Act 1997	NSW Department of Environment and Climate Change	Pollution Control and Environment Protection Licences for scheduled works
Soil Conservation Act, 1938 Water Management Act 2000 Local Government Act, 1993	Department of Natural Resources	Works affecting protected waters

12. SUPPORT

It is the responsibility the Site Supervisor to ensure that all workers, contractors, and site visitors on the site have undertaken the following training, prior to commencing work or on upon entering the site, this may include documents such as:

- Site Specific Induction
- Competencies & Licenses
- Task specific related SWMS.

12.1 Competence, Awareness and Training

The workplace shall ensure that persons doing work under the *Red Eye Constructions* control are aware of:

- The environmental policy & associated management plans/documentation.
- The significant environmental aspects and related actual or potential environmental impacts associated with their work.
- Their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance.
- The implications of not conforming with the environmental management system requirements, including not fulfilling the organisation's compliance obligations.

The workplace may also;

- Determine the necessary competence of persons doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations.
- Site specific induction – site specific HSE elements such as location of chemical storage, first aid kits, site rules, muster point, spill kits, no go zones etc shall covered in a site-specific induction - Site Induction for each worker at each location where they work, prior to commencing work at that location.
- Work Activity Induction - read & signed off on Management Plans, Company Policies, Procedures etc;
- Company Induction –where workers are to be engaged for more than a week, a company induction will be conducted to ensure company policies and procedures are understood and adhered to. A Company Induction Questionnaire is to be completed for each inductee to demonstrate understanding of key information and record completion of the induction.
- Ensure that these persons are competent of the basis of appropriate education, training, or experience.
- Determine training needs associated with its environmental aspects and its environmental management system.
- Where applicable, taken actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken.

12.2 Communication

Red Eye Constructions has established the processes needed for internal and external communications relevant to the EMS, including:

- on what it will communicate
- when to communicate
- with whom to communicate
- how to communicate

When establishing its communication processes, **Red Eye Constructions** has:

- considered its compliance obligations.
- ensured that environmental information communicated is consistent with information generated within the environmental management system and is reliable.

Red Eye Constructions shall respond to relevant communications of its EMS. **Red Eye Constructions** shall retain documented information as evidence of its communications (i.e. within Procore, or equivalent), as appropriate.

12.3 Internal Communication

Red Eye Constructions shall:

- internally communicate information relevant to the EMS among the various levels and functions of **Red Eye Constructions**, including suggested changes to the EMS, as appropriate.
- ensure its communication processes enable persons doing work under the **Red Eye Constructions** control to contribute to continual improvement.

Internal communication will include meetings. Meetings may include Pre-start Meetings, Toolbox Talks, Project Team Meetings, Work Health Safety and Environment Team Meetings, Subcontractor Meetings, and Work Health Safety, Environment, and Quality System Review Meetings. Meetings shall include appropriate environmental information and shall be minuted and recorded.

Internal communication will also include written instruction. This may include drawings, specifications, method statements, risk assessments, contracts, and sub-contracts.

Internal communication of the Workplace performance will also be undertaken via the monthly reporting.

12.4 External Communication

Red Eye Constructions shall externally communicate information relevant to the EMS, as required by its compliance obligations, to other relevant parties such as certification bodies, HSEQ consultants; Red Insight as well as to regulatory bodies, such as the EPA. This communication shall take part via phone call, in writing (such as email), or in person (face-to-face meetings).

External notification of events will be via the manager as required.

12.4.1 Site Specific Induction

The Induction Programs, including to whom they apply are detailed in the matrix below.

Induction Program	Worker	Contractor	Visitor	Customer
Company General	Yes	No	No	No
Site Specific - General	Yes*	Yes*	No	No
Site Specific - Visitor	No	No	Yes**	Yes**

NOTE:

- * Where entering a specific Site as a Worker, Contractor, or Customer (As defined in **Section 1.4 – Definitions & Interpretations**)
- ** Where entering a specific Site as a Visitor (As defined in **Section 1.4 – Definitions & Interpretations**)

For more details refer to **Procedure – HR Inductions (01-HSE-04-0029)**.

12.5 Training Competencies & Licenses

Task specific competencies / licenses necessary to conform with Environmental regulations shall be required, and persons performing such tasks shall provide proof of such qualifications.

A copy of a worker's competencies / licenses must be provided before performing high risk work on site. For example, this includes:

- Asbestos removal
- Demolition work

12.5.1 Training Matrix

A **Health and Safety Training Matrix** has been developed to record the competencies and licences attained by all personnel working on site. A copy of the safety training records shall be taken at the induction for all personnel.

This information is recorded in the **Redeye Record Library (RRL)**.

It is the responsibility of **Red Eye Constructions** to monitor and maintain the **Health and Safety Training Matrix**.

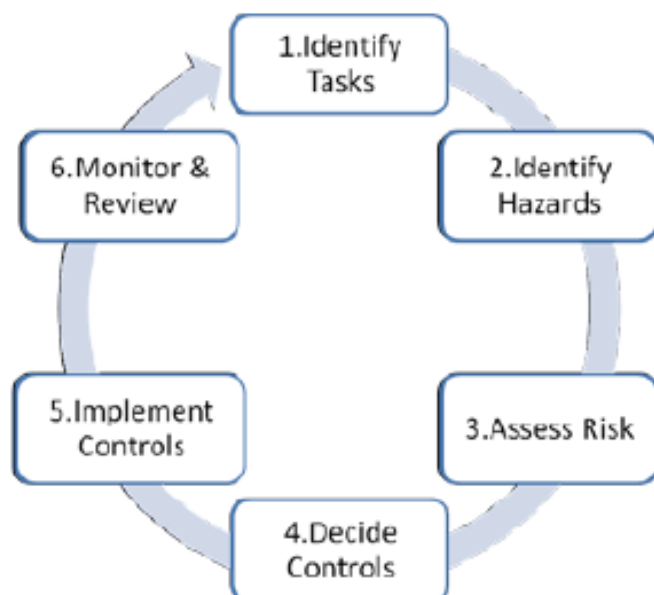
12.5.2 Competency Certificates

The health and safety training matrix is supported by documentary evidence of each person's certificate of competency which is also maintained in **Redeye Record Library (RRL)**.

Specific competencies that require refresher training or periodic renewal of licences or certification will be identified and reflected in the **Health and Safety Training Matrix/Workbench**.

13. ENVIRONMENTAL RISK MANAGEMENT

The *Red Eye Constructions* risk management process is illustrated in the figure below.



13.1 Hazard Identification

Hazards associated with all the activities required to complete the works shall be identified and managed through *Red Eye Constructions* Environmentally Safe System of Work.

13.2 Hierarchy of Control

The “Hierarchy of Controls” shall be used when implementing controls to eliminate the hazard or reduce the risk of a hazard causing loss / damage / injuries or environmental impacts.

The hierarchy of hazard controls emphasises controlling a hazard at the source which can be less subject to human failure. Back-up controls (such as PPE and administrative controls) should only be used as a last resort or as a support to other control measures. In many cases, it will be necessary to use more than one control method.

Whichever methods used, regular monitoring is important to ensure that the control is working effectively and that exposure to the hazard is reduced or eliminated.

The hierarchy of controls is:

- **Elimination:** The most effective method will be to remove the hazard completely if it is possible.
- **Substitution:** Replace the hazard with a lesser hazard. Be careful to assess what new risks the substitute may pose – i.e. substituting a chemical classified as ‘hazardous’, for a chemical not classified as ‘hazardous’.
- **Isolate:** the hazard. E.g. keep the chemical in locked storage when not in use as per SDS requirements.
- **Engineering:** Make changes to the process, equipment, or plant to reduce the hazard.

- **Administrative:** Establishing policies and procedures to minimise the risks, job scheduling to limit exposure, posting hazard signs, restricting access, and training.
- **PPE:** Personal Protective Equipment provides a barrier between the wearer and the hazard. PPE items include respirators, safety goggles, blast shields, hard hats, hearing protectors, gloves, face shields, and footwear.

13.3 Environmentally Safe Systems of Work

Red Eye Constructions has developed tools and processes to provide an environmentally safe system of work when performing work activities. The tools and processes to minimise the risk to **SFAIRP (So Far as Is Reasonably Practical)** vary depending on the level of control measures for the risk categories.

The *Red Eye Constructions* Environmentally Safe System of Work includes;

- Formal Project / Facility Risk Assessment
- Safe Work Procedures (SWP)
- Safe Work Method Statements (SWMS)
- Site **HSE** Audits
- Workplace Inspections
- Activity Observations

13.4 Operational Planning and Control

Operational planning and controls processes are implemented by the workplace to incorporate the actions identified in relation to risks and opportunities, and the achievement of environmental objectives, by establishing operating criteria and controls.

13.5 Outsourced Processes

Red Eye Constructions ensures that outsourced processes are controlled or influenced. Consistent with a life cycle perspective, *Red Eye Constructions* has:

- established controls, as appropriate, to ensure that its environmental requirement/s is/are addressed in the design and development process for the product or service, considering each life cycle stage.
- determined its environmental requirement/s for the procurement of products and services, as appropriate.
- communicated its relevant environmental requirement/s to external providers, including contractors.
- considered the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

13.5.1 Risk Assessment - Environmental

A formal Risk Assessment shall be conducted prior to commencing work on site to identify hazards relating to each of the key activities.

The risks associated with each of the hazards identified, shall be assessed by evaluating the likelihood of the hazard leading to an accident or incident and assessing the severity of the consequence or impact that could result from exposure to the hazard.

The management methods utilised to control the risks shall also be detailed. The risks shall be controlled by the hierarchy of control or equivalent.

The Risk Assessment and risk control measures shall be reviewed during construction in the following circumstances:

- The assessment is no longer valid;
- Injury or illness results from exposure to a hazard to which the risk assessment relates to;
- There is significant change in the premises or place of work to which the risk assessment relates to;
- A potential hazard has been raised by a worker or the principal;

Refer **Form:** **Risk Assessment (01-HSE-05-0252)**

13.5.2 Safe Work Procedures (SWP)

Certain risks within *Red Eye Constructions* shall be controlled by Safe Work Procedures (SWP) (or equivalent). These documents provide a prescribed manner of performing a construction work activity or undertaking an activity.

All procedures are located on the *Redeye Management Library (RML)*.

13.5.3 Safe Work Method Statements (SWMS)

The Work Health and Safety Act 2011 require a safe work method statement for all high risk construction work. When completing the SWMS, environmental factors will be considered, including the appropriate controls to be implemented to reduce environmental impacts as a result of *Red Eye Constructions* operations.

Refer **Procedure:** **Safe Work Method Statement (SWMS) (01-HSE-04-0246)**

Safe Work Method Statement (SWMS) for routine high-risk construction work activities are to be found on the *Redeye Management Library (RML)*.

13.6 Monitor & Review

Red Eye Constructions shall monitor the effectiveness of plans, procedures, and other supporting processes to ensure the control measures remain effective. The workplace shall monitor, measure, analyse and evaluate its environmental performance through the review of documents. For sites this is undertaken in through:

- Toolbox Talks
- Workplace Inspections & HSE Audits
- Activity Observations

The workplace shall determine:

- what needs to be monitored and measured.
- the methods for monitoring, measurement, analysis, and evaluation, as applicable, to ensure valid results.
- the criteria against which the organisation will evaluate its environmental performance, and appropriate indicators.
- when the monitoring and measuring shall be performed.

- when the results from monitoring and measurement shall be analysed and evaluated.

The workplace shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained, as appropriate. The workplace shall evaluate its environmental performance and the effectiveness of the EMS. The workplace shall communicate relevant environmental performance information both internally and externally, as identified in its communication processes and as required by its compliance obligations.

The workplace shall retain appropriate documented information as evidence of the monitoring, measurement, analysis, and evaluation results. The workplace shall establish, implement, and maintain the processes needed to evaluate fulfillment of its compliance obligations.

The workplace shall:

- determine the frequency that compliance will be evaluated.
- evaluate compliance and act if needed.
- maintain knowledge and understanding of its compliance status.

Red Eye Constructions shall retain documented information as evidence of the compliance evaluation results.

13.6.1 Toolbox Talks

Toolbox Talks are formal meetings held to communicate health, safety, environmental and operational matters and to reinforce the importance of being safe.

The Manager or supervisor in charge shall lead the meeting and encourage open discussion between all attendees to ensure information is disseminated to personnel across their site.

▪ **Toolbox Talk**

Position:	Frequency:
Site Supervisor	Bi-Weekly
Trade Manager (Joinery)	Monthly

Refer **Form – Toolbox Talk (01-HSE-05-0144) or Procore.**

Each attendee shall sign on to an attendance register for record of attendance. The records shall be held within the relevant Site folder on the **Redeye Record Library (RRL).**

13.6.2 Workplace Inspections & Audits

A workplace inspection is an assessment of the workplace or area of plant to identify unsafe conditions, hazards and compliance to procedures/permit conditions/work processes or plant safety related matters.

Managers and Supervisors shall conduct Inspections based on their targets (generally monthly) depending on the role of the person. Findings shall be recorded within the relevant site folder on the **Redeye Record Library (RRL).**

Refer Forms:

- **Daily Pre-Start (Procore)**

Position:	Frequency:
Site Supervisor	Daily

A photo of the completed Daily Pre-Start **may also** be taken and kept as a record in **Procore**. A hardcopy of the Daily Sign in Register shall be maintained on site as a record of all persons acknowledging the daily hazards and associated risks.

- **Work Site Inspection (Procore)**

Position:	Frequency:
Project Manager	Bi-Weekly
HSE Manager (Or Person(s) Fulfilling This Role)	Bi-Weekly
Trade Manager (Joinery)	Monthly

- **Weekly HSE Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Weekly

- **Work Site Electrical Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Monthly

- **Scaffold Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Weekly
HSE Manager (Or Person(s) Fulfilling This Role)	Monthly

- **Site Audit**

Position:	Frequency:
HSE Manager (Or Person(s) Fulfilling This Role)	Monthly

Any follow up actions shall be managed through site improvement processes and **be tracked to completion via Procore**.

13.6.3 Activity Observations

A behavioural Activity Observation is a formal assessment of a particular work activity done in consultation with the worker or workgroup with the goal of reducing risk by educating and **monitoring safe behaviour in accordance with the controls documented in the applicable Safe Work Method Statement (SWMS) in use for that particular work activity.**

Red Eye Constructions shall conduct Activity Observations based on their targets being weekly, fortnightly, or monthly depending on the site and role of the person. Findings shall be recorded within **Procore**.

Position:	Frequency:
Senior Manager	Bi-Weekly
Project Manager	Monthly
HSE Manager (Or Person(s) Fulfilling This Role)	Bi-Weekly
Trade Manager (Joinery)	Monthly
Site Supervisor	Bi-Weekly

14. WORK AND WORK ENVIRONMENT

14.1 Emergency Preparedness and Response

14.1.1 First Aid Personnel and Facilities

First Aid Facilities and trained personnel shall be available on worksites for the prompt and immediate first aid treatment of injuries or illness occurring on site. The number of workers on site will determine the number of trained first aid personnel, contents of the first aid kit and type of first aid facilities required.

14.1.2 Emergency Response Plans

Red Eye Constructions have established processes needed to prepare for and respond to potential emergency situations.

A summary of the activities to be conducted:

- prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations,
- respond to actual emergency situations.
- take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact.
- periodically test the planned response actions, where practicable.
- periodically review and revise the process and planned response actions, after the occurrence of emergency situations or tests,
- provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

The workplace shall maintain documented information to the extent necessary to have confidence that the process is carried out as planned.

Prior to commencement of work onsite, **Red Eye Constructions** will communicate with the principal to design or obtain a copy of the Site Emergency Plan identifying emergency exits, first aid kits, location of fire equipment and the Emergency Assembly Point.

Emergency Evacuation provides general instructions on the safe and rapid evacuation of persons from a worksite, shut down procedures, notification of emergency services and assigns responsibilities of workers during an emergency.

The details of on emergency response shall be detailed in the **Emergency Response Management Plan** and will be displayed at the worksite along with the Emergency Contact Information and Emergency Response Procedures.

Refer **Plan:** **Emergency Response Management Plan**

14.1.3 Signage and Display

To ensure that all workers and visitors have access to this information in the event of an emergency, signage shall be displayed in an appropriate location such as a central noticeboard, as well as in locations where workers are likely to gather such as the lunchroom, toilets and around areas of potential emergency situations (storage area of hazardous substances).

This information includes but is not limited to:

- Emergency Response procedures;
- Emergency contact details of site personnel, emergency services and regulatory authorities.
- Site plans indicating the location of:
 - access ways;
 - fire extinguishers;
 - first aid facilities;
 - muster points;
 - Storage areas for hazardous substances.
- Names & photos of Registered First Aiders and individuals responsible for control of emergency situations;
- SDS

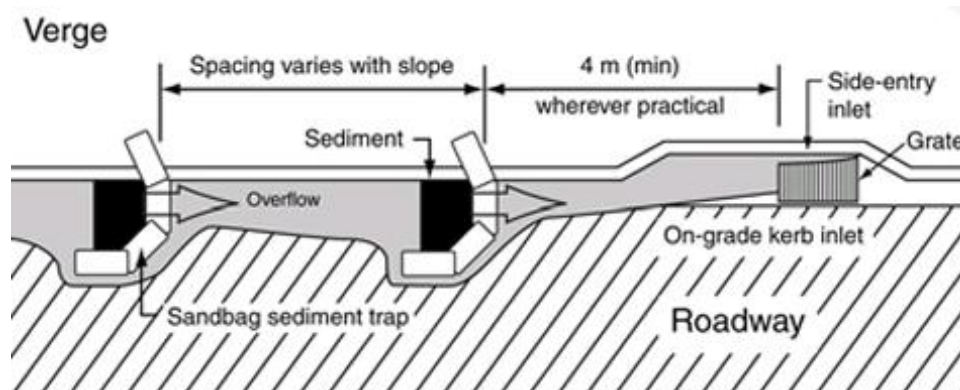
14.2 Stormwater & Erosion Control

The management of the stormwater and sediment during the construction of the works is critical to ensure there is no contamination of the project.

The following measures may be adopted during the works:

- All silt fences, silt traps and sedimentation basins will be cleared out regularly.
- A temporary sediment/absorption basin will be constructed until the final stormwater basin is installed, where existing stormwater drainage points are not available.
- Construction site water shall be directed to the temporary sedimentation basin for retention and, if required, flocculation until the required DECC water standards are adhered or discharged to drainage points via filtration measures.

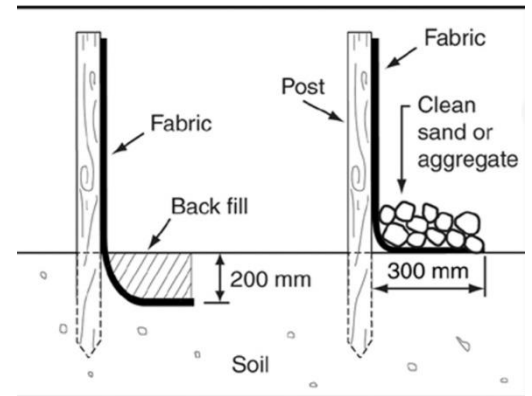
- All construction traffic will use designated roads at all times and the on-site access traffic routes.
- A wash out area will be designated for the cleaning of concrete pumps and equipment. Concrete trucks will be cleaned off site.
- Re-fuelling of vehicles and plant must not be carried out in areas, which may discharge to the stormwater drainage system or the project.
- Any oil-contaminated stormwater is to be removed by a licensed waste oil recycler.
- Minimising the area of soil disturbed on site therefore reducing the area that will be exposed to erosion – Ensure plant is limited to work areas only.
- Conserving topsoil for later site rehabilitation.
- Control the rate of water flow from the top of, and through the site (if practical to do so) using bunds, gravel, and sandbags.
- Rehabilitate disturbed lands quickly.
- Ensure sandbags are placed at all nearby drains on and around the site, to capture any excess runoff from site before it reaches drains and waterways.



- Maintain soil and water management measures appropriately during the project's phases this includes boundary silt screen fencing, coir logs, and sandbags.
- Ensuring access areas to site are maintained to prevent land degradation of these areas.
- Stockpile sediment controls - such as impervious covers shall be used to cover the stockpile (weighed down with bricks or secured to the ground with metal pegs) to reduce the creation of turbid runoff from stockpiles, where applicable.
- Exposed areas will be stabilised as required where erosion is likely to occur i.e. erosion matting, mulching etc.
- To keep public roads clean and to prevent site material being deposited on public roads from being carried by stormwater runoff into street stormwater drainage material deposited from construction traffic along existing sealed roads will be cleaned up either manually under guidance of traffic control or with a road sweeper.

Silt Screens must be erected within the following guidelines:

1. Construct sediment fences as close as possible to follow the contours of the site.
2. Drive 1.5-metre-long posts into ground, a maximum 3 metres apart.
3. Staple to 40 mm square hardwood posts or wire tied to steel posts – cap the top of these posts.
4. Dig a 150 mm deep trench along the up-slope line of the fence for the bottom of the fabric to be entrenched.
5. Backfill trench over base of fabric and compact on both sides.
6. Ensure silk screen height is no greater than 600mm.
7. The ends must be turned 'up' the slope to prevent water passing around the sides, which could result in ineffective control of sediment and water flow.

**Recommended installation options****14.3 Air Quality**

The following measures will be adopted according to site conditions:

- All petrol and diesel engine vehicles and equipment should be properly maintained to ensure that exhaust emissions comply with the Clean Air Regulations of the Protection of the Environment Operations Acts 1997.
- Use of a suitable water cart on sites (where this is available) with spray facilities for use as frequently as necessary to prevent the emission of dust. During windy conditions and in prolonged dry weather water spraying will be required repeatedly during the day.
- Limit speed of all vehicles and plant to 20km/hr on unsealed haul roads/access tracks on site, if safe to do so.
- Undertake gravelling in high traffic areas.
- Cover stockpiles with tarp to reduce the level of windblown particles from stockpiles.
- Washdown vehicles/plant in a designated wash bay prior to leaving site.
- Prior planning of how to cope with adverse weather conditions during operations. i.e., check wind speed and direction forecasted to prepare for the potential environmental impacts that may occur due to the specific weather conditions for that day of operations.
- Limit plant operation to the immediate work area to avoid excessive dust being created on the site.
- Use hoses to spray down areas that are beginning to generate excessive dusts.
- To prevent dust from being created by traffic passing over site material deposited on public roads, deposited material will be cleaned up either manually under guidance of traffic control or with a road sweeper as per occasion.

14.4 Noise Control

The following noise management measures will be undertaken during construction to measure the impact of the construction on the nominated properties.

- Limitation of construction activities to permitted working times unless written permission is obtained from Local Government authorities.

- Preparation of Work Method Statements for works performing noise related activities, the mitigation and control measures proposed, and monitoring of these actions to ensure contractual obligations are met.
- Operation of plant/equipment in a quiet and efficient manner where practical.
- Turn off plant that is not being used.
- Ensure plant/ equipment is regularly maintained, and repair or replace equipment that becomes noisy.
- Implement where feasible and reasonable, the use of silenced equipment and noise shielding around stationary plant/equipment (such as generators).
- Avoid dropping materials from a height.
- Consult workers in the pre-start meeting about noise impacts because of the planned works and how it can be reduced.
- Deliver machinery/plant/materials to site in during normal working hours.
- Rotate loud tasks to reduce exposure times – for the workers undertaking the tasks & other stakeholders in the immediate areas.
- Where there are complaints about noise from an identified work activity, review and implement, where feasible and reasonable, actions additional to those described above to minimise noise output.

14.5 Waste Management

Rising landfill tipping fees together with higher transport costs have helped increase the economic viability of recycling construction wastes.

Analysis of construction waste disposal costs indicates that these costs can be reduced by waste minimisation and recycling.

To encouraging waste minimisation and recycling and to ensure that those wastes which cannot be recycled are disposed of at an appropriate licensed waste disposal facility, the following actions should be taken:

- Where possible, the following wastes will be disposed of via recycling;
 - timber
 - plaster products
 - steel
 - cement based masonry.
 - clay based products, and
 - Asphalt.
- Waste disposal and recycling will only be undertaken by licensed waste disposal contractors.
- Where possible, recycled wastes such as crushed concrete will be reused on site.
- All wastes including concrete wastes and bituminous plant residues must be removed from the site. No wastes will be buried or incinerated on site.

The percentage estimations listed below are for waste that has been sorted on site. All site waste shall be sorted off site by Licensed Waste Disposal Contractors, Red Eye Constructions Pty Ltd will request sorting/ disposal slips from the Waste Contractor for the various waste items listed below. Bin locations will be shown on the site layout plan in appendix B.

Waste Description	Percentage Recycled
Steel	95%
Plasterboard	75%
Concrete	95%
Brick	95%
Timber Pallets	100%
Processed Timber (e.g. MDF)	10%
Timber	10%
Aluminium	95%

The percentage that is recycled from a mixed bin of waste is approximately 60%; the remaining 40% is to be disposed of accordingly.

14.6 Hazardous Substances

Where a hazardous substance (chemicals, compressed gasses, fuels, cleaning agents, glues, etc.) is required to be brought onto site a current Safety Data Sheet (SDS) must be supplied upon delivery (alternatively be readily available online through the Internet) for each product.

Each product shall be entered onto the site SDS Register under the SDS folder.

Refer **Form:** **SDS Register (01-HSE-05-0253)**

It is the responsibility of the person ordering the material or substance to request a Safety Data Sheet (SDS) for all chemical substance.

Where Handling of Materials and Hazardous Substance *Red Eye Constructions* shall:

- Obtain the Safety Data Sheets (SDS);
- Keep copies of all Safety Data Sheets (SDS) on site;
- Keep a register of all dangerous or potentially dangerous substances on site;
- Ensure that all containers are labelled;
- Ensure that the product is stored and utilised in accordance with the SDS;
- Store dangerous or potentially dangerous goods in a bunded or secure area as appropriate;
- Ensure adequate and appropriate signage is displayed around the dangerous or potentially dangerous storage bunded or secure area;
- Inspect all dangerous or potentially dangerous goods regularly to ensure the integrity of the containers, bunded area and labels;
- Where possible keep quantities of dangerous or potentially dangerous substances stored on site to a minimum;
- Ensure the appropriate PPE and first aid is available for use by workers and if necessary, conduct a toolbox meeting on the correct storage, use and treatment of affected personnel regarding the substance;

- Spillages of hazardous liquids will be contained by means of a dry absorbent such as sand, saw-dust, or oil absorber, which can be transferred to a suitable container for disposal by a licensed waste disposal contractor.
- When required, all contaminated material including any material contaminated by the spillage of hazardous substances should be disposed of in accordance with the following requirements:
 - The waste disposal contractor must hold the appropriate DECC license.
 - The proposed disposal location must be a DECC registered waste disposal facility and have approval to accept the particular waste.

15. COMMUNICATION & CONSULTATION

Workplace consultation and cooperation provides a means by which employers, workers work together to improve the work environment and make it environmentally safer for all.

This **Environmental Management Plan** shall be made available to all workers.

Communication & Consultation methods shall include:

- The Company's Environmental policy displayed and communicated throughout the workplace.
- Demonstrating hazard rectification as soon as possible in accordance with the established time frames displaying commitment to continuous improvement.
- Where delays in resolution of health and safety hazards are expected, the workplace hazard will be made safe via such measures as are necessary until the final control measure/s can be implemented. Where this occurs, the progress on full correction will be communicated to the workforce at regular intervals.
- Management will visibly and by demonstration support all environmental policies, plans and procedures and lead by example.
- A copy of this plan shall be made widely available.
- Workplace Inductions, Toolbox Talks, Activity Observations & Inspections.
- Distribution of bulletins, alerts, and other communication aids.
- Incident investigation reports completed in a timely manner.

RESOLUTION OF ISSUES - If a worker identifies a hazard that poses an immediate and imminent risk to the safety and health of themselves, or others, they must contact their Supervisor / Manager immediately to report the hazard and complete the **Hazard Observation Report** via **Procore**.

ENVIRONMENTAL INFORMATION - Relevant Acts, Regulations, Australian Standards, Codes of Practice, Guidance Notes, and other safety-related information will be made readily available to all workers upon request.

ENVIRONMENTAL PROMOTION - Management will promote environmental awareness throughout the Company, in order to influence positively the behaviour and attitude towards the environment.

PRINT MEDIA - Newsletters and electronic media will be used (as required) to promote environmental initiatives implemented and planned. Posters and brochures will be utilised in prominent positions to highlight specific environmental issues.

16. INCIDENT MANAGEMENT, REPORTING & INVESTIGATION

All Incident management, reporting and investigation shall be as detailed in the *Red Eye Constructions Incident Management Procedure*. At the Site Induction personnel shall be communicated:

- All incidents or near misses are reportable however minor.
- The procedures for contacting the Responsible Persons in the event of an Incident.
- Emergency Evacuation procedures, location of spill control kits

Refer **Procedure:** **Incident Management Procedure (01-HSE-04-0245)**

17. NON-CONFORMANCE, CORRECTIVE ACTIONS & CONTINUAL IMPROVEMENT

Red Eye Constructions management conduct annual reviews of the *Red Eye Constructions* EMS, to ensure its continuing suitability, adequacy, and effectiveness. When the EMS review is complete an update of system improvements is communicated to all workers.

The management review shall include consideration of:

- the status of actions from previous management reviews
- changes in:
 - external and internal issues that are relevant to the environmental management system.
 - the needs and expectations of interested parties, including compliance obligations.
 - its significant environmental aspects.
 - risks and opportunities.
- the extent to which environmental objectives have been achieved.
- information on the organisation's environmental performance, including trends in:
 - nonconformities and corrective actions.
 - monitoring and measurement results.
 - fulfilment of its compliance obligations.
 - audit results.
- adequacy of resources.
- relevant communication/s from interested parties, including complaints.
- opportunities for continual improvement.

The outputs of the management review shall include:

- conclusions on the continuing suitability, adequacy, and effectiveness of the EMS.
- decisions related to continual improvement opportunities.
- decisions related to any need for changes to the environmental management system, including resources.
- actions, if needed, when environmental objectives have not been achieved.
- opportunities to improve integration of the EMS with other business processes, if needed.
- any implications for the strategic direction of the organisation.

18. ENVIRONMENTAL REPORTING

The monthly reporting shall be based upon the elements of the *Red Eye Constructions* EMS using a set of lead and lag indicators.

Audits shall also be conducted to determine compliance with this **Environmental Management Plan** and facilitate performance improvements. **Each month Procore will generate a Monthly Safety Report to report the environmental performance of each site using the set of lead and lag indicators.**

18.1 Performance Measurement – Lead Indicators

Lead indicators used to measure Safety Performance will include:

- Toolbox Talk occurrences.
- Activity Observation occurrences.
- Workplace Inspection occurrences.
- **HSE** Audits
- Corrective actions overdue (from incident management system).
- Training compliance.

18.2 Performance Measurement – Lag Indicators

Lag indicators used to measure Environmental Performance include Incident and Frequency Rates.

18.3 System Audits & Management Review

To ensure continual improvement and effectiveness of the Management Systems, this plan shall be audited by an independent auditor as required by the principal.

The following areas shall be covered in the review:

- Results of audits conducted;
- Overall performance;
- Effectiveness of existing Management Plans in controlling the project performance;
- Any input from the principal regarding future improved project performance;
- Changes to legislation, codes of practice or Standards that may affect compliance requirements and consequently existing control measures.

Office of State Revenue NSW Treasury	
Client No: 4193211	763
Duty: \$200.00	Trans No: 3037131
Asst details: <u>SP 21/10/05</u>	

UNIT TRUST DEED

THIS DEED is made on the 20th day of October 2005.

PARTIES:

RED EYE CONSTRUCTIONS PTY LIMITED (ACN 116 100 657) having its registered office situate at c/- 301 Avoca Drive, Avoca Beach in the State of New South Wales ('Trustee')

AND

MATTHEW DAVID MYERS of 148 The Entrance Road, Erina in the said State ('Settlor')

RECITALS

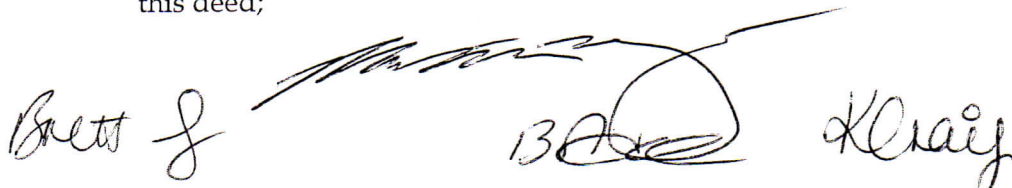
- A. The initial unit holders have paid the initial sum to the Trustee to establish a trust on the terms of this deed.
- B. The Trustee has agreed to act as trustee of the Trust and to hold all moneys and investments on the trusts and conditions set out in this Deed.
- C. The provisions of this deed apply to bind the unit holders and also to benefit them.

THE PARTIES AGREE

1.1 Definitions

In this deed unless the context otherwise requires:

- (a) 'Act' means the Income Tax Assessment Act 1936
- (b) 'deed' means this trust deed and all amendments and variations to this trust deed which may properly be made from time to time;
- (c) 'financial year' means a financial year for which income tax of a person, other than a company, is levied under the Act;
- (d) 'initial sum' means the amount of \$100.00 paid by each of the initial unit holders to the Trustee on the signing of this deed to initially constitute the trust fund;
- (e) 'person' includes a company, corporation, firm or body of persons;
- (f) 'register' means the register of unit holders required to be maintained by this deed;
- (g) 'termination date' means the date the Trust is to be wound up in accordance with this deed;
- (h) 'Trust' means the unit trust established by this deed;
- (i) 'Trustee' means the trustee for the time being of this Trust;
- (j) 'trust fund' means:
 - (i) the initial sum and all other moneys which are paid to the Trustee in respect of the issue of units; and
 - (ii) all other money and property which becomes subject to the trusts of this deed;



- (k) 'unit' means an undivided part or share of the trust fund evidenced by a unit held by a unit holder in accordance with this deed;
- (l) 'unit holder' means the person for the time being registered under the provisions of this deed as the holder of a unit and includes persons jointly so registered; and
- (m) 'unit price' means the amount payable by the Trustee to a unit holder on redemption of a unit calculated in accordance with cl 7.3.

1.2 Interpretation

In this deed unless the contrary is expressly provided:

- (a) the singular includes the plural and vice versa;
- (b) a gender includes each other gender;
- (c) headings are for convenience only and do not affect interpretation;
- (d) reference to legislation or a provision of any legislation includes modifications or re-enactments of the legislation, or any legislative provision substituted for, and all legislation and statutory instruments and regulations issued under the legislation; and

1.3 Governing law

Unless the Trustee, with the unanimous consent of the unit holders, may otherwise determine, the Trust is to be governed by, and this deed is to be construed in accordance with, the laws of New South Wales.

Trust

2.1 Name of trust

The Trust is to be known as the 'Red Eye Trust'.

2.2 Initial sum

The Trustee acknowledges receipt of the initial sum, which entitles the initial unit holder to be entered in the register as the holder of 8 units.

2.3 Trust fund



The Trustee holds the trust fund on trust for the unit holders on the trusts and subject to the terms of this deed.

Beneficial interest of unit holders

3.1 Beneficial interest in the trust fund

Subject to any contrary right of holders of units of a class, or to any special rights, restrictions or conditions attaching to the issue of particular units as permitted by this deed, the beneficial interest in the trust fund as existing from time to time is vested:

- (a) in the unit holders for the time being; and
- (b) if there is more than one unit holder, in such unit holders in proportion to the number of units each holds and the issue price of a unit does not alter the beneficial interest in the trust fund which the holder of that unit has compared to all other issued units.

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3.2 *No entitlement to any part of the trust fund*

Subject to any contrary rights of holders of units of a class or special rights, restrictions or conditions attaching to the issue of particular units as permitted by this deed:

- (a) a unit does not entitle the holder of the unit to any particular asset comprised in, or any particular part of, the trust fund; and
- (b) each unit entitles a unit holder equally with all other unit holders to the beneficial interest in the trust fund as an entirety.

Issue and classification of units

4.1 *Additional units*

Subject to any restrictions or conditions on the issue of additional units and express provisions as to the issue of units as set out in this deed, the Trustee may create and issue additional units to such persons as it by resolution may determine. The issue price for each additional unit can be \$1 or an amount lower or more than \$1 as the Trustee may determine. The issue price received on issue of a unit becomes part of the trust fund.

4.2 *Bound by deed*

Each person upon becoming registered as the holder of a unit is entitled to the benefit of and is bound by the terms of this deed and all special rights, restrictions and conditions (if any) attaching to the unit from time to time.

4.3 *Classification of units*

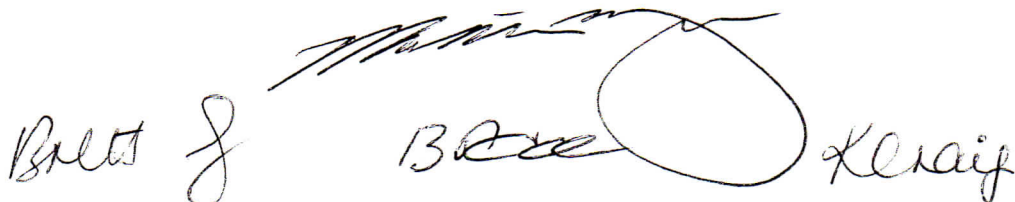
The Trustee with the written consent of all unit holders may classify or reclassify all or some of the units already issued or to be issued by attaching special rights, restrictions, or other conditions to such units. The Trustee must enter the terms of such special rights, restrictions or other conditions affecting a classified or reclassified unit in the register and, where practicable, on or annexed to the unit certificate in respect of such classified or reclassified unit.

4.4 *Application form*

A person to whom units are to be issued (other than the initial unit holder) and persons to whom units may be issued as provided in cl12(1)(f), must sign a form of application supported by such evidence and information as the Trustee may prescribe or require.

4.5 *Restriction on issue of units*

- (a) A unit may not be issued to a person who is the Trustee or one of a number of trustees of the Trust. Nothing in this clause is to be taken as restricting the issue of units to a director, officer or shareholder of a corporate trustee of the Trust or to a sole director or a sole shareholder of a corporation trustee of the Trust.

The image shows three handwritten signatures in black ink. On the left is 'Brett J.' with a large flourish. In the center is a signature that appears to be 'Brett' with a large circular flourish. On the right is 'Keraj'.

Certificates

6.1 *Issue of certificates*

Each sole unit holder is entitled to be issued with one or more certificates for the units registered in their name. Where units are held jointly, the joint holders are entitled only to a certificate in their joint names and delivery of that certificate to any of the joint unit holders is sufficient delivery to all such holders.

6.2 *Form of certificate*

A certificate may be in the form attached to this deed, or such other form as may be prescribed by the Trustee from time to time, and must be signed by the Trustee.

6.3 *Surrender of certificates*

When a unit is transferred as permitted by this deed, the certificate with respect of such unit, or evidence as to its loss or destruction satisfactory to the Trustee, must be given to the Trustee. A unit holder must deliver a certificate, or such evidence as to its loss or destruction, to the Trustee upon request following the redemption of the unit, or to note a change in any special right, restriction or condition attaching to the unit.

Redemption of units

7.1 *Redemption at request of a unit holder*

If:

- (a) a unit holder request the Trustee in writing to redeem all or part of the units held by such unit holder at the unit price or such lesser amount as the unit holder may agree to; and
 - (b) the Trustee determines that the units may be redeemed without detriment or disadvantage to the other unit holders or to the trust fund,
- the Trustee may redeem such units and advise the unit holder accordingly.

OR ALTERNATIVELY

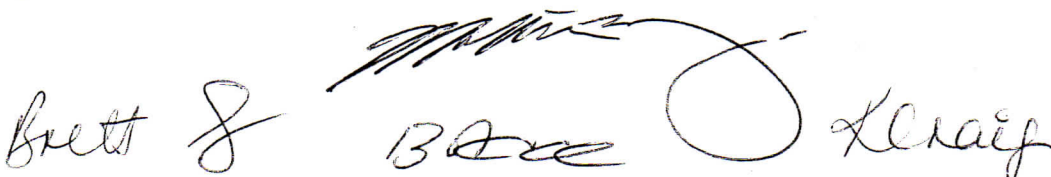
7.1 *Redemption at request of a unit holder*

If:

- (a) a unit holder requests the Trustee in writing to redeem all or part of the units held by such unit holder at the unit price or such lesser amount as the unit holder may agreed to;
 - (b) the Trustee determines that the units may be redeemed without detriment or disadvantage to the other unit holders or to the trust fund; and
 - (c) the consent in writing of unit holders (including the unit holder whose units are to be redeemed) holding more than 24% of the issued units is obtained,
- the Trustee may redeem such units and advise the unit holder accordingly.

7.2 *Redemption without the request of a unit holder*

The Trustee may at any time redeem all or any units held by a unit holder without being requested to do so at the unit price per unit by giving 1 month's notice in




writing to the unit holder of its intention to redeem such units. If the unit holder in writing waives its right to receive the notice of redemption, the Trustee may redeem the units without notice.

7.3 Calculation of unit price

The following provisions apply with respect to calculating the unit price:

- (a) if:
 - (i) the Trustee determines an amount which it considers to be a fair and reasonable value of a unit to be redeemed;
 - (ii) all of the unit holders in writing consent to such determination; and
 - (iii) redemption takes place within 90 days of such consents being given; the value as so determined will be the unit price of the unit for the purposes of the proposed redemption;
- (b) in all other cases the unit price must be fixed in accordance with the following paragraphs of this sub-clause and there is no requirement on the Trustee to first act under cl7.3(a);
- (c) the Trustee must have the trust fund and the units which are to be redeemed valued by a person who in the reasonable opinion of the Trustee is competent to carry out such valuations and unless the unit holder whose units are to be redeemed objects to the appointment, the auditor or the external accountant responsible for preparation of the financial statements and tax returns of the Trust may be appointed to carry out such valuations;
- (d) in determining the value of a unit to be redeemed, regard must be had to:
 - (i) the value of the trust fund and the ratio of the relevant unit compared to the number of issued units;
 - (ii) special rights, restrictions or conditions attaching to the unit and to other units, including rights to income or capital of the trust fund; and
 - (iii) expenses incidental to a deemed realisation by the Trustee of investments, even if the appropriate method of valuation is on a going concern basis; and
- (e) where a unit is to be redeemed otherwise than on the last day of a financial year, the Trustee may prior to redemption pay to the unit holder whose units are to be redeemed by way of an income distribution, so much of the income of the trust fund as the Trustee considers could reasonably be attributed to such unit for the current financial year, and the amount of income to be so paid must be taken into account in any valuation under this sub-clause.


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7.4 *Redemption*

On redemption of a unit:

- (a) the Trustee must pay to the relevant unit holder the unit price for each unit to be redeemed after deducting moneys owing by the unit holder to the Trustee on any account;
- (b) an entry must be made in the register to the effect that the unit is redeemed and that the unit holder ceases to be the holder of the unit; and
- (c) where the certificate is returned to the Trustee, the certificate must be destroyed or shown on its face as to have been cancelled.

7.5 *Payment of unit price*

The Trustee may raise out of the trust fund by borrowing in exercise of its powers in that regard a sufficient sum to provide the unit price or realise or sell any investments comprised in the trust fund to provide a sufficient sum to meet the unit price or pay the unit price out of funds on hand comprising the trust fund.

Transfer of units

8.1 *General restriction on transfer of units*

Subject to the written consent of all unit holders (including the transferor), a transfer of units cannot be effect if registration of the transfer would result in there being more than the maximum number of unit holders permitted under this deed.

8.2 *Form of transfer*

A unit may, with the consent of the Trustee and also with the written consent of unit holders (including the transferor) holding not less than 25% of the issued units, be transferred by an instrument in writing. Neither the Trustee nor a unit holder are required to give any reasons for disallowing a transfer or refusing to give consent. The transfer may be in the form of that appearing on the unit certificate attached to this deed or such other form as may be permitted by the Trustee.

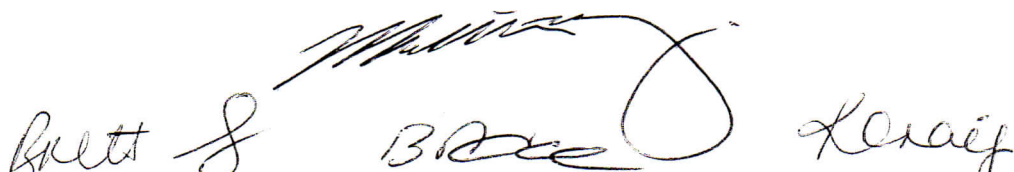
8.3 *Transferor holder while registered*

Every instrument of transfer must be executed by both the transferor and the transferee. Where a party to the transfer is a corporation, the Trustee may require execution by that party under its common seal. The Trustee may only deal with the transfer while it remains the holder of the units to be transferred until the name of the transferee is entered in the register as the holder of the units.

8.4 *Issue of new certificate*

Upon production to the Trustee of a properly executed and stamped instrument of transfer together with the certificate for the units to be transferred and compliance with the provisions of this deed concerning the transfer of the units, the Trustee must:

- (a) enter the name and address of the transferee as shown in the transfer in the register as the holder of the units transferred;
- (b) cancel the unit certificate in the name of the transferor;



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- (c) issue a new certificate of the transferee if it so requires for the units transferred;
- (d) if all of the units comprised in the original certificate have not been transferred, issue to the transferor a new certificate for the balance of the units comprised in the cancelled certificate; and
- (e) if a certificate is claimed to be lost or destroyed, the Trustee may dispense with production upon receiving evidence satisfactory to it of such loss or destruction.

Transmission of units

9.1 *Death of a unit holder*

In the case of the death of a unit holder, the survivor where the deceased was a joint holder, and the legal personal representative of the deceased in all other cases, is the only person recognised by the Trustee as having any title to or interest in the units held by such holder. Evidence must be given to the Trustee as it may require to enable it to verify the validity of the appointment of a legal personal representative.

9.2 *Election by representative*

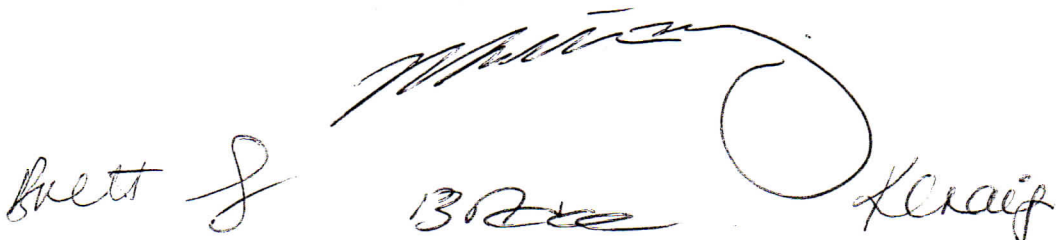
A person becoming entitled to a unit ('the person entitled') in consequence of the death, liquidation or legal incapacity of a unit holder (each of which in this clause is called a 'nominated event') may, upon such information being provided and evidence being produced as may be required by the Trustee, elect in writing to be registered as the holder of the unit. Where the provisions of this deed, which govern the transfer of units are complied with, a person nominated by the person entitled may become registered as the transferee of the unit.

9.3 *Effect of election*

- (a) Where following the occurrence of a nominated event and an election being made under cl 9.2, the person entitled to a unit has provided the Trustee with all information and evidence as the Trustee requires, that person alone is entitled to become registered as the holder of the unit by transmission and the Trustee must make an entry to such effect in the register.
- (b) Where an election under cl 9.2 is not made, the provision of this deed relating to the transfer of units apply as if the nominated event had not occurred, except that the person entitled will be the transferor.

9.4 *Rights of transmission*

A person entitled to a unit by transmission may receive and give a good discharge for all moneys payable in respect of the unit but except as otherwise provided in this deed is not entitled to any other rights or privileges of a unit holder unless and until he or she becomes registered in respect of the unit.



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Income and capital

10.1 *Determination of income*

The Trustee may determine whether a receipt or outgoing is to be regarded as being on account of capital or income or partly on account of one and partly on account of the other. In determining the income of the trust fund for a financial year the Trustee may so far as is reasonably possible exercise the powers conferred on it under this sub-clause so as to minimise the liability to income and capital gains tax of the unit holders. If the Trustee fails to make a determination under this sub-clause prior to midnight on 30 June in a financial year, the amount which under the provisions of the Act represent the 'net income' (within the meaning of s.95 of the Act) for that year in relation to the trust fund is to be taken to be the income of the trust fund for the purposes of this deed.

10.2 *Accumulation of income*

- (a) The Trustee may before the end of a financial year resolve to accumulate a part of the income of the trust fund for that financial year:
 - (i) to recoup any losses of the trust fund in any prior financial year; or
 - (ii) as reserves to meet contingencies, to provide for repairs or maintenance, for depreciation or for any other purpose, whereupon such amount, will, subject to cl 10.2(b), form part of the capital.
- (b) The Trustee may pay tax in respect of an accumulation out of the amount accumulated or out of capital.

10.3 *Distribution of income to unit holders*

- (a) Subject to any special rights as to sharing of income attached to any units, the remaining income of the trust fund for a financial year is distributed to the persons who at midnight on the last day of the financial year are the unit holders in proportion to the units registered in their respective names.
- (b) The Trustee may determine that a part, not exceeding 50%, of such distributed income is to be retained by the Trustee ('retained moneys') which must be dealt with as provided by cl 10.4.
- (c) If the Trustee has not prior to midnight on 30 June of a financial year resolved to distribute the remaining income due to a unit holder in one or more of the means available to it under cl 12.1, such income must be credited to a separate account in the books of the Trust in the name of the unit holder so that such moneys will constitute a debt due to the unit holder at call and will not bear interest.

10.4 *Retained moneys*

The following provisions apply to retained moneys:

- (a) the Trustee must set aside the retained moneys in separate accounts in the names of the unit holders;
- (b) interest will not accrue in respect of retained moneys;



- (c) moneys standing to the credit of a retained moneys account is a debt due to the unit holder which is payable at the earliest of:
 - (i) termination date;
 - (ii) at such time as the Trustee determines; and
 - (iii) in respect of a particular account, upon the unit holder giving not less than six months' notice in writing to the Trustee requiring payment;
- (d) retained moneys may be invested or otherwise dealt with by the Trustee in the same manner as the Trustee is authorised to invest or deal with the trust fund;
- (e) income derived from retained moneys is part of the income of the trust fund; and
- (f) the amount from time to time standing to the credit of the retained moneys accounts is to be taken into account as a debt due by the Trust in determining the value of the trust fund or the value of a unit where such valuation is to be made under a provision of this deed.

10.5 *Application of capital*

All receipts, including bonus issues, dividends, sale of rights or other benefits received by the Trustee, which the Trustee considers to be in the nature of capital and any income which is not applied or distributed under the provision of this deed is not available for distribution as income of the trust fund while the Trust continues undetermined but must be added to and held as capital of the trust fund upon the trusts of this deed and applied, invested and dealt with as such under the provisions of this deed.

10.6 *Distribution of capital prior to termination date*

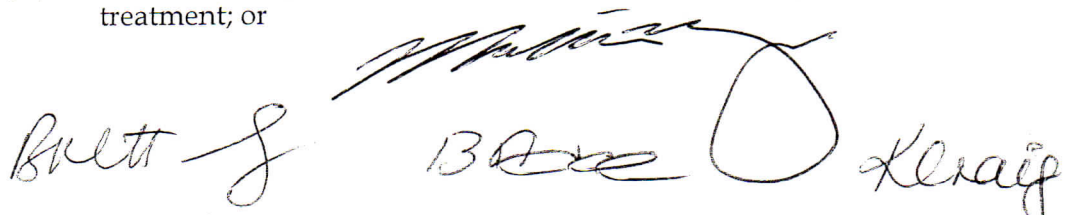
The Trustee may in its discretion determine at any time that the whole or any part of the capital of the trust fund be distributed or applied by the Trustee firstly in accordance with any special rights as to sharing capital attached to any units and then for such persons who at the time of such determination are the unit holds in proportion to the units registered in their respective names.

Categories of income and capital

11.1 *Categories of income and capital*

The Trustee may separately record the following categories of income or capital in the accounts of the Trust which under the Act:

- (a) are dividends:
 - (i) which are fully franked;
 - (ii) which are unfranked;
 - (iii) to which a foreign tax credit attaches; or
 - (iv) to which another separately identifiable taxation consequence or benefit may attach; and
- (b) is income or capital:
 - (i) which has an Australian source;
 - (ii) which has an ex-Australian source;
 - (iii) to which a foreign tax or other credit attaches;
 - (iv) which is exempt from tax or subject to differing rates of tax or tax treatment; or



- (v) which has or gives rise to any other separately identifiable taxation consequence or benefit.

11.2 *Other categories*

The Trustee may identify and separately record and maintain in the books of accounts of the Trust, income or capital having, or in respect of which there is attached, individual or unique characteristics other than as referred to in the preceding sub-clause.

11.3 *Allocation of income or capital of a category*

If the Trustee obtains the consent of all unit holders, the Trustee may by resolution determine that income of a financial year or capital which is distributed or accumulated pursuant to a determination of the Trustee or by any provision of this deed is the whole or part of the income or capital of a category so that all or a part of that income or capital is specifically or separately allocated and identified in a distribution to a unit holder or in any accumulation. If the Trustee does not obtain the consent of all unit holders, subject to any contrary rights of holders of units of a class, income or capital of a category is to be taken to have been distributed pro rata to all unit holders.

11.4 *Allocation of expenses*

Expenses and outgoings of the Trust may at the discretion of the Trustee be allocated against and deducted from income or capital of any one or more categories.

11.5 *Effect of allocation on categories of income*

If the Trustee does not exercise its discretion as provided in the preceding sub-clause, outgoings and expenses of the trust fund for the financial year must be allocated firstly against and deducted from income which is not income of a category. To the extent to which that income is insufficient to absorb all expenses and outgoings, then the part which is not so absorbed must be allocated against any income of a category to which a tax credit, rebate or exemption does not attach and thereafter against the remaining income.

11.6 *Distributed income retains categorisation*

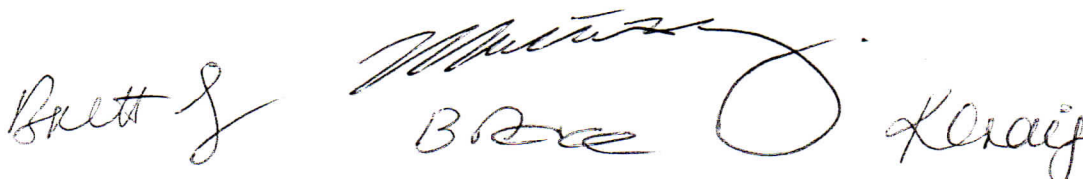
Income or capital to which a unit holder becomes entitled and which can be identified as being of a category, retains its separate identity on passing to or being received by the unit holder or when the unit holder otherwise becomes entitled to it.

Payment to unit holders

12.1 *Means of payment*

Subject to clause 10.3(b), a requirement in this deed to distribute, pay, apply or set aside any amount for a unit holder may be effected by the Trustee by any one or more of the following means:

- (a) with the consent of the unit holder, by placing the amount to the credit of the unit holder in a 24 hour call account;



- (b) by drawing a cheque for such amount made payable to the unit holder or paying the moneys into a bank account in the name of the unit holder;
- (c) with the consent of the Trustee, by paying the amount by cheque or in cash to a third party at the direction of the unit holder;
- (d) by applying all or part of the amount in or towards satisfaction of moneys owing by the unit holder to the Trustee on any account,
- (e) if the Trustee in its discretion thinks fit, by transferring any of the investment of the trust fund in specie to the unit holder on receiving in cash the difference between the amount to which the unit holder is entitled and the value of such investment at the valuation made by a valuer appointed by the Trustee for that purpose;
- (f) if the Trustee, with the consent of the unit holders, so resolves, by issuing units to unit holders entitled to such amount as though the amount not distributed has been first paid to them and thereafter paid to the Trustee as consideration for the issued units. The Trustee may determine the number of units to be issued and the premium (if any) and other terms relating to such units; or
- (g) by setting the amount aside to a separate account in the books of the Trustee in the name of the unit holder whereupon such moneys will constitute a debt due to the unit holder at call and will not bear interest.

12.2 *Payment by cheque*

Moneys payable the Trustee to a unit holder by cheque may be sent through the post to the registered address of the unit holder or in the case of joint unit holders to the registered address of the joint unit holder who is first named in the register of unit holders.

12.3 *Payment to joint unit holders*

If two or more persons are entered in the register of unit holders as joint holders of any unit, the receipt of one of these person for the moneys payable in respect of the unit will be as effective a discharge to the Trustee as if the person signing the receipt was the sole unit holder.

12.4 *Unit holder under a legal disability*

The Trustee may determine that a share of income or capital available for distribution, or as units issued under the provision of cl 12.1(f), payable to a minor or a person under some other legal disability be held by it under a separate trust for the minor or other person under a legal disability until that person has attained the age of 18 years or otherwise ceases to be under a legal disability as the case may be, and meanwhile to retain the distributed income by holding it on trust subject to such minor or person attaining the age of 18 years or ceasing to be under such legal disability and the following provisions apply to such separate trust:

- (a) if the person entitled dies before attaining the age of 18 years or otherwise ceasing to be under a legal disability, such interest or units and accumulated income must be paid to or held for the personal representative of such person;

- (b) the Trustee may pay or apply such share of the income or capital available for distribution for the maintenance, education or benefit in life of such person and may pay it to a trustee for, or to a guardian of, any such person or to any other person as trustee for such person to be so applied without being bound to see to its application;
- (c) any money, units or property held by the Trustee pursuant to the provision of this sub-clause must be held by it on a separate trust and must not be included as part of the trust fund; and
- (d) the income arising from the property and investments held on such trust is not to be treated as part of the income of the trust fund. The provision of this sub-clause apply as though the units, interests or retention of income are a share in the amount available for distribution to such minor or person under a legal disability.

Statements and accounts

13.1 *Accounting records*

The Trustee must:

- (a) establish and maintain proper books of account which accurately record all receipts and outgoings in relation to the trust fund; and
- (b) separately record all income and capital of different categories or classes as are referred to or provided for in this deed.

13.2 *Financial statements*

The Trustee must cause financial statements to be prepared by a qualified public or chartered accountant, including a profit and loss account and a balance sheet as at the end of such financial year certified by such accountant to be a true and proper statement of the affairs of the trust fund setting out all:

- (a) income of the trust fund;
- (b) capital of the trust fund;
- (c) costs and disbursement and other outgoings paid or payable out of the trust fund and chargeable against income;
- (d) capital expenditure and liabilities chargeable to capital;
- (e) investments and money comprised in the trust fund;
- (f) amounts held in the accumulated income account;
- (g) amounts distributed by the Trustee to unit holders; and
- (h) amounts held in retained moneys accounts pursuant to cl 10.4.

The unit holds may inspect such statement and the books of account in relation to the trust fund.

13.3 *Election to appoint auditor*

Unit holders holding 24% or more of the units may by resolution evidenced in writing and signed by such unit holders require that an auditor be appointed to examine the accounts of the trust fund, to ascertain the correctness of any financial statements in respect of the trust fund or to make such inquiry into the financial affairs of the trust fund as may be required. The auditor named in such resolution, or failing which an auditor appointed by the Trustee, must make such audit or inquiry as required. Every such auditor has a right of access to the accounts and other records of the Trustee in relation to the trust fund and may require and is entitled to

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be given such information and explanation as he or she desires. The costs of such auditor are to be paid out of the trust fund. The Trustee may terminate the services of an auditor.

13.4 *Collection of accounts receivable*

The Trustee must collect, receive and get in all moneys due to be paid to the Trustee arising out of the Trust (including dividends, rents and other income from investments of the trust fund) and from the carrying on of any business by the Trustee pursuant to this deed.

13.5 *Payment of accounts payable*

The Trustee must pay out of the trust fund all accounts due to be paid by the Trustee arising out of the Trust including costs and disbursements, commissions, fees, rates, taxes, insurance premiums, expenses for repairs, administration and management charges and all other property outgoings in respect of the investments and administration of the trust fund and the carrying on of any business permitted by this deed.

Appointment and removal of trustee

14.1 *Power to appoint and remove Trustee*

- (a) In this sub-clause the power to appoint a new Trustee in the place of an existing Trustee, the power to appoint a Trustee in addition to and jointly with an existing Trustee, and the power to remove a Trustee is called 'the appointment power'.
- (b) Where the Trustee is a sole Trustee which is a company, the appointment power is vested in the persons holding shares in the Trustee and may only be exercised by a resolution or instrument in writing signed by persons holding 25% or more of the shares in the Trustee.
- (c) Where the Trustee is not a sole trustee which is a company, the appointment power is vested in the unit holders and may only be exercised by a resolution or instrument in writing signed by unit holders holding 25% or more of the units.

14.2 *Restriction on appointment*

The power of appointing a new trustee may not be exercised in favour of any person who is, at the time the power is exercised, the holder of a unit.

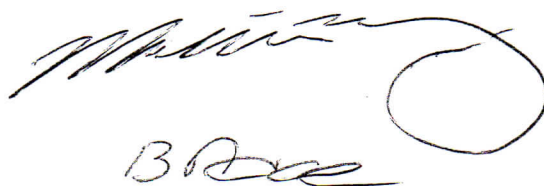
14.3 *Provisions on appointment*

The place of a trustee or trustees who have retired, resigned or been removed, may be filled by a sole appointment or by the appointment of more than one new trustee.

14.4 *Transfer of records and property*

Upon the resignation, retirement or removal of the Trustee, the Trustee (if a company by its responsible officer) must promptly, at the expense of the Trust:

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- (a) hand to the new trustee all books, records, documents and other property of or pertaining to the Trust;
- (b) do all things necessary to transfer the legal title in the assets of the trust fund to the new trustee;
- (c) sign authorities and give directions as the new trustee reasonably requires to give possession or control of the trust fund as may be in the hand of third parties, and
- (d) give such assistance as the new trustee may reasonably require to put the new trustee into full knowledge of the affairs of the Trust.

Variation of trust deed

15.1 *Variation of trust deed*

- (a) At any time prior to the termination date, the trusts, power or provision of this deed may be altered, modified, varied, amended, revoked or added to (all of which are referred to in this clause as a 'variation' as provided in this clause.
- (b) All variations must be by deed or other instrument in writing signed by the Trustee following the passing of a resolution by the Trustee approving of the variations.
- (c) A variation which concerns:
 - (i) a provision of cl 3 (the beneficial interest of unit holders);
 - (ii) the issue, transfer or redemption of units;
 - (iii) appointment or removal of a trustee;
 - (iv) a provision of this cl 15 (variation of this deed);
 - (v) voting rights at meeting of the unit holders;
 - (vi) a provision of cl 19 (limitation on liability of unit holders); and
 - (vii) a provision of cl 22.1 (termination of the Trust),
 is not effective unless, on or before the instrument of variation is entered into, the consents in writing of unit holders are obtained in accordance with cl 15.1(d).
- (d) The consents of unit holders under the preceding paragraph is to be taken to have been given only where a unit holder or unit holders holding 25% or more of units giving entitlement to vote at meetings of the unit holders, have signified their consent in writing to the proposed variation in one or a number of separate documents, or is a part of or annexed to or endorsed on the instrument of variation.
- (e) A variation may not prejudicially affect the rights of a unit holder to income of the trust fund previously set aside for it or held for its benefit, or prejudicially affect the rights of unit holder, whether of a class of units or not, to participate in the income or capital of the trust fund in accordance with the provision of this deed, unless the consent of the unit holder prejudicially affected or the consents of all unit holders whose rights are to be prejudicially affected are obtained at or prior to the time any such variation is made.

15.2 *Rule against perpetuities*

A variation must not infringe any applicable law or rule against perpetuities.

The image shows three handwritten signatures in black ink. On the left is 'Brett J' with a large flourish. In the center is 'B. B.' with a large circular flourish. On the right is 'Craig' with a large flourish.

15.3 *Time variation takes effect*

If the requirements of this clause have been complied with, the provisions of this deed will be effectively altered, modified, varied, amended, revoked or added to, as the case may be, on and from the date appearing in the instrument of variation referred to in cl 15.1(b).

Modification of class rights

16.1 *Variation of class rights*

The Trustee may at any time modify or vary the rights attached to a class of units in the trust fund provided:

- (a) such modification or variation does not affect the rights of other unit holders; and
- (b) all the unit holders of that class at the time consent in writing to such modification or variation.

16.2 *Effect of variation*

Upon a class of units being modified or varied in accordance with this clause:

- (a) the units of such class will be held subject to any preferred, deferred or other special rights or any restrictions whether in regard to the income or the sum payable on redemption or on termination of the trust fund, as so modified or varied; and
- (b) the Trustee must note the register of unit holders accordingly.

Provisions relating to trustee

17.1 *Restrictions on receipt of income*

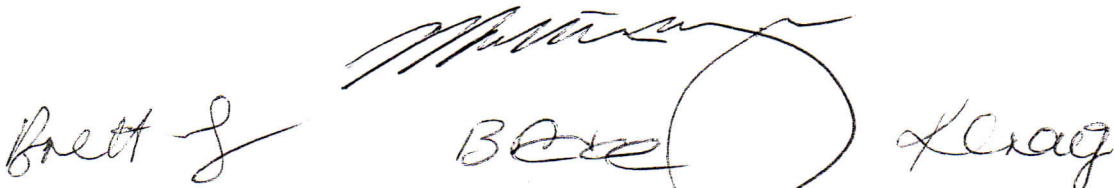
Notwithstanding anything to the contrary in this deed, income or capital of the Trust, other than remuneration permitted under cl 17.2 and 17.3 or payments permitted under cl 17.4 and 21.1 (cc), may not be paid or transferred beneficially to, or applied for the benefit of, the Trustee. No discretion or power conferred by this deed may be exercised or is capable of being exercised and no provision of this deed operates so as to confer or be capable of conferring any direct or indirect benefit in the Trustee on the Trustee other than remuneration properly payable to the Trustee.

17.2 *Remuneration*

The Trustee is entitled to remuneration for the Trustee's services in such sum out of the income or capital of the trust fund, whether by way of periodical fee, salary, commission or otherwise, as may be approved by unit holders holding 24% or more of the units.

17.3 *Administration expenses*

The Trustee may pay all costs, charges and expenses of administering the Trust out of the trust fund whether from capital or income as the Trustee may determine. If the Trustee is an accountant, solicitor or other person engaged in any profession, the Trustee is entitled:



- (a) to be reimbursed for all costs, charges and expenses of administering the trust fund incurred by the Trustee; and
- (b) to charge and be paid all usual professional charges for business transacted, time expended and acts done by the Trustee or any employee or partner in connection with the trusts of this deed including any acts which the Trustee not being in any profession could have done personally.

17.4 *Indemnity*

The Trustee acting in good faith is entitled to be indemnified out of the trust fund in respect of all liabilities:

- (a) incurred by the Trustee relating to the execution of any powers, duties, authorities or discretions vested in it by virtue of this deed;
- (b) arising in or about the investment and administration of the trust fund;
- (c) incurred in the conduct and management of any business forming part of the trust fund;
- (d) arising from the acquisition of any authorised investment under any contract entered into by the Trustee; and
- (e) all actions, proceedings, costs, claims and demands in relation to any matter or thing done or omitted to be done concerning the Trust.

The right of the Trustee to be indemnified in respect of any such liability incurred by the Trustee is limited to the assets of the trust fund in the hands of or under the control of the Trustee and does not extend to enable the Trustee to recover any loss or obtain reimbursement for any liability incurred from any unit holder or other person beneficially entitled to any unit.

17.5 *Exercise of powers by company trustee*

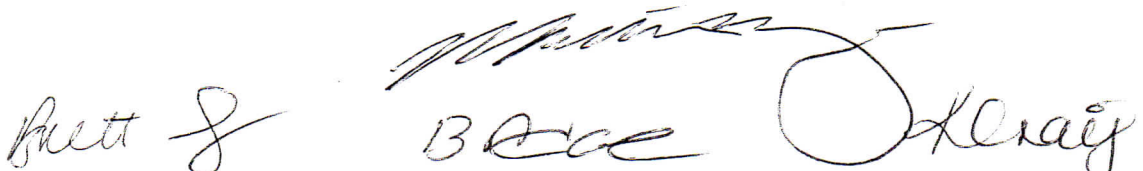
The Trustee, being a company, may exercise or concur in exercising any discretion or power conferred by this deed by a majority resolution of its board of directors or governing body or may delegate the right and power to exercise or concur in exercising any such discretion or power to one or more of its directors appointed unanimously from time to time by the board of directors or governing body for that purpose and may by majority resolution of its directors terminate any such delegated authority.

17.6 *Exercise of powers notwithstanding relationship with unit holder*

All powers and discretions conferred upon the Trustee by this deed or by law may be exercised notwithstanding that any person being a director or shareholder, or a sole director or sole shareholder, of a corporate trustee, is or may have been a unit holder or has, or may have, a direct, indirect or personal interest (whether as shareholder, director, member or partner of any company or partnership or otherwise) in the manner or result of exercising such power or discretion or may benefit directly or indirectly as a result of the exercise of any such power or discretion and notwithstanding that the Trustee for the time being is the sole trustee of the Trust.

17.7 *Release of power*

Unless a power or discretion which may be exercised by the Trustee is by the terms of this deed required to be irrevocable, the Trustee may release or revoke any power



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conferred upon it by this deed. Any other person upon whom any power is conferred by this deed may release or revoke any power conferred upon them. Upon the exercise of any release or revocation pursuant to this sub-clause, the power to release or revoke as so exercised is absolutely and irrevocably determined.

17.8. *Unfettered power*

Where in this deed the Trustee is entitled to exercise a power or a discretion, such power or discretion is an absolute unfettered power or discretion and no unit holder or other person, except as provided in this deed, is entitled to:

- (a) call into question the exercise of such power or discretion;
- (b) the failure to exercise such power or discretion; or
- (c) require the Trustee to assign any reason for its exercise of such power or discretion or failure to exercise such power or discretion.

17.9 *Professional advice*

The Trustee may take and act upon the opinion of a solicitor or barrister of at least six years standing who has continuously during that time practised in the jurisdiction where interpretation of the provisions of this deed or any document or statute, or matter concerning the administration of the Trust is to be determined without being liable to any unit holder in respect of any act done by the Trustee in accordance with such opinion, but nothing in this sub-clause prohibits or impedes the Trustee from applying to any court if the Trustee thinks fit.

17.10 *Manager*

The Trustee is not bound to act personally but may employ a manager or other person to transact all or any business required to be done or performed by the Trustee including the receipt and payment of money and the Trustee may determine the remuneration to be paid to any such person.

17.11 *Vacation of office*

The office of trustee is determined and vacated:

- (a) if the Trustee, being an individual, is found to be of unsound mind or a person whose person or estate is liable to be dealt with in any way under the law relating to mental health or if the Trustee becomes bankrupt or makes any arrangement or composition with creditors generally; or
- (b) if the Trustee, being a company, enters into liquidation, whether compulsory or voluntary (not being a voluntary liquidation for the purposes of amalgamation or reconstruction), or have an administrator, receiver or official manager or receiver and manager appointed.

17.12 *Custodian trustee*

It is not necessary for property, including a security, being part of the trust fund to be registered in the name of the Trustee but such property may, at the discretion of the Trustee, be registered in the name of a nominee without the necessity of disclosing that the nominee holds such property as nominee for and on behalf of the Trustee

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and the Trustee has the same powers and discretion in respect of such asset as if it were registered in its own name.

17.13 *Documents of title*

The Trustee may from time to time deposit the documents of title to property or securities for the time being subject to the Trust with a solicitor, accountant, bank, trust company, investment or stock broker or like institution in any part of the world in which the trust fund is invested or situated and the Trustee is not liable or responsible for any loss not caused by its own fault which may in any manner occur in relation to so depositing such documents of title.

Meetings of unit holders

18.1 *Convening and adjourning a meeting of unit holders*

- (a) The Trustee may whenever it thinks fit convene a meeting of unit holders.
- (b) The Trustee must convene a meeting of unit holders if required to do so by a requisition signed by or on behalf of unit holders registered as the holders in the aggregate of 25% or more of units.
- (c) The Trustee may adjourn a meeting of unit holders, whether called by itself or the unit holders, to such date and time, being within 21 days of the date of the adjourned meeting, and at such place, as the Trustee may determine.

18.2 *Notice of meetings*


- (a) Not less than 28 days' notice must be given of every meeting of unit holders and such notice must be given to all unit holders specifying the general nature of the business to be transacted. The date of service of the notice is to be counted as the first day but the day of the meeting is not to be counted.
- (b) A meeting may be held at shorter notice being not less than twenty-four hours with the consent of unit holders holding 25% or more of the unit entitled to receive notice and attend such meeting.
- (c) A meeting may be held at less than twenty-four hours notice with the consent of all unit holders entitled to receive notice and attend such meeting.

18.3 *Appointment of chairman*

At every meeting of unit holders the Trustee must nominate some person, whether a unit holder or not, to preside as chairman. If there is an equality of votes, the chairman does not have a casting vote.

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18.4 *Determination of questions*

Every question arising at a meeting of unit holders is to be decided in the first instance by a show of hands unless:

- (a) it be a question which under this deed must be decided by the holds of a prescribed percentage or more of the units in which case a poll is to be taken; or
- (b) a poll is demanded.

18.5 *Calling a poll*

A poll may be demanded by unit holders holding not less than 24% of the units entitled to vote at meetings of the unit holders.

18.6 *One vote per unit*

Upon a poll every unit holder present in person or by proxy, subject to any contrary special rights, restriction or condition attaching to a unit, will have one vote for every unit held.

18.7 *Giving of votes*

Votes may be given either personally, by proxy, by attorney or, in the case of a unit holder which is a company, by a person appointed under seal to represent the company.

18.8 *Proxies and representatives*

Every instrument of proxy or appointment of a representative must be in such form as the Trustee may prescribe or otherwise in such common or ordinary form and must be signed by the unit holder. The instrument appointing a proxy must be deposited at the office of the Trustee not less than 24 hours, or such lesser period as the Trustee may agree to, before the time of holding the meeting or adjourned meeting as the case may be at which the person named as proxy proposes to vote.

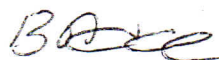
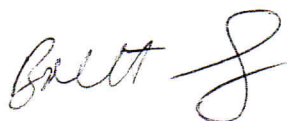
18.9 *Quorum*

The quorum for a meeting is 2 or more unit holders present personally or by proxy or by representative or attorney who so represent in the aggregate not less than 24% of the units.

18.10 *Joint unit holders*

If there be joint unit holders of any unit:

- (a) any of such joint holders may vote either personally or by proxy as if such joint holder were solely entitled to the units comprised in the joint holding; and



- (b) if more than one of such joint holders is present at any meeting either personally or by proxy, the joint holder whose name stands first in the register in respect of the joint holding is alone entitled to vote in respect of such holding.

The executors or administrators of a deceased holder are, for the purposes of this clause, to be taken to be joint holders.

18.11 *Minors*

A unit holder who is a minor or a person under a legal disability may vote only by a parent or his legal guardian or by such other person as properly has the management of his or her affairs. Any such parent, legal guardian or other person may vote either personally or by proxy and may vote both on a show of hands and in a poll and may be counted in determining a quorum.

Limitation on liability of unit holders

19.1 *No partnership*


Nothing in this deed constitutes or is to be taken to constitute:

- (a) the relationship of principal and agent between the Trustee and the unit holders;
- (b) the relationship of partners as between the Trustee and the unit holders; or
- (c) the relationship of partners as between the unit holders among themselves.

19.2 *No indemnity from unit holders*

- (a) Notwithstanding any other provision of this deed or any rule of law to the contrary, no unit holder by reason of holding units or of the relationship created by this deed is under any obligation personally to indemnify the Trustee or any creditor of the Trustee in the even of there being any deficiency of the assets of the trust fund as compared with the liabilities of the Trustee in relation to the trust fund.
- (b) The rights of indemnity of the Trustee or of such creditor are limited to recourse to the assets of the trust fund.
- (c) A unit holder is not liable for any loss or damage howsoever incurred or suffered by the Trustee in acting as trustee of the Trust or otherwise in connection with the Trust to the extent to which the loss or damage exceeds so much of the consideration (if any) payable for issue of the units held by the unit holder as may be unpaid and outstanding.
- (d) The Trustee expressly waives, releases, forfeits and abandons all rights and remedies which it otherwise might have at law or in equity to recover from a unit holder moneys by reason of any right of indemnity or subrogation notwithstanding that any such right may not be able to be satisfied or discharged in whole or in part out of the assets comprising the trust fund.

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19.3 *No right of action if unit holders consent to investment*

If all of the unit holders consent in writing to the Trustee acquiring an investment as part of the trust fund, the unit holders are to be taken as having waived all rights they may have against the Trustee at law or under this deed with respect to the Trustee's acquisition of the investment. This sub-clause applies whether the consent of the unit holders was obtained on, prior to or after the date the investment was acquired by the Trustee.

Investment powers

20.1 *Power to invest and vary investments*

The Trustee may invest the trust fund in any form of investment and vary an investment at any time.

20.2 *Diminishing the duty of care*

If the Trustee is not a public company or a subsidiary of a public company, there is no obligation on the Trustee in exercising a power of investment to exercise the care, diligence and skill that a prudent person would exercise in managing the affairs of other persons.

20.3 *Review of investment performance*

The Trustee may, but is not required to, review at any time or at fixed intervals the performance (individually or as a whole) of the Trust investments.

20.4 *Broadening of investment power*

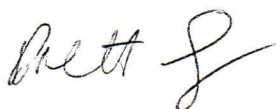
The Trustee may exercise the power to invest the trust fund or vary an investment without the need to comply with any rule or principle of law or equity including a duty to invest the trust fund in investments which are not speculative, hazardous or involving waste. For the purposes of this and the next sub-clause, the expressions 'vary an instrument' and 'varying an investment' includes realising an investment or a change to a term or condition of an investment.

20.5 *Investment advice*

In exercising the power of investment, the Trustee may, but is not required to, having regard to the size and nature of the Trust, do either or both of the following:

- (a) obtain and consider independent and impartial advice for the investment of the trust fund, varying an investment or the management of the investment from a person whom the trustee reasonably believes to be competent to give the advice; and
- (b) pay out of the trust fund the reasonable costs of obtaining the advice.

[Only for New South Wales and States (if any) which have legislative provisions similar to section 14C(3) of the NSW Trustee Act 1925]



20.6 Section 14C of the Trustee Act 1925 (NSW)

The Trustee is expressly forbidden to comply with any one or more paragraphs of sub-s (1) of s.14C of the Trustee Act 1925 (NSW) where in the reasonable opinion of the Trustee compliance would not advance the purposes of the Trust.

General powers


21.1 *General powers*

In the administration of the Trust and in the exercise of the powers, authorities and discretions conferred by this deed or by law, the Trustee has the following powers which are in addition to the powers, authorities and discretions vested in it by any other provision of this deed or by law and which do not limit the powers, authorities and discretions otherwise vested in the Trustee by this deed or by law:

- (a) *Generally deal with trust fund:* to sell, call in, convert into money, grant options or rights to purchase, mortgage, charge, sub-charge, or otherwise deal with, dispose of or transfer any item or asset comprising the whole or part of the trust fund or otherwise held by the Trustee under the terms of the Trust for such consideration and on such terms as it may think fit as if it were the absolute and beneficial owner of the trust fund;
- (b) *Real property:* to acquire, dispose of, exchange, mortgage, sub-mortgage, lease, sub-lease, let, grant, release or vary any right or easement or otherwise deal with real property or any estate or interest in real property;
- (c) *Personal property:* to acquire, dispose of, exchange, hire, lease, let, mortgage or otherwise deal with personal property of any kind;
- (d) *Lease:* to rent premises from any person, acquire the interest of any lessee in any lease, purchase, hire, taken on lease, grant leases, sub-leases and tenancies or rights of any nature in and to any realty or estate or interest in land or in and to motor vehicles, computer hardware and software, fixtures and fittings, furniture, utensils, plant and equipment and other personalty of any other description;
- (e) *To let:* to lease and let property forming part of the trust fund for such period, at a rental and to persons and upon such terms as the Trustee may decide and to accept surrenders from, make allowances to and arrangements with, a tenant with or without consideration as the Trustee may think fit;
- (f) *Employment:* to engage or employ persons, including a person having an interest in or who is the holder of an office in the Trustee, or obtain such other assistance as the Trustee may deem requisite, to provide staff amenities and to vary and terminate any contract of employment;

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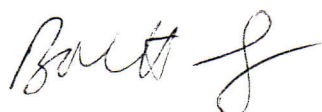
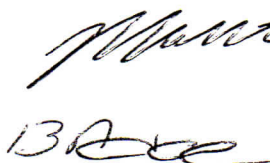

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- (g) *Engage experts:* to employ or engage agents or professionals in the execution of these trusts and powers and instead of acting personally from time to time, to employ or engage and pay out of the trust fund such managers, agents, advisers, solicitors, barristers, auditors, accountants, brokers, surveyors, valuers or other persons to transact any business or to do any act required to be done in connection with the administration of these trusts and to act upon the opinion or advice of any such person without being responsible for loss or damage occasioned in so acting;
- (h) *Power to lend:* to lend moneys forming part of the trust fund, or give credit to any person or company on such terms as the Trustee may decide, in particular without limiting the generality of the foregoing, to any unit holder or person having an interest in or to the holder of an office in the Trustee and any such lending or giving of credit may be made at call or for a period of time and may be made at a rate of interest or at no interest, and may involve the taking of security in any form or without security;
- (i) *Power to borrow:* to raise or borrow moneys either alone or jointly with another or others, from any person including a firm or company, either bearing or free from interest on such terms and conditions and for purposes as the Trustee may decide, and to secure the repayment of any moneys or other indebtedness by mortgage, charge or other security or encumbrance over the whole or part of the trust fund as the Trustee may decide or to have the repayment secured over property of a third party which may include property of the Trustee or a unit holder whether such third party collateral security is given alone or jointly with property of the trust fund and no lender is required to inquire as to whether the necessity for any such borrowing has arisen or as to the purpose for which it is required, or as the application of moneys borrowed;
- (j) *Commercial bills:* to draw, endorse, accept, guarantee or be a party in any way to a commercial bill or other bill of exchange, promissory note, letter of credit, hypothecation or other facility involving the raising, borrowing or lending of moneys by or to the Trustee;
- (k) *Credit:* to enter into alone or with others any agreement or arrangement for obtaining credit upon such terms as the Trustee may see fit including but not limited to obtaining, upon deferred terms as to payment, goods, trading stock or other property or services of any nature;
- (l) *Attorney:* to appoint any person as the representative or attorney of the Trustee for the purpose of executing any document which the Trustee is permitted or authorised to execute by this deed or by law and to revoke any such appointment;
- (m) *Service entity:* to act as a service entity in providing office supplies and services, including professional or other employees, office furniture and equipment of all types, stationery, telephone and electricity services, management, administration and consultancy services and anything incidental to them;
- (n) *Bank accounts:* to open in the name of the Trustee or in the name of a person or corporation as nominee of the Trustee or in the joint names of the Trustee and another, any cheque, savings deposit or other account with any bank or financial institution wherever situated with full power to operate on any such account including, without limitation, power to sign, draw and endorse cheques and other negotiable or transferable instruments on the account and to close the account;

Brett C. J.

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- (o) *Management expenses*: to pay out of income or capital all costs, charges and expenses incidental to the management of the trust fund or to the exercise of any permitted power, authority or discretion or in carrying out or performing the trusts of this deed;
- (p) *Pay general expenses*: to pay insurance premiums, rates, taxes rents and outgoings in connection with real or personal property of the trust fund and to manage property and effect repairs as the Trustee may consider necessary or advisable and where the Trustee is unable to charge such expenditure against income it is at liberty to restore to capital;
- (q) *Corporate securities*: with respect to any company in which the Trustee hold shares, debentures, options, convertible notes or other security ('securities') to exercise the following powers in addition to powers conferred by law:
 - (i) to pay calls on securities or permit securities to be forfeited and sold;
 - (ii) to purchase securities and take up securities of a new issue;
 - (iii) to attend meetings personally or by proxy, attorney or representative and vote at the discretion of the Trustee;
 - (iv) to sell securities at a price and upon terms as the Trustee may decide;
 - (v) to assent to or join in any arrangement relating to the sale, transfer or exchange of any securities or modifying any rights, privileges or interests in relation to securities, to agree to any scheme or arrangement for the increase or reduction of the value of amounts of any securities or of the capital of any company in which any securities form part of the trust fund or by which any securities are substituted or given in exchange, either wholly or partly for other securities, whether in the same company or not, and for any such purpose to deposit, surrender or exchange any scrip or documents of title relating to the securities and to pay out of capital or income any contribution or incur any expense in connection with such scheme or arrangement and generally to manage and deal with any securities as if the Trustee owned them beneficially; and
 - (vi) to agree in respect of a winding up with the liquidator of the company or any member or creditor of the company, or in a voluntary administration, as the trustee thinks fit;
- (r) *Unit trust interests*: to acquire units or sub-units of any fixed or flexible unit trust either by way of application, purchase or by way of settlement by the Trustee in the establishment of such unit trust and to exercise all rights including voting rights and perform all obligations as a holder of any units in such trust and to accept all distributions by the trustee of such unit trust as income or capital and as unit holder the Trustee may in its absolute discretion consent to a breach of trust by the trustee of the unit trust or give its consent to, or waive its rights with respect to, any action taken or to be taken by the trustee of the unit trust and the Trustee may so act even if the Trustee's actions may not be in the interests of the Trust or the unit trust;
- (s) *Franchises*: to acquire by means of purchase or otherwise and to sell, dispose, relinquish or otherwise deal in franchises, franchise agreements, licence or things of like nature relating to subject matters of all kinds;
- (t) *Subdivision of property*: to partition or subdivide property of any kind which, or any interest in which, may for the time being be subject to these trusts and to pay moneys by way of equality or partition;
- (u) *Development of property*: to enter into any agreement with any person with respect to the development and turning to account of any real or personal

property or any interest in property and any other right, privilege or interest for the time being subject to these trusts or with respect to the construction of any buildings, laying out or preparing land for building purposes or in developing or turning to account real or personal property or any rights, privileges or interests;

- (v) *Promotion of companies:* to establish, promote or acquire any company or join in the promotion or establishment of any company and to do anything which a person, not being a trustee, is authorised or empowered to do under any law relating to or governing any such company;
- (w) *Maintain property:* to maintain and preserve in good and substantial order and condition real or personal property of the trust fund or otherwise held by the Trustee under the terms of this deed and to pay or defray those costs;
- (x) *Guarantees and indemnities:* power, whether with or without security and whether alone or jointly or severally or both jointly and severally with any other person, to guarantee, indemnify, secure by way of mortgage, charge or otherwise over the whole or part of the trust fund or undertake in any way the payment or repayment of money or debts (including any interest whether existing or to accrue) previously or then lent or to be advanced or any existing or future duties, undertakings, liabilities or obligations incurred or which may at any future time be incurred by any person whether a unit holder or not and to guarantee, indemnify or secure, with or without security, the due performance of any contract, agreement, covenant, or obligation of any person whether a unit holder or not;
- (y) *Power to set aside:* to set aside out of income or capital from time to time such money as may in the opinion of the Trustee be sufficient to meet any debt or obligation due or accruing;
- (z) *Superannuation and bonuses:* to pay bonuses, gratuities or retirement benefits or to establish and support or aid in the establishment and support of schemes providing superannuation, death and retirement benefits or any one or more of such benefits in respect of employees or ex-employees of the Trustee, including in the case of a corporate trustee directors or other holders of any office of the Trustee and the dependants of any such persons and for the benefit of employees, ex-employees and their dependants of any company or person associated with the Trustee;
- (aa) *Futures contracts and options:* to engage brokers and commission agents and vary and determine the terms of any such engagement and either directly or through any broker or agent in any market in any part of the world to buy, sell, open, close-out or otherwise deal in futures contracts of all kinds and to enter into, vary, exercise, abandon or sell any put or call option or rights, or to place bids, make offers, hedge and effect orders including buying, selling, straddle, switch and stop-loss orders to tender and take delivery of commodities and currencies which are the subject of any futures contract or option and otherwise to do and perform all things so as to operate, utilise or deal with the facilities of any stock or futures exchange;
- (bb) *To mix funds:* to mix the trust fund including its income and any other moneys held from time to time by the Trustee pursuant to these trusts with any other moneys held by the Trustee pursuant to any provision of this deed or under any other trust deed and;
 - (i) to invest the moneys so mixed in any investment, property, interest, arrangement or business or in any other mode or manner in which the

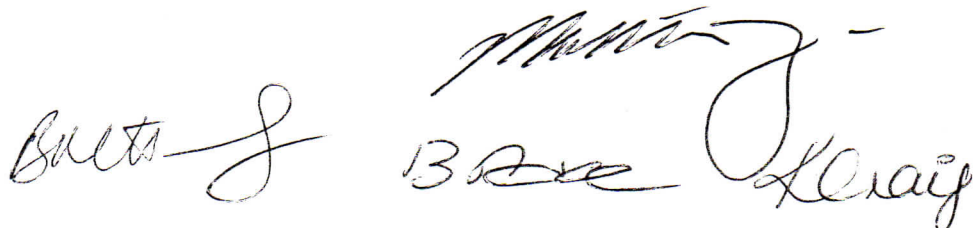
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Trustee may by law or by this deed be empowered to invest the trust fund;

- (ii) to exercise all powers authorities and discretions with respect to the mixed fund which the Trustee is by this deed or by law is authorised to exercise with respect to the trust fund; and
- (iii) to make such arrangements with respect to the moneys and their investment with any other person as the Trustee would be authorised or empowered by law or by this deed to make or enter into;
- (cc) *Trustee's power to deal with itself*: notwithstanding any rule of law to the contrary, to acquire as property of the trust fund real or personal property the beneficial interest in which is at the date of such acquisition the absolute property of the Trustee provided that any property so acquired is acquired for a consideration being not greater than the current market value of the property and upon such acquisition the beneficial interest in and to the property will be held by the Trustee upon the trusts contained in this deed;
- (dd) *Policies*: to effect or acquire policies of life assurance of any kind on the life of any person or in respect of sickness, disability or accident to any person and to pay premiums, transfer, surrender, change the situs of and deal with such policies in any manner, whether or not such policies are individual policies on the life of one person or a group policy on the lives of two or more persons, and to purchase or enter into insurance or investment bonds whether or not the bonds are linked to a policy over the life of any person;
- (ee) *Determination between capital and income*: to determine whether real or personal property, or any increase or decrease in value of any property, or any receipts or payments from, for or in connection with real or personal property, is to be treated as and creditor or debited to capital or to income and generally to determine all matters as to which any doubt may arise in relation to the execution of the Trust and powers of the Trust and every determination of the Trustee in relation to any of these matters, whether upon a question formally or actually raised or implied in any of the acts or proceedings of the Trustee in relation to the trust fund, binds all interested parties and may not be objected to on any ground;
- (ff) *Partnerships and joint ventures*: to enter into partnership or a joint venture with any person on such terms as the Trustee thinks fit and to vary the terms of or terminate and be a party to the partition of assets of any such partnership or joint venture;
- (gg) *To permit a unit holder to use trust property*: to permit a unit holder to reside in any house, flat, strata title lot or other residential unit or to use any personal property which, or the proceeds of sale of which, may from the time being be subject to the Trust with or without consideration and generally upon such terms as the Trustee in its discretion thinks fit;
- (hh) *Agency and licences*: to apply for, purchase or hold any permit, agency or licence which may be desirable or required to enable or facilitate the carrying on of any business or venture which the Trustee is empowered to engage in and to surrender, relinquish, sell, vary or assign the same;
- (ii) *Choses-in-action*: to acquire choses-in-action, including debts and obligations of all kinds, for value or by way of gift or at a discount or at a premium and to assign, release, vary, relinquish or otherwise deal with such choses-in-action in any way on such terms and conditions as the Trustee may see fit;

The image shows three handwritten signatures in black ink. On the left is a signature that appears to be 'Burt J'. In the middle is a signature that appears to be 'Burt'. On the right is a signature that appears to be 'Keraj'.

- (jj) *Advertise*: to adopt such means of making known and advertising any business which the Trustee is empowered to carry on or in pursuing any power as may seem expedient or desirable;
- (kk) *Make gifts and donations*: to make gifts or donations out of the trust fund for any charitable, scientific or education purposes;
- (ll) *Receive gifts*: to receive property by gift inter vivos or by will or under the provisions of any trust or otherwise from any person as an addition to the trust fund and whether subject to liabilities or not and to hold the same upon these trusts and to administer such additions as part of the trust fund;
- (mm) *Legal proceedings*: to institute, join in and defend proceedings at law or by way of mediation or arbitration and to proceed to the final end and determination and to compromise and settle any such dispute or proceedings for such consideration and upon such terms and conditions as the Trustee may decide;
- (nn) *Intellectual property rights*: to apply for, purchase or otherwise acquire and to sell patents, patent rights, copyrights, trade marks, designs, formulas, licenses, concessions, know-how and the like conferring any exclusive or non-exclusive or limited right to use or any other intellectual property rights and to use, exercise, develop or grant licenses in respect of or otherwise turn to account property rights or information so acquired;
- (oo) *Power to appropriate trust fund in specie*: to appropriate in specie any portion of the trust fund, or any investment to or towards the share or entitlement of a unit holder and to charge any such share or entitlement with such sum of money by way of equality as the Trustee may think fit and for these purpose the Trustee may fix the value of any real or personal property forming part of the trust fund and every such appropriation, charge and valuation is binding on all persons who may at any time be entitled to any interest in the trust fund;
- (pp) *Release of powers*: by irrevocable deed to renounce and release any power conferred on the Trustee under the Trust in respect of the whole or part of the trust fund or the income and upon such renunciation and release coming into effect, such power is to be taken to be at an end and no longer exercisable by the Trustee to the extent of such renunciation and release;
- (qq) *Incidental powers*: to do all other things as may be incidental to the exercise of the powers, rights, discretions and authorities conferred on the Trustee by this deed;
- (rr) *Carry on business*: from time to time to carry on alone or jointly with another or others any business or an interest in any business and use the trust fund in carrying on such business as the Trustee may decide with power to charge against or pay or retain out of the trust fund all debts, costs, expenses, and other outgoings incurred in carrying on such business or for the purpose of carrying it on or for the purpose of establishing a proposed business and without limitation the Trustee has the following powers:
 - (i) to investigate and determine the feasibility or desirability of establishing or carrying or acquiring any business or an interest in any business which the Trustee proposes or considers establishing or carrying on or acquiring and the Trustee is entitled to incur expenses in or in connection with any investigation and determination and to pay or recoup such expenses out of income or capital whether or not pursuant to that investigation and determination the Trustee proceeds to establish or carry on that business;
 - (ii) to establish any business;

Bruce J



Bruce J. Kay

- (iii) to acquire the whole or part of the goodwill of an existing business;
- (iv) to acquire the assets, or an interest in the assets, of or used in any business;
- (v) to undertake the meet liabilities or contingent liabilities incurred or to be incurred by any person in or about the establishment or carrying on or acquisition of the whole or part of any existing business the goodwill and assets of which or any of which are proposed to be acquired by the Trustee and to given indemnities for or enter into guarantees of such liabilities and contingent liabilities or any of them;
- (vi) to acquire, or join in acquiring, chattels and stock in trade for use in, or in connection with, any business carried on or proposed to be carried on by the Trustee or in which the Trustee may acquire an interest;
- (vii) to make payments or incur expenses or liabilities (including donations) which the Trustee considers to be for the benefit of any business carried on by or proposed to be carried on by the Trustee or in which the Trustee may have an interest or which the Trustee considers will promote or facilitate such business notwithstanding that the Trustee may be under no legal or enforceable obligation to make such payments or incur such expenses or liabilities and notwithstanding that such payments or the incurring of such expenses or liabilities do not produce any direct benefit to the trust fund;
- (viii) to sell the goodwill of any business;
- (ix) to enter into any covenant or agreement in restraint of trade;
- (x) to enter into contracts for importing or exporting goods and to enter into contracts for the shipping or other transportation of goods; and
- (xi) to carry on any business in the same manner and with the same powers and rights as the Trustee would have in relation to the business as if it were carrying it on in its own right and not as trustee and in carrying on such business:
 - (A) the Trustee may transfer title to any property which it holds as trustee, with or without consideration, notwithstanding any limitation on such power which might otherwise by operation of law or under any other provision of this deed prevent such title being effectually or validly transferred by reason of it being a trustee or the transferee having notice that it is a trustee;
 - (B) any person dealing with the Trustee may contract with and make payments to the Trustee without being required to inquire as to whether the Trustee has power to deal with them under this deed or whether the Trustee is properly exercising any power it may have in so dealing with such person is not obliged to inquire as to the property application by the Trustee of any payment so made or is accountable for the non-application of such money notwithstanding that such person was on notice that the Trustee was carrying on such business as a trustee; and
 - (C) the title of any person to whom property is transferred by the Trustee, whether with or without consideration, is not affected by any notice that the Trustee held title to such property as a trustee and the receipt of the Trustee is an absolute discharge for any payment made to the Trustee.

Fullth J *Martin* *Bar* *Gray*

21.2 *Power to act as a director*

The Trustee, being a natural person, may become a director of any company in which any moneys forming part of the trust fund are from time to time invested and may receive the remuneration attached to such office without being liable to account.

21.3 *Power to act notwithstanding personal interest*

The Trustee may exercise or concur in exercising all powers and discretions given under this deed or by law notwithstanding that it, or any person being a director or shareholder of the Trustee, has or may have a direct or indirect interest in the mode or result of exercising such power or discretion or may benefit either directly or indirectly as a result of the exercise of any such power or discretion and notwithstanding that the Trustee for the time being is a sole trustee.

Termination of trust

22.1 *Termination of trust*

The Trust must wind-up and terminate on the first to occur of:

- (a) the date of termination which unit holders holding not less than 25% of the units notify the Trustee in writing that the Trust is to be determined;
- (b) if at any time the Trustee considers it to be in the interests of the unit holders, the date the Trustee so determines; or
- (c) 80 years from the date of this deed

22.2 *Procedure on termination*

The Trustee must on the termination date:

- (a) as soon as practicable sell, call in and convert into money the investments and property constituting the trust fund;
- (b) pay out all debts and liabilities in relation to the Trust; and
- (c) pay the remainder, less all proper costs, disbursements, fees and other outgoings and less all proper provisions for future liability, to the unit holders (subject to any right, restriction or condition affecting the units into which the trust fund is divided relating to the right to share in the capital of the trust fund on the termination of the trust fund) in proportion to the number of units of which they are at the termination date respectively registered as the holders.

22.3 *Postponement of sale*

In winding up the Trust the Trustee may postpone the sale, calling in and conversion of any part of the investments and property of the trust fund for such time as it thinks desirable in the interests of the unit holders and is not responsible for any loss attributable to such postponement.

But J *Barre* *Kraig*

22.4 *Provision for liabilities*

In winding up the Trust the Trustee may make such provision as in its discretion it considers necessary to provide for any outgoing or liabilities (actual or contingent) in respect of the trust fund or any of the investments of the trust fund before making any distribution to the unit holders and subject to this must hold the part of the trust fund or the investment so retained in trust for the unit holders otherwise entitled.

Notices and service

23.1 *Notices*

Subject to the provisions of cl 23.3, for a notice or demand given under this deed to be properly made it must be in writing; and

- (a) where the notice or demand is given by an individual, it must be signed by such party personally or by a solicitor acting for the individual or by any agent or attorney of such party authorised in writing; and
- (b) where the notice or demand is given by a company, it must be executed under seal or signed by a director or secretary of such company or by a solicitor acting for the company or by any agent or attorney of the company who is duly authorised in writing in that regard.

23.2 *Service*

In addition to any method of service authorised by the law governing this deed, service of a notice or demand is sufficient and effect if:

- (a) where service is to be on a company, the notice or demand is:
 - (i) delivered or sent by pre-paid post to the registered office or a place of business of that company;
 - (ii) served personally on any director of that company;
 - (iii) where the company to be served is a unit holder, the notice or demand is delivered or sent by prepaid post to the address of the unit holder as shown in the register; or
 - (iv) served by facsimile in accordance with cl 23.4; and
- (b) where service is to be upon a natural person, the notice or demand is:
 - (i) served personally;
 - (ii) delivered or sent by pre-paid post to the place of business or residence of that person;
 - (iii) where the person to be served is a unit holder, the notice or demand is delivered or sent by prepaid post to the address of the unit holder as shown in the register; or
 - (iv) served by facsimile in accordance with cl 23.4.

23.3 *Provisions regarding service*

Notwithstanding the provisions of the two previous sub-clauses:

- (a) service of a notice or demand on any one of several joint unit holders is to be taken to be effective service on all joint holders;
- (b) a notice or demand to be served at an address in Australia and sent by pre-paid post from within Australia is properly served only if it is sent by prepaid

Brett J. Murray
Brett J. Murray


- ordinary, express or security post and is to be taken to have been served on the next business day following date of posting; and
- (c) a notice or demand to be served at an address outside Australia and sent by pre-paid post from within Australia is properly served only if it is sent by any form of pre-paid airmail post and is to be take to have been served on the sixth business day following the day of posting.

23.4 *Facsimile service*

- (a) Service of a notice or demand may be effected by facsimile transmission to a facsimile number known by the sender of the notice or demand to be a current facsimile number of the person or company ('receiver') to be served, and is to be taken to have been served when the facsimile machine of the sender produces a report showing the date an time of the transmission and the facsimile number of the receiver. Where the receive within 24 hours of transmission notifies the sender that the transmission as not wholly received in legible form, service by facsimile is effective where a retransmission is sent in conformity with this clause, and no such notice is given by the receiver.
- (b) A facsimile communication transmitted after 5pm eastern standard time, or on a date other than a Saturday, Sunday or public holiday in New South Wales ('business day') is to be taken to have been transmitted and received on the next business day in.

EXECUTED AS A DEED

SIGNED SEALED AND DELIVERED)
 by Brett Alexander Craig)
 in the presence of:)



 Director/Secretary - Red Eye
 Constructions Pty Ltd




SIGNED SEALED AND DELIVERED)
 by Bradley Ivan Ridge)
 in the presence of:)



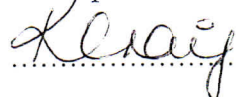
 Director - Red Eye Constructions Pty Ltd



SIGNED SEALED AND DELIVERED)
 by Matthew David Myers)
 in the presence of:)



 Settlor



UNIT TRUST CERTIFICATE

Certificate No:

The Red Eye Unit Trust

Established in New South Wales by deed dated

This is to certify that **B. CRAIG HOLDINGS PTY LTD** as Trustee for the Craig Family Trust is the holder of 4 **units** in the Red Eye unit trust on which all moneys payable on issue of the units have been paid. The units are issued subject to and with the benefit of the terms and conditions of the deed establishing the Red Eye Unit Trust as varied from time to time.

Special rights, restrictions or conditions attaching to these units at time of issue:

Nil

(If units are units of a class, set out terms in respect of such class of units)

DATED this 20th day of October 2005.

SIGNED FOR AND ON BEHALF
OF RED EYE CONSTRUCTIONS
PTY LTD



.....
Signature of Director/Secretary



.....
Signature of Director

UNIT TRUST CERTIFICATE

Certificate No:

The Red Eye Unit Trust

Established in New South Wales by deed dated

This is to certify that **RIDGE FAMILY HOLDINGS PTY LTD** as Trustee for the Ridge Family Trust is the holder of 4 **units** in the Red Eye unit trust on which all moneys payable on issue of the units have been paid. The units are issued subject to and with the benefit of the terms and conditions of the deed establishing the Red Eye Unit Trust as varied from time to time.

Special rights, restrictions or conditions attaching to these units at time of issue:

Nil

(If units are units of a class, set out terms in respect of such class of units)

DATED this 20th day of October 2005.

SIGNED FOR AND ON BEHALF
OF RED EYE CONSTRUCTIONS
PTY LTD


.....
Signature of Director/Secretary


.....
Signature of Director



Australian Government

Department of Climate Change, Energy,
the Environment and Water

Notification of referral decision and designated proponent – controlled action. Preliminary documentation

Torrens Title 8-Lot Industrial Subdivision, NSW (EPBC 2023/09648)

This decision is made under section 75 and section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action

designated proponent Red Eye Constructions Pty Ltd

ACN 116 100 657

proposed action The proposed action involves a one into eight lot Torrens Title subdivision of a 4.72 ha site and associated infrastructure in Wyong, NSW (See EPBC Act referral 2023/09648).

Referral decision: controlled action

status of proposed action The proposed action is a controlled action.

The project will require assessment and approval under the EPBC Act before it can proceed.

relevant controlling provisions Listed threatened species and communities (sections 18 & 18A)

Assessment approach decision

assessment approach The project will be assessed by preliminary documentation.

Person authorised to make decision

name and position Fiona Beynon
A/g Branch Head
Environment Assessments NSW and ACT

Signature

date of decision 2 February 2024



ecoplanning
ecology | planning | offsets

Preliminary Documentation for EPBC Act Assessment



Torrens Title 8-Lot Industrial Subdivision, Wyong, NSW

Prepared for: Red Eye Constructions Pty Ltd

29 July 2024 Version: 1.1

PROJECT NUMBER	2023-087			
PROJECT NAME	Preliminary Documentation for EPBC Act Assessment			
PROJECT ADDRESS	Torrens Title 8-Lot Industrial Subdivision, Wyong, NSW			
PREPARED FOR	Red Eye Constructions Pty Ltd			
AUTHOR/S	Brian Towle			
REVIEW	Technical	QA	Version	Date to client
	Robert Humphries		1.0	27 June 2024
			1.1	29 July 2024
LICENCES	Scientific Licence		SL101557	
	Bionet Sensitive Species Data Licence		1115	
	Animal Research Authority Ethics Licence		Fauna Surveys and Monitoring (16/346)	
	Scientific Collection - Aquatic		P19/0009-1.0 & OUT19/2602	

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Contents

1	Introduction.....	1
1.1	Project background	1
2	Description of the proposed action.....	5
2.1	Current management of the project area	7
2.2	Consultation and alternatives considered	11
2.3	Mitigation measures	11
2.4	Assessment and approval under state legislation	12
3	Description of the environment	13
3.1	IBRA bioregions and IBRA subregions	13
3.2	Rivers, streams, wetlands and hydrology	13
3.3	Areas of geological significance.....	16
3.4	Existing ecosystem	16
3.4.1	Native vegetation	16
3.4.2	Flora and fauna habitat values	19
4	Threatened species and ecological communities	21
4.1	██████████ (██████████)	21
4.1.1	Occurrence across the species' range	21
4.1.2	Occurrence within the project area	24
4.1.3	Habitat.....	32
4.1.4	Impact Assessment	35
4.1.5	Avoidance, mitigation, and management measures	37
4.1.6	Compensation measures (offsets).....	38
4.2	Swift Parrot.....	39
4.2.1	Species occurrence and habitat	39
4.2.2	Impact Assessment	42
4.3	Coastal Swamp Sclerophyll Forest of NSW and South East Queensland	43
4.3.1	Occurrence within the project area and region	43
4.3.2	Impact Assessment	44
5	Other requirements	46
5.1	Economic and social matters	46
5.2	Environmental history of the person proposing to take the action	46
6	Conclusions.....	47
7	References	49



Appendices

Appendix A	EPBC Act Referral.....	52
Appendix B	Request for Information (RFI)	52
Appendix C	Requested information Checklist	52
Appendix D	Translocation Plan.....	52
Appendix E	BDAR	52
Appendix F	Environmental Management Plan	52

Figures

Figure 1.1:	The project area	4
Figure 2.1:	Proposed subdivision layout	6
Figure 2.2:	Aerial imagery of the project area from July 2010, September 2020 and May 2023 (source: Nearmap)	8
	.....	9
Figure 2.4:	Location of star-picket installation in 2020	10
Figure 3.1:	The assessment area, including native vegetation extent and rivers, streams and wetlands	15
Figure 3.2:	Plant Community Types mapped across the project area (Source HES 2023)	18
Figure 4.1:	.....	23
Figure 4.2:	.....	25
Figure 4.3:	Survey effort for within the project area in 2022 (Source: HES 2023)	26
Figure 4.4:	Survey effort for within the project area in 2023 (Source: Ecoplanning 2023)	27
Figure 4.5:	Recorded locations for within the project area across all seasons	31
Figure 4.6:	Modified landforms within the source site including recorded locations for	33
Figure 4.7:	Ponding water within recorded locations of	34
Figure 4.8:	..... growing within an exotic grassland	34
Figure 4.9:	Swift Parrot records from BioNet within the assessment area and surrounds	40
Figure 4.10:	Important area mapping for the Swift Parrot (Source: NSW DCEEW 2024)	41

Tables

Table 3.1: Plant Community Types within the project area (after HES 2023)	17
Table 4.1: Recorded sub-populations of [REDACTED] including population estimates	22
Table 4.2: Occurrence within the project area	29

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Glossary and abbreviations

Acronym	Description
AES	Australian Environmental Surveys
BAM	Biodiversity Assessment Method
BAM -C	Biodiversity Assessment Method Calculator
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BC Reg	NSW <i>Biodiversity Conservation Regulation 2017</i>
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
DA	Development Application
DAWE	Former Department of Agriculture, Water and Environment, now Cth. DCCEEW
Cth. DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DoE	Former Department of Environment, now Cth. DCCEEW
DoEE	Former Department of the Environment and Energy, now Cth. DCCEEW
DPE	Former Department of Planning and Environment, now NSW DCCEEW
DPIE	Former Department of Planning, Industry and Environment, now NSW DCCEEW
DSEWPAC	Former Department of Sustainability, Environment, Water, Population and Communities, now Cth. DCCEEW
EEC	Endangered Ecological Community
EP&A Act	NSW <i>Environmental Planning & Assessment Act 1979</i>

Acronym	Description
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GDA	Geocentric Datum of Australia
HES	Habitat Environmental Services
IBRA	Interim Biogeographic Regionalisation of Australia
MNES	Matter of National Environmental Significance
NPWS	National Parks and Wildlife Services
NSW	New South Wales
OEH	Former Office of Environment and Heritage, now NSW DCCEE
PCT	Plant Community Type
PD	Preliminary Documentation
RFI	Request For Information
SCA	State Conservation Area
SEPP	State Environmental Planning Policy
SoS	Saving our Species
VIS	Vegetation Integrity Score



1 Introduction

Red Eye Constructions Pty Ltd propose a one (1) into eight (8) lot Torrens Title subdivision (the 'proposed action') of lands located at 460 Pacific Highway, Wyong NSW (Lot 1212, DP 818944), hereafter referred to as the project area (**Figure 1.1**).

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a process for environmental assessment and approval of proposed actions that have, will have, or are likely to have, a significant impact on Matters of National Environmental Significance (MNES) or on Commonwealth land. Under the EPBC Act, a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth. DCCEEW) is required if the Project has the potential to cause a 'significant impact' on MNES.

On the 13 September 2023 the proposed action was referred to Cth. DCCEEW (2023/09648) due to the potential for significant impacts of MNES (**Appendix A**). On 2 February 2024, a delegate of the Minister for the Environment and Water determined that the proposed action was a controlled action due to likely significant impacts on listed threatened species and communities (s18 & s18A). Specifically, the Cth. DCCEEW considers that ██████████ (██████████) is likely to be significantly impacted by the proposed action, based upon the submitted referral. It was also determined under section 87 of the EPBC Act, that the proposed action will be assessed by Preliminary Documentation (PD).

This report, the PD, addresses the additional information required for assessment (Request for Information; 'RFI') dated 24 April 2024 (**Appendix B**), to allow the Minister (or delegate) to make an informed decision on whether to approve the proposed action. **Appendix C** details the additional requested information within the RFI and where in this document relevant information is presented.

1.1 Project background

The lot which represents the entire project area, Lot 1221 // DP 818944, was formed as part of an approved 68 Lot industrial development (DA-651/1993). As part of this approved Development Application (DA; DA-651/1993), including subsequent modifications, approval was granted for the filling and regrade of surface levels across the entire project area to provide for smooth transition to adjacent lots, including creation of drainage channels/reserves. These works have partially commenced across the project area including drainage channel construction and importation of fill, with vegetation clearing across much of the project area having occurred prior to the commencement of DA-651/1993.

A new DA was lodged with Central Coast Council ('Council') on 24 July 2020 (DA/731/2020) for a hardstand storage facility within the project area (460 Pacific Highway, Wyong). During the assessment of this DA, Council officers identified the presence of ██████████ ██████████ ██████████ listed as critically endangered under the EPBC Act and the NSW *Biodiversity Conservation Act 2016* (BC Act). Following identification of ██████████ with the project area, the applicant (person proposing to undertake the action) worked with Council and the former NSW Department of Planning and Environment (DPE, now NSW Department of Climate Change, Energy Environment and Water [NSW DCCEEW]) towards conservation efforts. In support of

achieving positive outcomes for the [REDACTED] within the project area, the applicant enabled officers from the NSW Government's Saving our Species (SoS) team to access the site to collect seed capsules and genetic samples, for inclusion within the Australian Plant Bank and an ongoing genetic study of [REDACTED].

Consultation with Council and DPE was undertaken between October 2022 and March 2023 to discuss various ways of developing the project area in a manner that would reduce the potential for adverse impacts to [REDACTED]. Two differing development design options were originally discussed with the aim of establishing a conservation area within the project area. However, it was determined during consultation that the establishment of a conservation area within the project area was unfeasible due to a lack of available area, the low condition of the habitat present, uncertainty regarding outcomes for [REDACTED], and the high costs involved in restoring habitat value through vegetation restoration activities.

During consultation between Council, representatives from DPE and ecologists engaged by the applicant (Habitat Environmental Services [HES]), it was agreed that translocation of the species from the project area to a suitable recipient site was likely to have a better conservation outcome for the species than in-situ conservation. In accordance with the NSW 'Translocation Operational Policy' (DPIE 2019), justification for translocation includes situations where the risks of not translocating (to the target species) are greater than the risks of translocating (to the target species and recipient ecosystem). For the proposed action, the prospects of long-term survival of the population of [REDACTED] within the source site is low due to the high degree of habitat modification which has occurred from historic disturbances (additional information on habitat modification within the project area is included in **section 2** and **section 3** of this document). While in-situ restoration of habitat is recognised as having higher priority than translocation in the hierarchy of conservation techniques (Commander et al. 2018; DPIE 2019), the degree of habitat modification which has occurred across the project area means that the chance of success from restoration activities is considered to be no greater than the chance of successful translocating the individuals within the project area.

In consultation with Council, the previous DA (DA/731/2020) was withdrawn and a separate staged DA process commenced. The first stage of this process involved a new DA (DA/2314/2023) for environmental management works to facilitate the translocation of the [REDACTED] in accordance with the updated [REDACTED] translocation plan (Ecoplanning 2024; **Appendix D**). The second stage, involving future subdivision and physical works on the site, will be subject to separate DAs to be submitted to Council. Approval from Council under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) has been issued for the first stage of the proposed action (DA/2314/2023) which cover the following works:

- A 'salvage' translocation involving whole plants at the source site being excavated and maintained as an ex-situ population at the Australian Botanic Garden at Mt Annan (hereafter referred to as Mt Annan').
- An experimental 'reinforcement' translocation utilising seed collected from the source site and direct seeding into pre-prepared plots [REDACTED]
[REDACTED]
[REDACTED]
- Planting of salvaged plants and/or propagules from the ex-situ population to appropriate recipient site or sites (to be determined in consultation with Council and NSW DCCEEW).

In accordance with the translocation plan (Ecoplanning 2024; **Appendix D**) salvage translocations, involving excavation of individual [REDACTED] within the project area (the source site). This approach has been adopted due to the current highly modified condition of the source site and uncertainty regarding the long-term prospects for survival of this population. Maintaining the salvaged population as an ex-situ population for a period of time before planting at a suitable recipient site is to occur to allow for ongoing genetic and pollinator studies (as part of the NSW Government's SoS program) to be completed prior to planting at selected recipient sites. By waiting until ongoing pollinator and genetic studies have been completed before undertaking re-introductions, selection of recipient sites will be informed by the most up to date understanding of the species' ecology.

Initially, the proposed translocation was to occur across two seasons commencing with 'isolated individuals' in the first year (summer months of 2023-24) and the 'core population' in the second year (summer months of 2024-25). However, due to delays in the project approvals and an ongoing decline in the number of individuals detected within the 'core population' in the project area from 2022 to 2023 (18 individuals detected in 2022 and only 12 detected in 2023), translocation is now proposed to occur across a single season in the summer months of 2024-25. This updated translocation proposal has been reflected in the updated translocation plan (Ecoplanning 2024) and has been approved by Council (email dated 27 June 2023).

For the purposes of this document, the proposed action covers the combined development applications (DA/2314/2023 and future DAs covering earthworks and construction) and includes all works associated with the [REDACTED] translocation, the subsequent subdivision of the project area and all earthworks and related activities to support the final land use for light industrial purposes. The proposed action would involve clearing of all vegetation across the project area, including approximately 0.49 ha of native vegetation and 4.20 ha of exotic grassland.



Figure 1.1: The project area

2 Description of the proposed action

This section describes the proposed action and addresses the requirements of section 2 of the RFI. For the purposes of approval under the EPBC Act and this PD, the proposed action covers all works involved in the proposed [REDACTED] translocation, subsequent subdivision and all physical works associated with development of the project area for light industrial land uses.

The specific actions subject to this referral would include:

- [REDACTED] relocation in accordance with the [REDACTED] translocation plan (Ecoplanning 2024).
- One (1) into eight (8) lot subdivision of the project area.
- Construction of 10 m wide Brussels Road extension along the western boundary of the site.
- Construction of an internal access road including cul-de-sac, as an extension of the future Donaldson Road to the west.
- Extension of culvert crossing underneath the Pacific Highway.
- Installation of electrical and hydraulic services.
- Earthworks associated with the proposal.
- Clearing of all vegetation within the project area.
- Stormwater Management works.

The indicative proposed lot layout is shown in **Figure 2.1**. The construction/clearing footprint boundary includes the entire project area and the entirety of Lot 1212, DP 818944. The proposed action, including final land-use for light industrial, would involve clearing all vegetation within the project area and earthworks. The proposed action does not include any retained vegetation, conservation areas, retained open spaces or buffer zones within the project area. Considering adjacent land uses for industrial purposes, indirect impacts (e.g. noise, dust, light spill) beyond the project area are not anticipated to exceed existing background levels.

The proposed timing for the project would be dependent upon the timing of relevant project approvals, however the project timeline would extend for approximately 18 months following completion of the [REDACTED] translocations works within the project area. This would include the following stages:

- Pre-construction works (design & documentation, application and approvals, site establishment)
- Construction works including the following:
 - Civil construction works (excavation, concrete & culvert install, kerbs & footpaths, subgrade & Bitumen)
 - Electrical works (Electrical kiosk install, electrical distribution, streetlights, commission)
 - Hydraulics (new sewer junction to be installed to service each Lot, extend water main & reticulate to new lots)
- Occupation certification

The proposed action does not relate to any other actions (of which the proponent is aware) that is being or will be taken in the region.

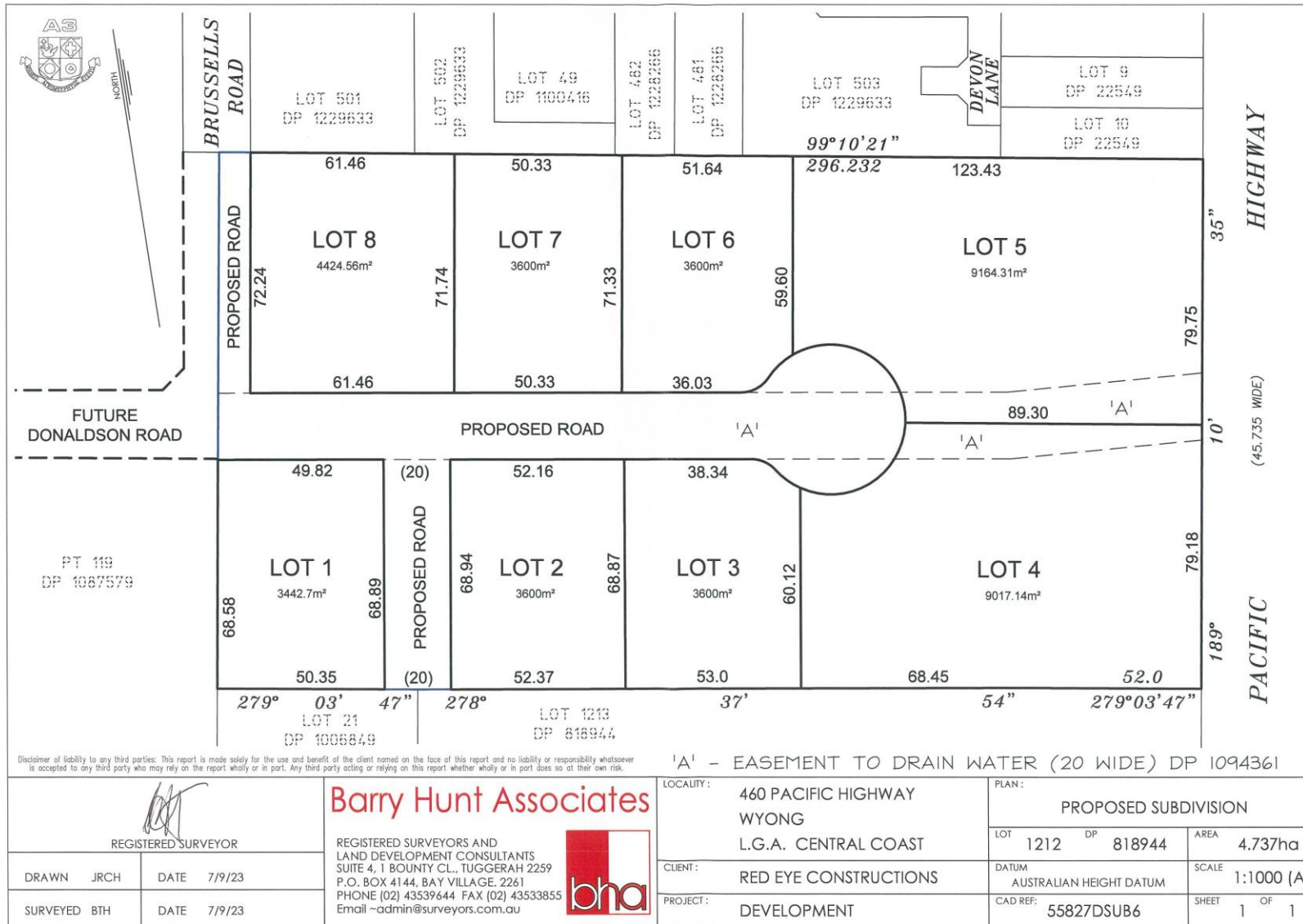


Figure 2.1: Proposed subdivision layout

2.1 Current management of the project area

There are no current ongoing uses of the project area. The project area has been historically cleared of native vegetation with various stockpiles of soil, gravel, and rock present across the project area since at least 2010 (**Figure 2.2**). Following the identification of [REDACTED] within the project area in September 2020, the location of individuals was demarcated with metal star-pickets by DPE representatives on 29 October 2020 (**Figure 2.3**). Star-pickets were installed for all individuals observed on the 29 October 2020, which included all locations recorded by Council and AES, except for three locations where individuals could not be observed (**Figure 2.4**). Between June and August 2021, additional stockpiling of material occurred within the central-northern portions of the project area (as approved by DA-651/1993; **Figure 2.2**), although demarcated locations of [REDACTED] records were avoided during these stockpiling works.

Aside from the demarcation of confirmed locations for [REDACTED] in spring 2020, and subsequent marking of additional plants during spring 2023, there are currently no ongoing actions or legislative requirements for the land owner to actively manage threatened species habitat across the project area (only a requirement not to knowingly damage/harm/pick threatened flora or their habitats).

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2.2 Consultation and alternatives considered

Initial consultation with the landowner (Redeye Construction Pty Ltd), Council, HES, and representatives from DPE was undertaken on the 12 October 2022, 15 December 2022 and 16 March 2023 to discuss various ways of developing the project area in a manner that would reduce the potential for adverse impacts to [REDACTED]. Two development design options were originally discussed with the aim of establishing a conservation area within the project area.

It was determined during consultation that the establishment of a conservation area within the project area was unfeasible due to a lack of available area, the low condition of the habitat present, and the high costs involved in restoring habitat value through vegetation restoration activities (not cost-effective). Following this initial consultation, during which the decision to undertake a translocation was conceived, regular email consultation has occurred with Council, Mount Annan Botanic Gardens and DPE.

2.3 Mitigation measures

Translocation of [REDACTED] in accordance with the translocation plan (**Appendix D**) was proposed as the principle mitigation measure during consultation with Council and representatives from DPE. This mitigation measure is proposed to mitigate potential impacts associated with the proposed action, as well as current threats to the species operating even without the proposed action. Other secondary mitigation measures are outlined within Table 12 of the BDAR (**Appendix E**).

Reviews of plant translocations identify translocations as relatively high-risk, high-cost and challenging (Silcock *et al.* 2019.). Nonetheless, the number of plant translocations occurring continues to grow (Commander *et al.* 2018) and translocations are becoming a standard mitigation approach where development projects have impacts on populations of rare and threatened species and are increasingly considered as part of a mitigation hierarchy (Silcock *et al.* 2019). In their review of translocations across Australia, Silcock *et al.* (2019) found that translocation performance is highly variable between plant species, lifeforms, habitats, propagule types and types of translocations. [REDACTED]

[REDACTED] However, Bell (2020) demonstrates that well-planned projects within an adaptive framework can achieve success as evidenced by established translocated [REDACTED] which are flowering and fruiting at rates similar to benchmark populations. The translocation plan (**Appendix D**) for the proposed action has been prepared in accordance with best practice guidelines (Commander *et al.* 2018) and following reviews of relevant scientific literature to maximise the chances of success. Nonetheless, there remains an element of uncertainty regarding the chance of success of the translocation and in accordance with the 'EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act', impact assessment has considered the loss of all individuals within the project area.

2.4 Assessment and approval under state legislation

The first component of the proposed action, involving the [REDACTED] translocation, has been approved under the NSW EP&A Act (DA/2314/2023). All other aspects of the proposed action will be subject to separate DAs to be lodged with Council. Conditions of Consent for DA/2314/2023, which are relevant to the consideration of MNES include the following:

- 4.3 *Implement and fully comply with the approved Translocation Plan (Ecoplanning, 20/11/2023). Obtain approval from Central Coast Council prior to accessing or undertaking any work on Council land. Any variation to the Translocation Plan must be approved by Council's Ecologist and will take precedence over the conditions of consent.*
- 9.2 *Despite any variation to the Translocation Plan approved by Council, monitoring of stage 2 ([REDACTED] salvaged planting) is to be undertaken a minimum five years (annually, during the flowering period) following completion of planting the salvaged plants. Monitoring reports must be submitted to Council's Ecologist by the 15 December each year and include information on population size, survival of planted propagules and recruitment.*

It is an offence under section 2.4 of the NSW *Biodiversity Conservation Act 2016* to damage any habitat of a threatened species unless authorised to do so by other legislation or a BC Act scientific licence. Authorisations by other legislation form a defence to this offence and include actions necessary for development in accordance with a development consent under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Therefore, the development consent issued for the first stage of the project (DA/2314/2023) which includes the translocation of [REDACTED] in accordance with the Translocation Plan (**Appendix D**), represents authorisation to undertake the translocation. However, as [REDACTED] is a MNES the proposed action cannot proceed without an approval under the EPBC Act, if the action is deemed likely to have a significant impact.

Approval under the NSW EP&A Act is in accordance with the NSW 'Translocation Operational Policy' (DPIE 2019). Under this policy justification for translocation includes situations where the risks of not translocating (to the target species) are greater than the risks of translocating (to the target species and recipient ecosystem). For the proposed action, the prospects of long-term survival of the population of [REDACTED] within the source site is considered low due to the high degree of habitat modification which has occurred from historic disturbances. While in-situ restoration of habitat is recognised as having higher priority than translocation in the hierarchy of conservation techniques (Commander et al. 2018; DPIE 2019), the degree of habitat modification which has occurred across the project area means that the chance of success from restoration activities is considered to be no greater than the chance of successful translocating the individuals within the project area.

3 Description of the environment

This section describes the environment within the project area and addresses the requirements of section 3 of the RFI.

The project area consists of the approximately 4.72 ha area located at 460 Pacific Highway, Wyong NSW (Lot 1212 // DP 818944 (**Figure 1.1**)). The project area is rectangular in shape and has a relatively flat topography. The larger assessment area, defined in the RFI as including a 1 km buffer area around the project area, is shown in **Figure 3.1**.

The project area and assessment area do not include any commonwealth places. The assessment area is located on Darkinjung Country. No specific heritage values relevant to this region have been identified within the project area.

3.1 IBRA bioregions and IBRA subregions

The Interim Biogeographic Regionalisation of Australia (IBRA, DoEE 2012) represents a landscape-based approach to classifying the land surface, including attributes of climate, geomorphology, landform, lithology, and characteristic flora and fauna species present. The entire assessment area (which includes the project area) is wholly located within the 'Sydney Basin' bioregion and the Wyong' subregion (IBRA version 7).

3.2 Rivers, streams, wetlands and hydrology

There are no mapped watercourses within the project area (**Figure 3.1**). However, an open constructed channel traverses the centre of the site (east to west) and drains to another open constructed channel along the western boundary of the project area. The open channel along the western boundary of the project area drains south towards Wyong Racecourse Swamp and the Wyong River (**Figure 3.1**). Northern portions of the assessment area, not including the project area, drain to the north-west into Porters Creek Wetland (**Figure 3.1**) which occurs on the north-west margin of the assessment area.

Approximately 600 m south-west of the project area is the Wyong Racecourse Swamp. This wetland is mapped as an Important Wetland, listed under the Directory of Important Wetlands of Australia (Environment Australia 2001), and is also mapped as a Coastal Wetland for the purposes of the NSW *State Environment Planning Policy (Resilience and Hazards) 2021* (SEPP [Resilience and Hazards]). Wyong Racecourse Swamp, as described by Cth. DCCEEW (2024a), is a shallow freshwater swamp approximately 60 ha in area and up to one metre in depth. The water flows into the wetland from local runoff but flood water can enter the swamp from the Wyong River, although there is no conspicuous channel. The swamp is densely vegetated with sedges and there is a belt of *Melaleuca quinquenervia* (Broad-leafed Paperbark) along the southern and eastern sides. Dense reedbeds are the dominant habitat and a large shallow open pond in the southwest forms important waterbird habitat (Cth. DCCEEW 2024a).

Porters Creek is an Important Wetland located approximately 1 km northwest of the project area and on the margins of the assessment area (**Figure 3.1**). Porters Creek Wetland is also an Important Wetland and is mapped under the SEPP (Resilience and Hazards) as a Coastal Wetland. Porters Creek Wetland is the largest remaining freshwater wetland on the Central

Coast and contains several vegetation types, including Coastal Swamp Sclerophyll Forest of NSW and South East Queensland, a MNES under the EPBC Act (Cardno 2011).

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Figure 3.1: The assessment area, including native vegetation extent and rivers, streams and wetlands

3.3 Areas of geological significance

No other landscape features including areas of geological significance (including karst, caves, crevices and cliffs) or soil hazard features have been identified within the project area and assessment area.

3.4 Existing ecosystem

3.4.1 Native vegetation

Much of the assessment area, and in particular the project area, has been subject to historical disturbances associated with clearing of native vegetation initially for agricultural purposes and subsequently for urban and industrial developments (**Figure 3.1**). Across the 409.7 ha of the assessment area, only 121.5 ha (29.7 %) has been identified as supporting native vegetation (DPE 2022).

Vegetation within the project area has been subject to detailed investigations by HES (2023) as part of a Biodiversity Development Assessment Report (BDAR; **Appendix E**) prepared in accordance with the NSW Biodiversity Assessment Methodology (BAM; DPIE 2020a). As per the BAM, vegetation within the project area has been classified into Plant Community Types (PCTs) and the condition of PCTs within the project area has been assessed from floristic data collected within 20 m × 20 m plots as well as a number of vegetation metrics (e.g. litter cover) along a 50 m transect. This data has been entered into the BAM calculator (BAM-C) to derive a Vegetation Integrity Score (VIS) that reflects the vegetation condition relative to a benchmark condition for the same vegetation type in the contemporary landscape. It is noted that PCT classification commenced prior to the release of the updated Eastern NSW PCT classification (DPE 2022) and classification and reference to PCTs follows the previous classification (legacy classification [pre ENSW]). For consistency with other documents and future offsetting, the equivalent PCTs under the updated PCT classification system (DPE 2022) and the legacy classification are shown in **Table 3.1**.

Exotic Grasslands were the dominant vegetation type within the project area, with small occurrences of two native PCTs also identified (**Figure 3.2**):

- PCT 1718: '*Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast*,' and
- PCT 1737: '*Typha Rushland*'.

The area of each mapped PCT, including the equivalent PCTs under the updated PCT classification system, are shown in **Table 3.1**.

Exotic grasslands represented the dominant vegetation type within the project area, occupying 4.20 ha of the project area. This vegetation type was dominated by exotic perennial grasses such as *Paspalum urvillei* (Vasey Grass), *Paspalum dilatatum* (Paspalum) and *Cenchrus clandestinus* (Kikuyu). Several exotic herbs also occurred throughout this vegetation type including *Senecio madagascariensis* (Fireweed), *Hydrocotyle bonariensis* (Pennywort), *Trifolium repens* (White Clover) and *Medicago polymorpha* (Burr Medic).

The occurrence of PCT 1718 within the project area was characterised by a canopy of regenerating Swamp Mahogany (*Eucalyptus robusta*) in fragmented and isolated patches. However, within western portions of the project area an intact canopy, shrub and groundcover was present. A large number of exotic plant species occurred within the mapped occurrences of this PCT including several High Threat Weeds listed under the BAM.

The occurrence of PCT 1737 within the project area was restricted to the open constructed drainage channel and low-lying areas containing pooling water. This PCT was characterised by the presence of *Typha orientalis* (Borad-leaved Cumbungi) with a large number of exotic plant species present, including several High Threat Weeds listed under the BAM.

The VIS, which reflect vegetation condition relative to benchmark condition for the same vegetation type in the contemporary landscape, calculated in accordance with the BAM (DPIE 2020a) for the vegetation types within the project area are included in **Table 3.1**. The calculated VIS range from 2.4 to 34.0 out of 100 and are reflective of highly disturbed patches of vegetation with vegetation composition, structure and function all highly modified. Additional details of the assessment of vegetation condition are include within the BDAR prepared by HES (2023; **Appendix E**).

Table 3.1: Plant Community Types within the project area (after HES 2023)

PCT (HES 2023)	Revised East Coast PCT classification	Condition class	Vegetation integrity score	Area (ha)
Exotic grasslands	N/A	Cleared	2.4	4.20
PCT1718: Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	PCT4020: Coastal Creekflat Layered Grass-Sedge Swamp Forest	Moderate	34.0	0.33
PCT1737: Typha Rushland	PCT3975: Southern Lower Floodplain Freshwater Wetland	Moderate	15.7	0.17
Total				4.70



Figure 6 - Plant Community Types and Plot Locations



Legend

- Study Area (Lot 1212, DP 818944)
- BAM Plots
- Plant Community Types and Vegetation Zones**
- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

Figure 3.2: Plant Community Types mapped across the project area (Source HES 2023)



Endangered Ecological Communities (EECs)

Vegetation identified as PCT 1718 was recognised as being equivalent to the 'Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland' endangered ecological community (hereafter referred to as 'Swamp Sclerophyll Forest'), listed as an endangered ecological community (EEC) under the EPBC Act. As part of the BDAR prepared by HES (2023), the Conservation Advice for the EEC (DAWE 2021) was reviewed to determine the conservation status of the vegetation and to determine the condition classification under the EPBC listing. The occurrence of PCT 1718 within the project area was identified as being equivalent to the EEC on the following basis:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the site is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.
- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, HES (2023) concluded that the vegetation is commensurate with the EEC and is classified as Class C2: A small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.

3.4.2 Flora and fauna habitat values

The project area has been subjected to historical disturbance including vegetation clearing and earthworks. No key habitat features such as hollow-bearing trees, large water bodies or dense vegetation containing a complex structure were identified within the project area (HES 2023). Occurrences of native vegetation within the project area were identified as being in a state of early regeneration following past disturbances.

Native vegetation within the project area, including regenerating Swamp Sclerophyll Forest and emergent aquatic vegetation within the constructed drainage channel, were in the early stages of regeneration and contained a mix of disturbance tolerant natives and exotic species,

[REDACTED]. Due to the disturbance history of the project area, the habitat present was considered to be too degraded to support populations of almost all threatened plant species known to occur in the region [REDACTED] which was associated with non-native disturbed vegetation within the project area as discussed in **section 4.1.3** (HES 2023).

Habitat for fauna within the project area was also identified as being limited as a result of historical disturbances (HES 2023). Identified habitat values included limited refugia for terrestrial fauna species within dense exotic groundcover and areas containing thickets of weeds such as Pampas Grass (with mature trees generally absent). Foraging habitat was also limited by the small area of regenerating forest present, although it is likely that highly mobile

fauna species such as birds and mammals may forage within the area as part of larger network of habitat within the locality. The aquatic habitat within the drainage channels is ephemeral and may provide suitable breeding habitat for common amphibian species and aquatic insect species. Larger fauna species may also utilise the habitat periodically as a water source.

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4 Threatened species and ecological communities

This section outlines details on threatened species and communities as requested in Section 1.1 of the RFI. As detailed within the original referral (EPBC 2023/09648 – Appendix A), the project area was identified as supporting habitat for one listed ecological community and two threatened species, as follows:

- [REDACTED] ([REDACTED])
- Swift Parrot (*Lathamus discolor*)
- Coastal Swamp Sclerophyll Forest of NSW and South East Queensland

Relevant details of each of these entities, as required in Section 1.1 of the RFI are provided in the following sections.

4.1 [REDACTED] ([REDACTED])

4.1.1 Occurrence across the species' range

[REDACTED] Previous estimates of the species' extent of occurrence and its area of occupancy have been less than 10 km² [REDACTED]. Incorporating recent observations of the species, as recorded on the BioNet Atlas (DPE 2023), the species range extends from Lake Munmorah State Conservation Area in the north, south to the Wyong area (**Figure 4.1**).

The total population size for the species was previously estimated to be very low (less than 250 individuals; [REDACTED]). However, since the time of these estimates and with active targeted searches implemented through the NSW Government's Saving our Species program, many more new populations and individuals of the species have been recorded. Incorporating these recent records, the total population size across the species range is estimated to be in the order of 1,300 individuals (**Table 4.1**). This estimate is based upon a combination of data from records submitted to the BioNet Atlas (DPE 2023), publicly available data from the NSW Government's Saving Our Species program (NSW DCCEE 2024) and personal observations from targeted surveys completed in the last 12 months. It should be noted that the detection of [REDACTED] is almost exclusively from [REDACTED] and therefore these estimates rarely incorporate [REDACTED].

Accordingly, the population estimate of 1,300 individuals should be considered a minimum population estimate.

4.1.2 Occurrence within the project area

Survey effort

The occurrence of [REDACTED] within the project area was first recorded in 2020 by Council (Jed Field - Ecologist) as part of a site inspection for a previous development application. Survey effort completed by Council during these inspections involved random meanders across the project area (J. Field pers. comm. 2024). Following detection of the species in 2020, additional surveys were conducted during the flowering period by AES (AES 2020). The survey effort of AES is shown in **Figure 4.2**. Following identification of the species within the project area in 2020, representatives from the former NSW Government's 'Saving our Species (SoS) team undertook surveys to permanently stake and flag the location of the [REDACTED] as well as to collect seed capsules, which were transported to the Australian Plant Bank.

In 2022, as part of a Biodiversity Development Assessment Report (BDAR) prepared by HES (2023), targeted surveys were completed in accordance with the NSW 'Biodiversity Assessment Method' (BAM; DPIE 2020a) and specifically the 'Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method' (DPIE 2020b). Targeted surveys involved parallel traverses separated by approximately 5 – 10 m [REDACTED] [REDACTED] (DPIE 2020b). Targeted surveys for [REDACTED] were undertaken within the project area during September and October 2022 (06/09/22, 15/09/22, 28/09/22, 29/09/22 and 04/10/22) with survey effort shown in **Figure 4.3**.

In 2023, targeted surveys for [REDACTED] within the project area were replicated by Ecoplanning (Brian Towle – Senior Ecologist). As for the 2022 targeted surveys, survey effort involved parallel traverses separated by approximately 10 m, consistent with the transect spacing required for [REDACTED] within open habitat under the survey guidelines (DPIE 2020b). Targeted surveys for [REDACTED] were undertaken within the project area during October and November 2023 (2/10/2023, 16/10/2023, 25/10/2023, 14/11/2023) with survey effort shown in **Figure 4.4**.

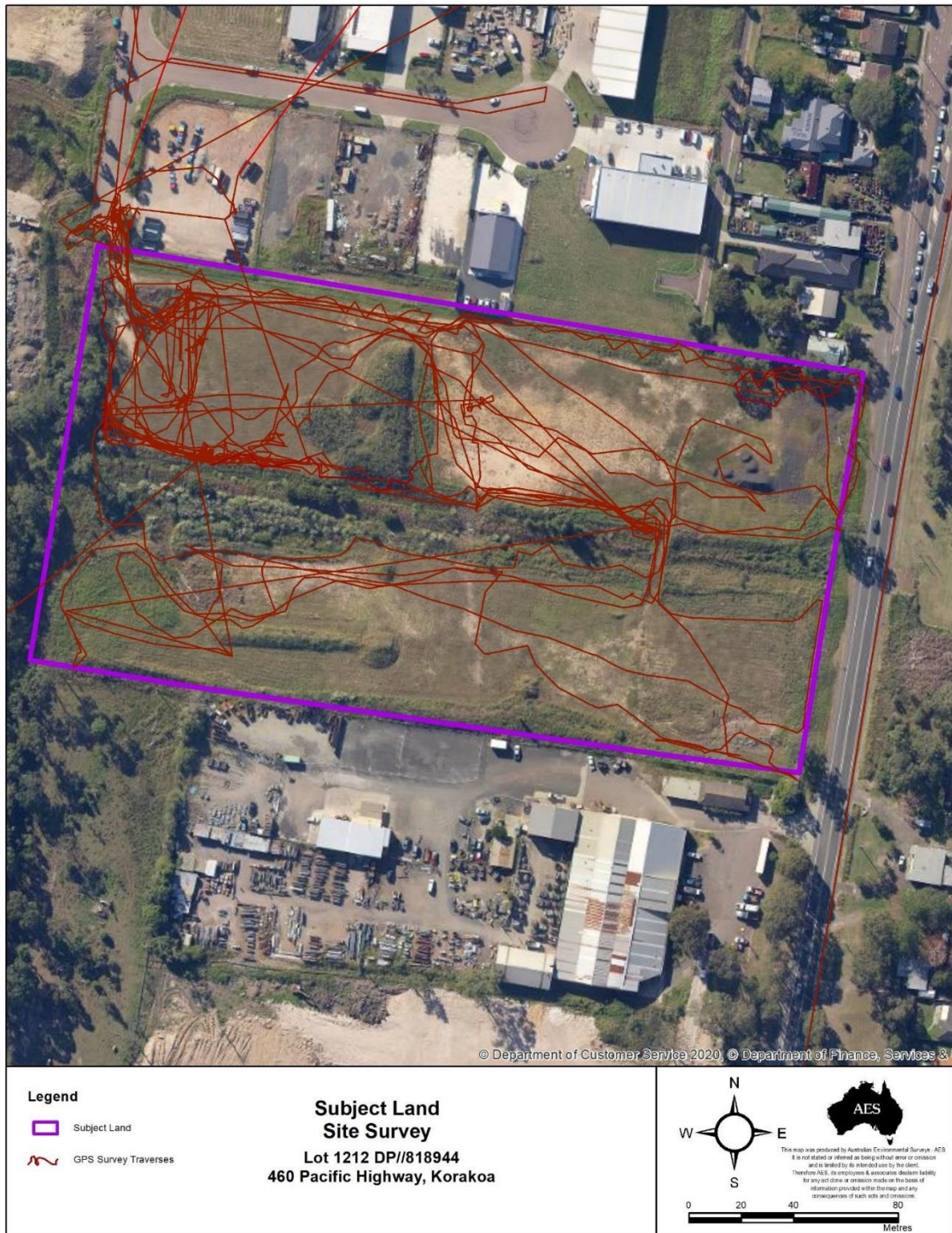


Figure 4.2: Survey effort for [redacted] within the project area in 2020 (Source: AES 2020)

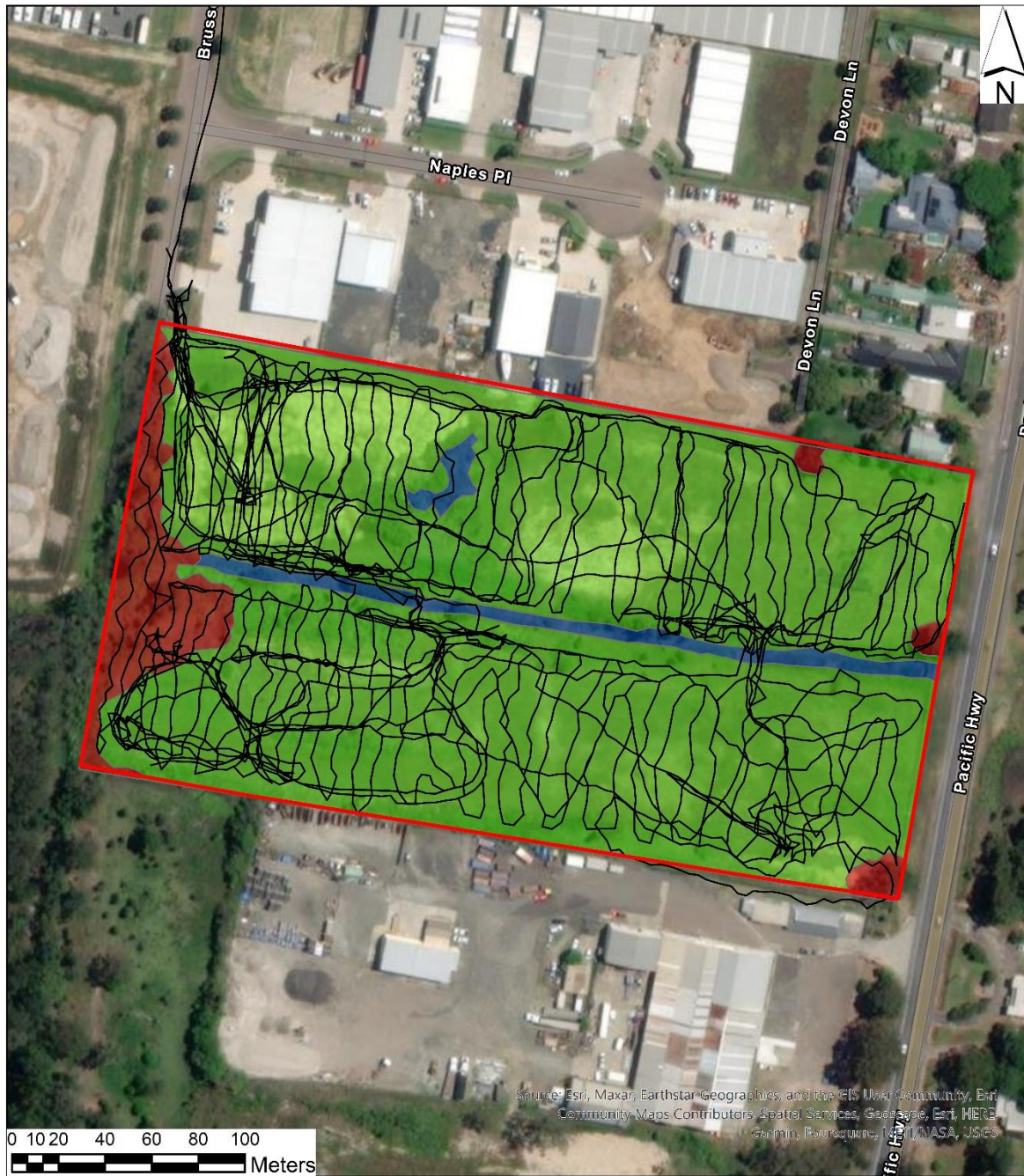


Figure 7 - Threatened Flora Survey Effort



Legend

- Study Area (Lot 1212, DP 818944)
- Threatened Flora Survey Tracks (September - October 2022)
- Plant Community Types and Vegetation Zones**
- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

Figure 4.3: Survey effort for [redacted] within the project area in 2022 (Source: HES 2023)





Figure 4.4: Survey effort for [redacted] within the project area in 2023 (Source: Ecoplanning 2023)

Population within the project area

Across the three seasons in which the population within the project area has been surveyed (2020, 2022, 2023), between 26-50 mature individuals of [REDACTED] have been observed in individual seasons. **Table 4.2** presents the number of individuals recorded at each location across the project area, noting that small variations between recorded locations were observed between seasons (associated with accuracy limitations of hand-held GPS devices) and are not included in the Table. A total of 38 individuals were recorded from the source site during the 2020 flowering period by Council (BioNet Atlas data, DPE 2023), while AES (2020) reporting 50 'stems' were observed in this season ([REDACTED] individuals produce single flowering stems, with each stem a separate individual). A total of 27 individuals were recorded in 2022 (HES 2023) and 26 individuals observed in 2023 (Ecoplanning 2023). In each subsequent survey season, a portion of the previously tagged individuals were not relocated with additional untagged individuals also recorded. During the 2022 surveys between 14 and seven previously undetected individuals were observed (compared to AES (2020) and Council counts respectively), although up to 28 previously observed individuals were not found (**Table 4.2**). In 2023, 15 individuals observed in 2022 were not detected, while 14 individuals not observed in 2022 were detected (with nine of these individuals previously observed in 2020). It is unknown what proportion of the individuals not observed in 2022 and 2023 compared to previous seasons had died, were dormant and undetectable, or were simply undetected. Therefore, there is uncertainty regarding the total population size of the project area and it is estimated to be between 26 (the number observed in 2023) and 64 (the combined maximum assuming all unrecorded plants in 2022 and 2023 were still alive but were either dormant or undetected). The locations within the project area where [REDACTED] have been recorded are shown in **Figure 4.5**.

The population of [REDACTED] within the project area has been considered as a discrete population of the species with very limited, or no, movement of seed or pollinators between the project area and populations in proximity. The population of [REDACTED] within the

[REDACTED]
[REDACTED] However, the project area is separated from the
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] Additionally, examples of colonisation of [REDACTED] species across long distances support this conclusion. However, most studies investigating spatial genetic structure [REDACTED] have found a significant pattern to the spatial genetic structure, which in most cases was explained by limited seed dispersal (Machon et. al. 2003; Jersáková and Malinová 2007). [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

4.1.3 Habitat

Habitat across the species' range

Habitat for [REDACTED] was originally identified as vegetation described as 'Dooralong Spotted Gum Ironbark Forest' [REDACTED] which is now considered equivalent to the PCT 3433: 'Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest'; DPE 2022). However, additional surveys and records of the species since 2005 have increased the number of habitat types in which the species has been recorded. Generally, most recorded locations of [REDACTED] appear to be associated with vegetation communities which are equivalent to the following PCTs:

- 'Coastal Headland Clay Heath' (PCT 3793)
- 'Hunter Coast Lowland Apple-Bloodwood Forest' (PCT 3582)
- 'Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest' (PCT 3433), and
- 'Lower North Creekflat Mahogany Swamp Forest' (PCT 3998)

Of particular note, the habitat of [REDACTED] within these vegetation types (and other PCTs in which the species has been recorded) is frequently in previously disturbed habitats and along roadsides. [REDACTED]

[REDACTED] Additional records of the species made since 2005, have frequently been associated with slashed easements, roadsides and other modified habitats. The association of [REDACTED] with slashed habitats has been attributed to slashing simulating fire events and triggering flowering and germination of fire-stimulated species [REDACTED]. However, for [REDACTED] [REDACTED] is not just associated with regularly slashed habitats but also areas where there has been some level of soil disturbance (e.g., buried pipelines and minor earthworks). This suggests that the species favours areas where soils have been disturbed. [REDACTED]

Habitat within the project area

Due to the association of [REDACTED] with disturbed habitats, all areas of the project area have been considered to represent habitat (either potential or occupied) for [REDACTED]. This includes vegetation mapped as part of the following PCTs and zones (HES 2023):

- PCT 1718 Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast: 0.33 ha total (0.28 ha area of regenerating forest in the western portion of the Study Area and 0.05 ha of isolated trees near the eastern boundaries);
- PCT 1737 Typha Rushland: 0.17 ha area of aquatic emergent vegetation was identified within the constructed drainage channel and low-lying areas of the site; and
- Exotic vegetation: 4.20 ha across the vast majority of the project area.

The habitat for [REDACTED] across the project area is heavily modified. Due to this heavily modified habitat, the prospects of long-term survival of the species within the project

area is low due to the high degree of habitat modification which has occurred from historic disturbances. Specifically, current threats to [REDACTED] within the source site include:

- An altered hydrological regime resulting from modified landforms across the source site. Stockpiling of soil has occurred across much of the source site, including where [REDACTED] has been recorded (**Figure 4.6**). The result of this landform modification includes prolonged ponding of water after rainfall (**Figure 4.7**). Additionally, some plants which are currently growing in soil stockpiles may face water stress due to more rapid drying out of soils compared to natural conditions.
- Competition from exotic species. A large number of exotic species are present within the source site (**Figure 4.8**) including species identified as representing a specific risk to [REDACTED] [REDACTED] [REDACTED]



Figure 4.6: Modified landforms within the source site including recorded locations for [REDACTED], [REDACTED].



Figure 4.7: Ponding water within recorded locations of [REDACTED], [REDACTED]



Figure 4.8: [REDACTED] growing within an exotic grassland

4.1.4 Impact Assessment

The proposed action would involve translocation (i.e. removal) of all known [REDACTED] occurring within the project area and subsequent development representing a permanent (irreversible) loss of all habitats across the entire project area. While the translocation of all [REDACTED] is an important mitigation measure, the outcomes of translocations (including [REDACTED]) are high-risk and challenging. Therefore, consistent with the 'EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act' (DSWEPAC 2013), for the purposes of impacts assessment the potential loss of all individuals is assessed. Therefore, if the proposed action were to proceed the long-term viability of [REDACTED] would be:

- At the local (site level) scale the proposed action may result in the loss of the discrete population of [REDACTED] within the project area and all habitat for the species within the project area. However, it is noted that the habitat which would be lost is heavily modified (see **section 4.1.3**) and the long-term viability of the population within this habitat is uncertain. Across the three seasons in which the population in the project area has been surveyed, the number of mature individuals observed in each season declined (see **section 4.1.2**).
- At the regional scale, the potential loss of all individuals within the project area (estimated population size of up to 64 individuals and approximately 5 % of the known population) would be unlikely to have any impacts on populations of the species outside the project area. The proposed action would not impact connectivity of habitat for the species nor would the proposed action form part of any known cumulative impacts within the broader region.

As detailed above, impacts within the project area are largely known and irreversible (e.g. loss of all habitats). Therefore, there can be high confidence of the predicted impacts to the habitat within the project area. However, the impacts to the species more broadly are unknown and depending upon the success of the translocation works, positive outcomes may be achieved for the species.

In terms of confidence of outcomes from the proposed translocation works, published data (Bell 2020) demonstrates that well-planned projects within an adaptive framework can achieve success as evidenced by established translocated [REDACTED] which are flowering and fruiting at rates similar to benchmark populations. As part of the decision-making process to undertake the translocation works, it was considered that the risks and uncertainty of the translocation process were less than, or broadly similar to, the risks and uncertainty of long-term survival for the population within the project area if the proposed action did not occur.

Significant impact criteria

The MNES Significant impact guidelines 1.1 (DoE 2013) include criteria to assist in determining whether the impacts of a proposed action on any MNES are likely to be significant impacts. The criteria and their applicability to the proposed action are as follows:

Will the action lead to a long-term decrease in the size of a population?

Following the definition of a population under the EPBC Act as “*an occurrence of the species in a particular area*”, the population of [REDACTED] for the purposes of this assessment



is identified as the occurrence of the species within the project area. As discussed in **section 4.1.2**, the population of [REDACTED] within the project area has been considered as a discrete population of the species with very limited, or no, movement of seed or pollinators between the project area and populations of the species in proximity to the project area.

All individuals of [REDACTED] comprising the population in the project area are proposed to be translocated from the project area. Whilst best practice methods are proposed for the translocation, there remains the distinct possibility that at least some proportion of the total population would not survive the translocation process. However, given the heavily modified nature of the project area, a long-term decrease in the size of the population within the project area is predicted even if the proposed action is not undertaken.

Where the translocation is successful and results in individuals being housed within world class facilities at the National Herbarium of NSW, opportunities for propagation may result in an increase in the long-term size of the population.

In conclusion, it is possible that the action will lead to a long-term decrease in the size of the population.

Will the action reduce the area of occupancy of the species?

The area of occupancy is defined as area within a species range (or 'extent of occurrence') which is occupied by the species. The proposed action would result in short-term reduction in the area of occupancy of the species (reduction of 4.72 ha). However, given the heavily modified nature of the project area, such a reduction in the area of occupancy of the species is predicted even if the proposed action is not undertaken.

Where the proposed translocation is successful and results in individuals being housed within world class facilities at the National Herbarium of NSW, opportunities for increasing the area of occupancy of the species may arise.

In conclusion, the proposed action would result in a short-term reduction in the area of occupancy of [REDACTED].

Will the action fragment an existing population into two or more populations?

As discussed, the population within the project area is considered to be a discrete population and all habitat for the species within the project area would be lost. The proposed action would increase fragmentation between populations, although would not fragment individual populations.

Will the action adversely affect habitat critical to the survival of a species?

No critical habitat has been declared for [REDACTED] and therefore all known habitat can be considered critical. However, the habitat within the project area has been subject to historic disturbances such that long-term survival of the species within this habitat is highly uncertain. As the habitat within the project area is highly degraded and has ongoing threats to the survival of the species within the area, it does not represent habitat that is critical to the survival of the species in the locality. The long-term survival of the species within the project area is uncertain, even if the proposed action does not proceed.

Will the action disrupt the breeding cycle of a population?

The proposed action would result in the loss of the population of the species within the project area, although would be very unlikely to impact the breeding cycle of any populations of [REDACTED] outside the project area.

Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

The habitat within the project area is highly degraded and the loss of this habitat would be unlikely to cause the species to decline across its range.

Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?

The project area contains large infestations of exotic plant species that currently threaten the occurrence of the [REDACTED]. The long-term survival of [REDACTED] within habitat supporting dense cover of exotic weeds is highly uncertain. The proposed action would not increase the risk to the species posed by invasive species, nor would the proposed action impact any habitat for [REDACTED] outside of the project area.

Will the action introduce disease that may cause the species to decline, or interfere with the recovery of the species?

The proposed action would involve the loss of all habitat for the species within the project area, although would not involve any actions which would be likely to introduce disease into other populations of [REDACTED]. Best practice pest and disease management would form part of any future translocations/reintroduction resulting from the proposed action.

Conclusion

The proposed action would involve translocation (i.e. removal) of all known [REDACTED] occurring within the project area. While the translocation of all [REDACTED] is an important mitigation measure, the outcomes of translocations (including [REDACTED]) are high-risk and challenging. Therefore, consistent with 'EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act' (DSWPAC 2013), for the purposes of impacts assessment the potential loss of all individuals is assessed. Therefore, the proposed action may significantly impact [REDACTED] and mitigation measures and compensation measures (offsets) are discussed in the following sections.

4.1.5 Avoidance, mitigation, and management measures

Consultation with Central Coast Council ('Council') and the NSW Department of Planning and Environment (DPE, now NSW DCCEE) was undertaken on 12/10/22, 15/12/22 and 16/03/23 to discuss various ways of developing the project area in a manner that would reduce the potential for adverse impacts to [REDACTED]. Two differing development design options were originally discussed with the aim of establishing a conservation area within the project area. However, it was determined during consultation that the establishment of a conservation area within the project area was unfeasible due to a lack of available area, the low condition

of the habitat present, and the high costs involved in restoring habitat value through vegetation restoration activities.

During consultation with Council and DPE, it was agreed that translocation of [REDACTED] to a suitable recipient site was likely to have a better conservation outcome for the species.

4.1.6 Compensation measures (offsets)

Compensation measures for the proposed action have been calculated in accordance with the NSW Biodiversity Offset Scheme (BOS) as detailed within the Biodiversity Assessment Method ('BAM'; DPIE 2020a). The BAM and BOS have been endorsed by the Commonwealth such that offsetting outcomes achieved through the BAM can be accepted for the purposes of the EPBC Act approval, provided that they are 'like-for-like'.

The outcomes of translocations, including [REDACTED], are high-risk and challenging. Therefore, in accordance with the 'EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act' (DSEWPAC 2013), the calculation of offsets for [REDACTED] under the BAM has assumed all areas of the project area represent suitable habitat for the species. Under the BAM, [REDACTED] is an area-based Species Credit species, therefore, impacts are based upon a loss of 4.7 ha (the entire project area) of habitat for the species. A total of 18 species credits for [REDACTED] are required to offset potential impacts as part of the proposed action. This offset requirement represents a 'like-for-like' offset, noting that variation rules do not apply for Critically Endangered species under the BAM.

The calculated offset requirement for the proposed action, in accordance with the BAM, is required in addition to the proposed translocation and will require establishment of an offset property supporting [REDACTED] within the narrow range of the species. Therefore, the proposed offset would correlate to, and adequately compensate for, potential impacts to [REDACTED] associated with the proposed action.

In accordance with Section 6.30 of *Biodiversity Conservation Regulation 2017* (BC Reg) and the NSW BOS (as endorsed by the Cth. DCCEE), the method by which the offset requirement for the project will be met, would be through payment into the Biodiversity Conservation Fund. The payment is to occur prior to any translocation of [REDACTED] within the project area. Once payment into the BCF has been made, the legal obligation to secure the offsets would be transferred to the NSW Biodiversity Conservation Trust (BCT). The BCT must then secure the offsets in line with legislated offset rules included within the BOS and as set out in Section 6.6 of the BC Reg. Ultimately, the exact parcels of land from which the conservation gain would be achieved (either via establishment of a stewardship site or by funding a conservation action), would be at the discretion of the BCT.

Therefore, it is unknown what the land tenure would be, or the exact method of securing the land, for any land-based offsets. Additionally, the timeframe, method for securing offsets and achieving the proposed conservation gain, and level of certainty that proposed offsets would be successful would be dependent upon actions undertaken by the BCT once the offset obligation was transferred.

4.2 Swift Parrot

4.2.1 Species occurrence and habitat

The Swift Parrot (*Lathamus discolor*) is a migratory species with the entire population (estimated to be no more than 1000 pairs; Saunders and Tzaros 2011) of the species migrating from breeding habitats in Tasmania to the mainland in winter, where it disperses widely foraging on flowering Eucalypts and psyllid lerps. The Central Coast region is a key wintering area for Swift Parrots, which may become more important as a result of climate change, and there are regular records of the species from the region (DPE 2023). There are two records of the species within the assessment area (1 km buffer around the project area) from the BioNet database (records from 2002 and 2020), with numerous records from the broader region (**Figure 4.9**). *Eucalyptus robusta*, which was identified within the project area, is recognised as a key foraging habitat type in the national recovery plan for the Swift Parrot (Saunders and Tzaros 2011).

The Swift Parrot has not been recorded within the project area, although no targeted surveys for the species have been completed and are unlikely to detect the species on-site unless repeated over many days and seasons. In accordance with the BAM, no targeted survey is required for species within areas on an 'important habitat map' for that species. Where an area of important habitat is mapped, the species is considered present for the purposes of the BAM and the part of the subject land that is within the important habitat map forms the species polygon used to generate species credits (BAM section 5.2.5 Box 2). The western portions of the project area, where Swamp Sclerophyll Forest has been mapped (equivalent to PCT 1718: 'Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast; **Figure 3.2**) are included on the important habitat map for the swift parrot (**Figure 4.10**). Vegetation within this area was sampled as part of floristic surveys conducted as part of the BDAR (HES 2023) and *Eucalyptus robusta* was recorded within this habitat. However, the vegetation within the western portion of the project area was highly degraded and contained only a low number of individual trees that could provide foraging habitat for the Swift Parrot.

The area of the project area included on the Important area habitat map for Swift parrot is 0.15 ha (HES 2023). As discussed, under the BAM this forms the unit of measure for assessing impact to the species. For the purposes of assessment under the EPBC Act and adopting a conservative approach, the 0.33 ha area of regenerating woodland (equivalent to mapped extent of PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast; HES 2023; Figure 3.2), which includes the 0.15 ha on the important area habitat map, has been assessed as foraging habitat for the Swift Parrot.

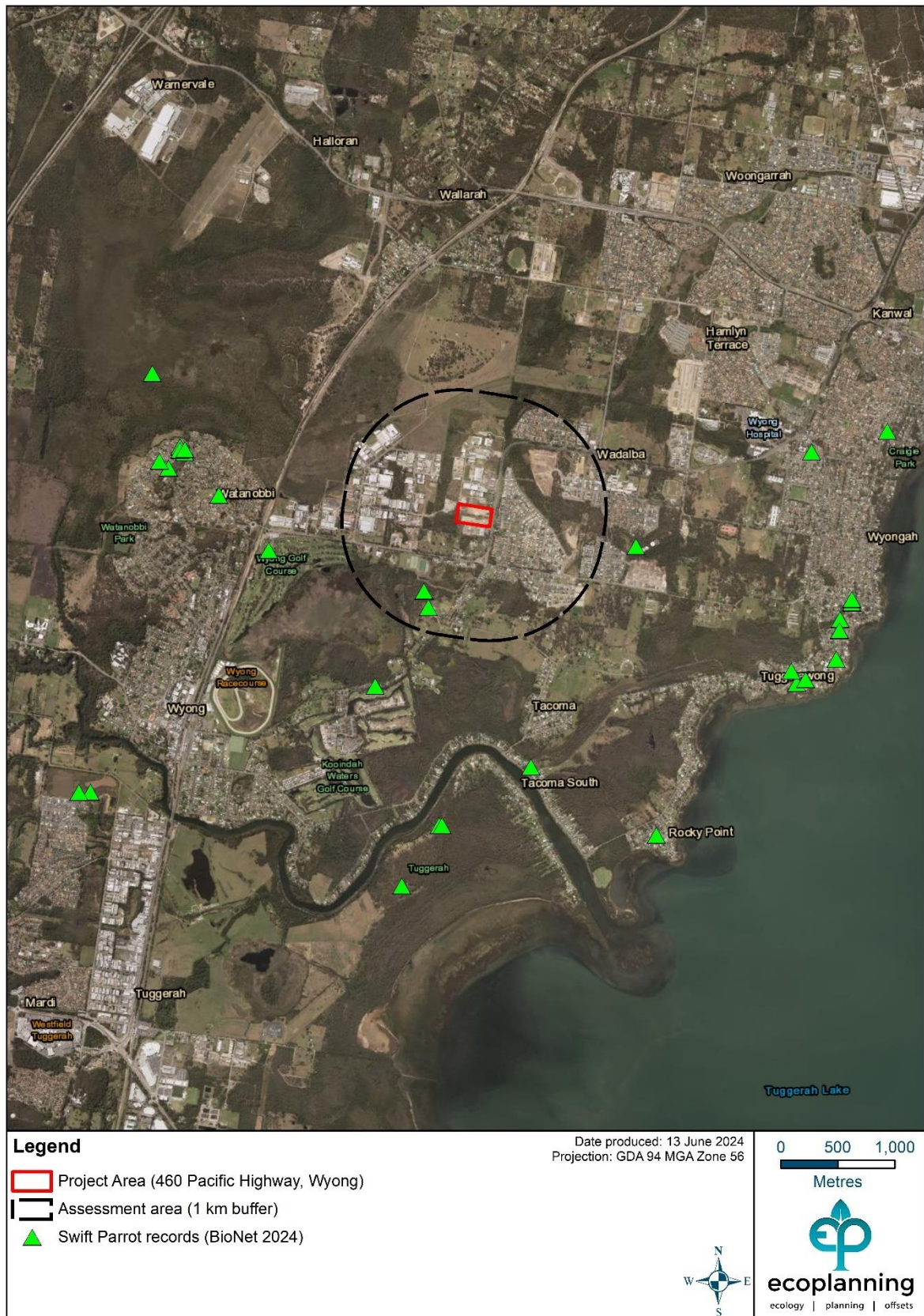


Figure 4.9: Swift Parrot records from BioNet within the assessment area and surrounds



Figure 4.10: Important area mapping for the Swift Parrot (Source: NSW DCEEW 2024)

4.2.2 Impact Assessment

The proposed action would involve the complete and permanent loss of the 0.33 ha of foraging habitat for the species within the project area. Impacts within the project area are largely known and irreversible (e.g. loss of all habitats). Therefore, there can be high confidence of the predicted impacts to the habitat within the project area. The MNES Significant impact guidelines 1.1 (DoE 2013) include criteria to assist in determining whether the impacts of a proposed action on any MNES are likely to be significant impacts. The criteria and their applicability to the proposed action are as follows:

1. Will the action lead to a long-term decrease in the size of a population?

No. All Swift Parrot migrate between Tasmania and the Mainland and are considered a single population. The permanent removal of the 0.33 ha of regenerating woodland within the project area, which represents foraging habitat, would be highly unlikely to lead to a long-term decrease in the size of the population of the Swift Parrot.

The foraging habitat for the Swift Parrot within the project area is highly degraded and contains a low number of individual trees that could provide foraging habitat for the species. In the context of larger areas of habitat to the north-west of the project area (Porters Creek Wetland and the Watanobbi locality) and the south (in proximity to Wyong Racecourse Swamp; **Figure 3.1**), the loss of habitat within the project area would not lead to a long-term decrease in the size of a population.

2. Will the action reduce the area of occupancy of the species?

No. The Swift Parrot is a migratory species; therefore, the habitat present within the project area represents foraging habitat only. The proposed action will not reduce the area of occupancy of the species.

3. Will the action fragment an existing population into two or more populations?

No. The Swift Parrot population in Australia is considered to represent a single population. The removal of the small area of highly disturbed foraging habitat within the project area would not fragment an existing population of this highly mobile migratory species into two or more populations.

4. Will the action adversely affect habitat critical to the survival of a species?

No. The habitat within the project area is highly degraded and does not represent habitat that is critical to the survival of the species in the locality.

5. Will the action disrupt the breeding cycle of a population?

No. The Swift Parrot is a migratory species; therefore, the habitat present within the project area represents foraging habitat only. The proposed action would result in a very small reduction to the area of foraging habitat for the species within the region, although the minor extent of the reduction would be unlikely to disrupt the breeding cycle of the species.

6. Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

No. The habitat within the Study Area is highly degraded and is not considered to represent habitat that is critical to the survival of the species in the locality. The removal of the habitat is unlikely to contribute greatly to a reduction in the extent of habitat for the species.

Conclusion

The proposed action would involve the loss of a small, degraded area of potential foraging habitat for the Swift Parrot. Given the small scale of the habitat loss (0.33 ha), and the highly degraded nature of the habitat proposed to be removed, the proposed action is unlikely to represent a significant impact to the Swift Parrot.

4.3 Coastal Swamp Sclerophyll Forest of NSW and South East Queensland

4.3.1 Occurrence within the project area and region

'Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland' (hereafter referred to 'Swamp Sclerophyll Forest') was listed as an Endangered Ecological Community (EEC) under the EPBC Act on 08 December 2021. The Swamp Sclerophyll Forest EEC is typically associated with forested palustrine wetlands, or swamp forests, found in the temperate to subtropical coastal valleys of Australia's east coast (DAWE 2021). The Coastal Sclerophyll Swamp Forest often has a layered canopy and is dominated by *Melaleuca* species and/or *Eucalyptus robusta*.

Within the assessment area (1 km radius around the project area, as defined in the RFI), 50.6 ha of native vegetation has been mapped as PCTs which are recognised as being equivalent to the Swamp Sclerophyll Forest EEC (DPE 2022). This represents approximately 41 % of the mapped native vegetation within the assessment area (DPE 2022; **Figure 3.1**).

HES (2023) identified an approximately 0.33 ha area of regenerating vegetation within the project area which was characterised by the presence of *Eucalyptus robusta* and *Melaleuca ericifolia*. The Conservation Advice for the EEC (DAWE 2021) was reviewed to determine the conservation status of the 0.33 ha of regenerating vegetation and to determine the condition classification as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the project area is connected to an area of native vegetation to the southwest with gaps of less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.
- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the 0.33 ha of regenerating vegetation within the project area is commensurate with the Swamp Sclerophyll Forest EEC. According to the condition classes listed in the conservation advice (DAWE 2021), this area was condition class C2, which

is defined as “a small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.”

4.3.2 Impact Assessment

The proposed action would involve the complete and permanent loss of the 0.33 ha of Swamp Sclerophyll Forest within the project area. Impacts within the project area are largely known and irreversible (e.g. loss of all habitats). Therefore, there can be high confidence of the predicted impacts to the habitat within the project area. The MNES Significant impact guidelines 1.1 (DoE 2013) include criteria to assist in determining whether the impacts of a proposed action on any MNES are likely to be significant impacts. The criteria and their applicability to the proposed action are as follows:

1. Will the action reduce the extent of an ecological community?

Yes. The entire occurrence of the Swamp Sclerophyll Forest EEC within the project area would be permanently removed as part of the proposed action. The proposed action would reduce the extent of the EEC, although the extent of the reduction is very small (0.33 ha).

In a local and regional context, larger areas of this community remain and would not be impacted by the proposed action. The removal of the occurrence of the EEC within the project area would represent a reduction in extent within the assessment area by less than 1 % (based upon 50.6 ha mapped as equivalent to the EEC by DPE 2022).

2. Will the action fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines?

Yes. The proposed action would involve the permanent removal of the entire extent of the EEC within the project area which would represent a small increase in the fragmentation of the EEC within the assessment area. However, the extent of the increased fragmentation is very small (0.33 ha).

3. Will the action adversely affect habitat critical to the survival of an ecological community?

No. The occurrence of the ecological community within the project area has been highly modified and has little potential to increase in extent due to surrounding development pressure. The habitat within the project area is not considered to be critical to the survival of the ecological community.

4. Will the action modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns?

Yes. The proposed development will alter surface water drainage patterns, i.e., removal of vegetation and replacement with hard structures and the alteration of local topography within the site. However, these abiotic factors have already been modified across the project area as a result of historical disturbances including vegetation clearing and construction of open drainage channels.

5. Will the action cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting?

The proposed action would remove the extent of the EEC within the project area, therefore removing its functionality for locally occurring species. However, the proposed action would not impact the composition of occurrences of the EEC outside the project area. As the occurrence of the EEC within the project area has been heavily modified and it is located within a landscape which has been predominantly cleared of vegetation, it is very unlikely that there are functionally important species for the ecological community which are dependent upon the habitat within the project area.

6. Will the action cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **Assisting invasive species, that are harmful to the listed ecological community, to become established, or**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

The proposed development will remove the entire extent of the ecological community within the project area. However, there is very little risk of invasive species, pollutants or fertilisers impacting any occurrences of the EEC outside the project area. The heavily modified nature of the project area and the broader assessment area, mean that occurrences of the Swamp Sclerophyll Forest EEC within the assessment area are already at risk of invasive species or increased nutrient supply from existing urban, agricultural and industrial land uses. The proposed action would represent only a very small increase in the risk, above the current existing risk, associated with these processes.

Conclusion

The proposed action would involve the loss of a small, degraded area of Swamp Sclerophyll Forest. Given the small scale of the habitat loss (0.33 ha), and the highly degraded nature of the habitat proposed to be removed, the proposed action is unlikely to represent a significant impact to the Swamp Sclerophyll Forest EEC.

5 Other requirements

5.1 Economic and social matters

In addition to the impacts to MNES discussed in **Section 4**, the proposed action will have long- and short-term economic and social impacts. The expected long- and short-term economic and social impacts of the proposed action include the following:

- Creation of an additional 8 lots of usable and highly sought after industrial land in an appropriate and highly accessible and fully serviced area (long term)
- Employment creation during subdivision works and construction of individual buildings, as well as ongoing employment for the use of the industrial buildings and multiplier effect (short and long term).
- Upgrades to existing infrastructure in the vicinity such as road and stormwater (long term)
- Environmental impacts during construction for surrounding developments i.e. dust, noise. (short term)
- Environmental impacts during operation of individual and cumulative uses within the subdivision i.e. dust, noise, traffic (long term), noting the zoning does not allow for heavy or hazardous industry and mitigation measures addressed during individual site development application stage.

The noted investment value for subdivision works is \$2 m, noting the proposal allows for the intensification of an industrial site, for an additional 8 future buildings within the project area. It is assumed each building will provide employment for a minimum 2 people, but is expected to be higher. All future developments will be required to provide cost summary reports and is assumed would have a minimum development cost of \$500,000, but expected to be higher.

5.2 Environmental history of the person proposing to take the action

Red Eye Constructions Pty Ltd. has a satisfactory record of responsible environment management. There have been no proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against Red Eye Constructions Pty Ltd. Red Eye Constructions Pty Ltd has not been responsible for undertaking any action previously referred under the EPBC Act. Additionally, following identification of [REDACTED] with the project area, the applicant (person proposing to undertake the action) has worked with Council and NSW DCCEEW towards conservation efforts. In support of achieving positive outcomes for the species within the project area, the applicant enabled officers from the SoS team to access the site to collect seed capsules and genetic samples, for inclusion within the Australian Plant Bank and an ongoing genetic study of [REDACTED].

Red Eye Constructions Pty Ltd has prepared and operates in accordance with its Environmental Management Plan (**Appendix F**).

6 Conclusions

Red Eye Constructions Pty Ltd propose a one (1) into eight (8) lot Torrens Title subdivision of the project area. The proposed subdivision would create an additional eight lots of usable and highly sought after industrial land in an appropriate, highly accessible, and fully serviced area. This would result in employment creation during subdivision works and construction of individual buildings, as well as ongoing employment for the use of the industrial buildings and multiplier effects.

The proposed action, including final land-use for light industrial, would involve clearing all vegetation within the project area. Due to the modified state of the project area, as a result of historical vegetation clearing and land-form modifications including construction of drainage channels, retention and restoration of areas within the project area is not proposed.

The clearing of all vegetation would predominantly involve clearing of exotic flora species within exotic grasslands. However, vegetation to be cleared would include small areas (0.33 ha) of the Swamp Sclerophyll Forest EEC which also represents potential foraging habitat for the Swift Parrot. Assessment against the MNES Significant impact guidelines 1.1 (DoE 2013) determined that the small extent of these impacts, combined with the highly modified nature of the habitats within the project area, mean that the impacts are unlikely to significantly impact the Swift Parrot or the Swamp Sclerophyll Forest EEC.

The proposed action would involve translocation (i.e. removal) of all known [REDACTED] occurring within the project area and subsequent development representing a permanent (irreversible) loss of all habitat for the species across the entire project area. While the translocation of all [REDACTED] is an important mitigation measure, the outcomes of translocations (including [REDACTED]) are high-risk and challenging. Therefore, consistent with the 'EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act' (DSEWPAC 2013), for the purposes of impact assessment the potential loss of all individuals has been assessed. Accordingly, the proposed action has the potential to significantly impact [REDACTED]. Nonetheless, as part of the decision-making process to undertake the translocation works, it was considered that the risks and uncertainty of the translocation process were less than or broadly similar to the risks and uncertainty of long-term survival for the population within the project area if the proposed action did not occur.

As the proposed action has potential to significantly impact [REDACTED], compensation measures (offsets) for the proposed action have been determined in accordance with the NSW BAM. The BAM and BOS have been endorsed by the Commonwealth such that offsetting outcomes achieved through the BAM can be accepted for the purposes of the EPBC Act approval, provided that they are 'like-for-like'. The calculation of offsets for [REDACTED] under the BAM has assumed all areas of the project area (4.7 ha) represent suitable habitat for the species. A total of 18 species credits for [REDACTED] are required to offset potential impacts as part of the proposed action. This offset requirement represents a 'like-for-like' offset, noting that variation rules do not apply for Critically Endangered species under the BAM.

The proposed action, within a highly modified landscape and including mitigation measures to translocate (with the aim of conserving) all [REDACTED] individuals, is not inconsistent with the principles of ecologically sustainable development.

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7 References

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[REDACTED]

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[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

Appendix A EPBC Act Referral

Provided as separate pdf file

Appendix B Request for Information (RFI)

Provided as separate pdf file

Appendix C Requested information Checklist

Provided as separate pdf file

Appendix D Translocation Plan

Provided as separate pdf file

Appendix E BDAR

Provided as separate pdf file

Appendix F Environmental Management Plan

Provided as separate pdf file

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1. About the project

1.1 Project details

1.1.1 Project title *

Torrens Title 8-Lot Industrial Subdivision

1.1.2 Project industry type *

Commercial Development

1.1.3 Project industry sub-type

—

1.1.4 Estimated start date *

01/12/2023

1.1.4 Estimated end date *

01/12/2025

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

The proposed action involves a one (1) into eight (8) lot Torrens Title subdivision. The purpose of the subdivision would be to allow for future industrial land uses consistent with the zoning of the land under the Central Coast Local Environment Plan 2022.

The specific actions subject to this referral would include:

- One (1) into eight (8) lot subdivision.

- Installation of electrical and hydraulic services.
- Earthworks associated with the proposal.
- Tree removal.
- Stormwater Management works.

The proposed action would involve clearing of approximately 0.49 ha of native vegetation and 4.20 ha of exotic grassland within the approximately 4.7 ha study area. A detailed description of vegetation within the study area is provided within Attachment A, Section 3.2, page 21.

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

Yes

1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?

Yes

1.2.5 Provide information about the staged development (or relevant larger project).

The action represents the first stage (subdivision and site preparation works) before subsequent industrial land uses within the newly created lots. The subsequent developments within each of the lots (stage 2 of the development) would be subject to separate environmental assessments under NSW and Commonwealth legislation.

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The legislative context of the action is summarised in Attachment A, section 1.6, page 11-16. This includes the following acts and policies:

- NSW Environmental Planning and Assessment Act 1979 (EP&A Act)
- NSW Local Land Services Act 2013 (LLS Act)
- NSW Water Management Act 2000 (WM Act)
- NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021
- NSW State Environmental Planning Policy (Resilience and Hazards) 2021
- Central Coast Environmental Plan (LEP) 2022
- Central Coast Development Control Plan (DCP) 2022.
- Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Entry into the Biodiversity Offset Scheme, established under Part 6 of the NSW Biodiversity Conservation Act 2016 (BC Act), is triggered for the action by the potential for significant impacts to a species which is listed under the BC Act. Consequently, a Biodiversity Development Assessment Report (Attachment A - BDAR) has been prepared.

Species which require control prior to and post construction of the Project to ensure they are not spread due to construction and clearing works, in accordance with the NSW Biosecurity Act 2015, are identified within Attachment A, Table 18, page 67.

No water courses are mapped within the Study Area. The proposed development does not constitute a 'controlled activity' as per the NSW Water Management Act. Therefore Approval from the Natural Resources Access Regulator (NRAR) is not required.

The Study Area is located within the Central Coast LGA, which is listed within Schedule 1 of Chapter 4 of the Biodiversity and Conservation SEPP (Koala Habitat Protection 2021). Chapter 4 of the Biodiversity and Conservation SEPP was therefore deemed applicable to the action. As such, an assessment of Koala habitat suitability was conducted in accordance with the SEPP including the determination of 'Highly Suitable Koala Habitat' and 'Core Koala Habitat' within the Study Area. Koala use tree species listed under Schedule 3 of the SEPP (Central Coast Koala Management Area) were identified within the Study Area, including *Eucalyptus robusta* (Swamp Mahogany). This species constitutes more than 15% of the total number of trees within the regenerating areas of the site (Vegetation Zone 2 – PCT 1718). As such, this vegetation zones represents "highly suitable habitat" under the SEPP. No evidence of a Koala population within the Study Area was found during the assessment. The nearest record of Koalas to the site was recorded to the west at Watanobbi in 1994. No records of Koalas within the past 18 years occur within 2.5 km of the Study Area. Therefore, the habitats within the Study Area do not meet the definition of 'Core Koala Habitat' under the SEPP.

The Study Area does not contain or adjoin Wetland Protection Area; therefore, Part 10.6 of the NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021 does not apply.

The aim of Chapter 2 (Coastal Management) of the State Environmental Planning Policy (Resilience and Hazards) 2021 is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the NSW Coastal Management Act 2016, including the management objectives for each coastal management area. The Study Area does not contain areas mapped as any of the four coastal management areas. The Coastal Management Act does not apply to this proposed development.

Under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), approval is required for actions that are likely to have a significant impact on matter of national environmental significance including threatened species. As the proposed action has potential to impact upon a threatened species listed under the EPBC Act, this referral has been prepared.

Once the presence of a threatened species within the study area was identified, the applicant worked with the NSW Department of Planning, Industry and Environment (now NSW Department of Planning and Environment, DPE) for conservation efforts. The applicant enabled officers from the Departments Save Our Species team to access the site to undertake conservation works.

Since the conservation works during late 2020, the proponent has had several meetings with Council and DPE in relation to the conservation of the species and development constraints at the site. The meetings occurred on:

- 5th August 2021
- 23rd September 2021
- 12th October 2022
- 15th December 2022

Subsequent meetings have also been held with Council and the proponent ecologists and DPE. Throughout this period discussions have occurred in relation to the best conservation outcomes. Throughout this process Council and DPE have been engaged and involved in assisting the proponent, viewing options to understand the best pathway to develop the site in a manner that would reduce the potential for adverse impacts. During the consultation, it was agreed that a staged translocation program to a recipient site was likely to have the best conservation outcome.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details	
ABN/ACN	48602713691
Organisation name	ECOPLANNING PTY. LTD.
Organisation address	2516 NSW
Referring party details	
Name	Brian Towle
Job title	Senior Ecologist
Phone	0477 888 251
Email	brian.towle@ecoplanning.com.au
Address	428 Princes Highway, Woonona NSW 2517

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

No

1.3.2.2 Is Person proposing to take the action an organisation or business? *

Yes

Organisation address

Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Person proposing to take the action details

Name

Brad Ridge

Job title

Director

Phone

02 4389 8933

Email

brad.ridge@redeyeconstructions.com.au

Address

Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

Yes

1.3.2.16 Describe the nature of the trust arrangement in relation to the proposed action. *

The trust arrangements are detailed within the attached Trust Deed (Attachment D - Red Eye Trust Deed)

Red Eye Constructions Pty Ltd. has a satisfactory record of responsible environment management. There have been no proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against Red Eye Constructions Pty Ltd. Red Eye Constructions Pty Ltd has not been responsible for undertaking any action previously referred under the EPBC Act.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation’s environmental policy and planning framework

Red Eye Constructions Pty Ltd has prepared and operates in accordance with its Environmental Management Plan (Attachment C - Environmental Management Plan).

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Organisation address

Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Proposed designated proponent details

Name

Brad Ridge

Job title

Director

Phone

02 4389 8933

Email

brad.ridge@redyeconstructions.com.au

Address

Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

1.3.4 Identity: Summary of allocation

✔ Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN

48602713691

Organisation name

ECOPLANNING PTY. LTD.

Organisation address

2516 NSW

Representative's name

Brian Towle

Representative's job title

Senior Ecologist

Phone

0477 888 251

Email

brian.towle@ecoplanning.com.au

Address

428 Princes Highway, Woonona NSW 2517

Organisation name	Red Eye Constructions Pty Ltd
Organisation address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261
Representative's name	Brad Ridge
Representative's job title	Director
Phone	02 4389 8933
Email	brad.ridge@redeyeconstructions.com.au
Address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

1.4.9 Would you like to add a purchase order number to your invoice? *

No

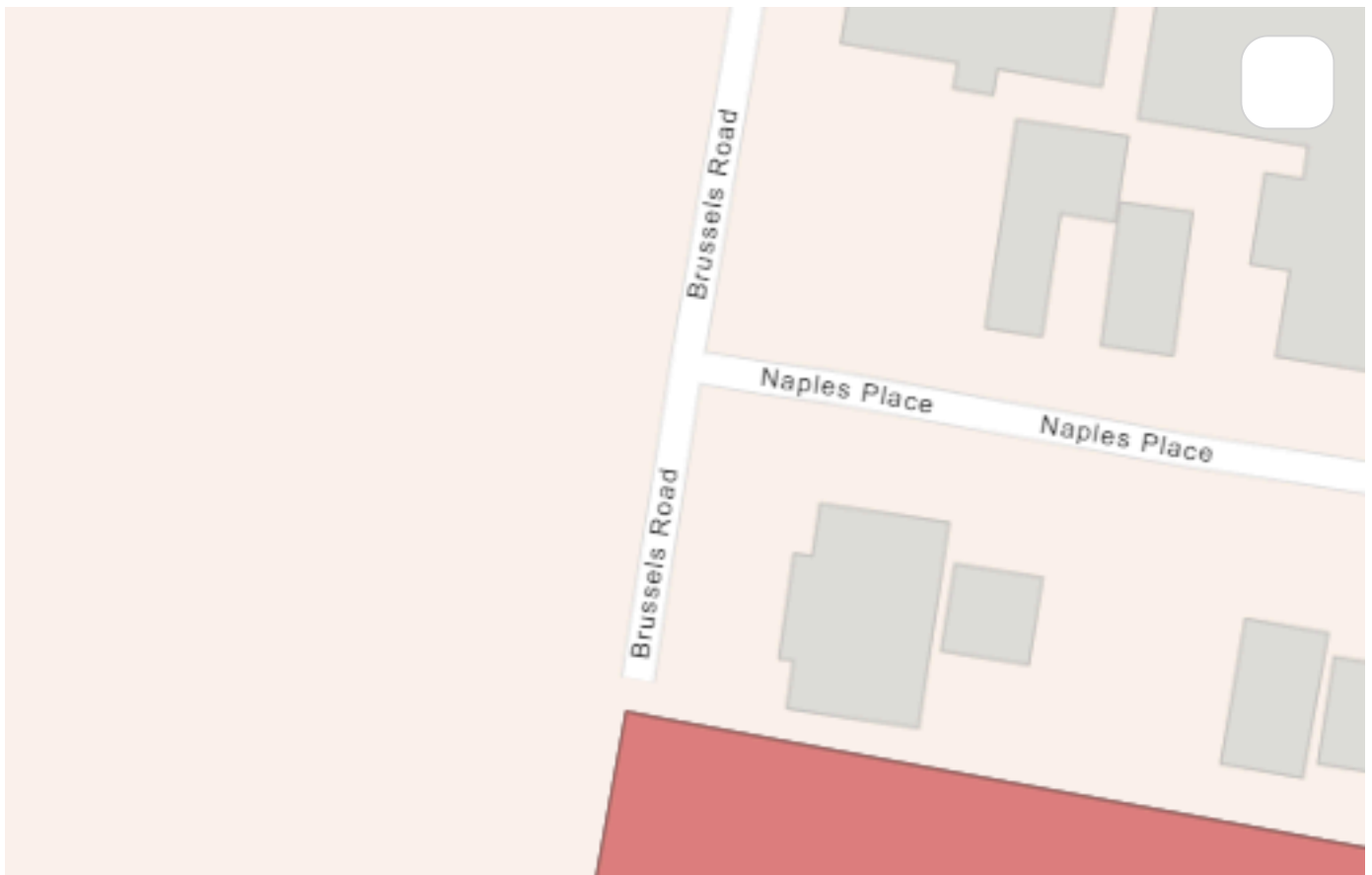
1.4 Payment details: Payment allocation

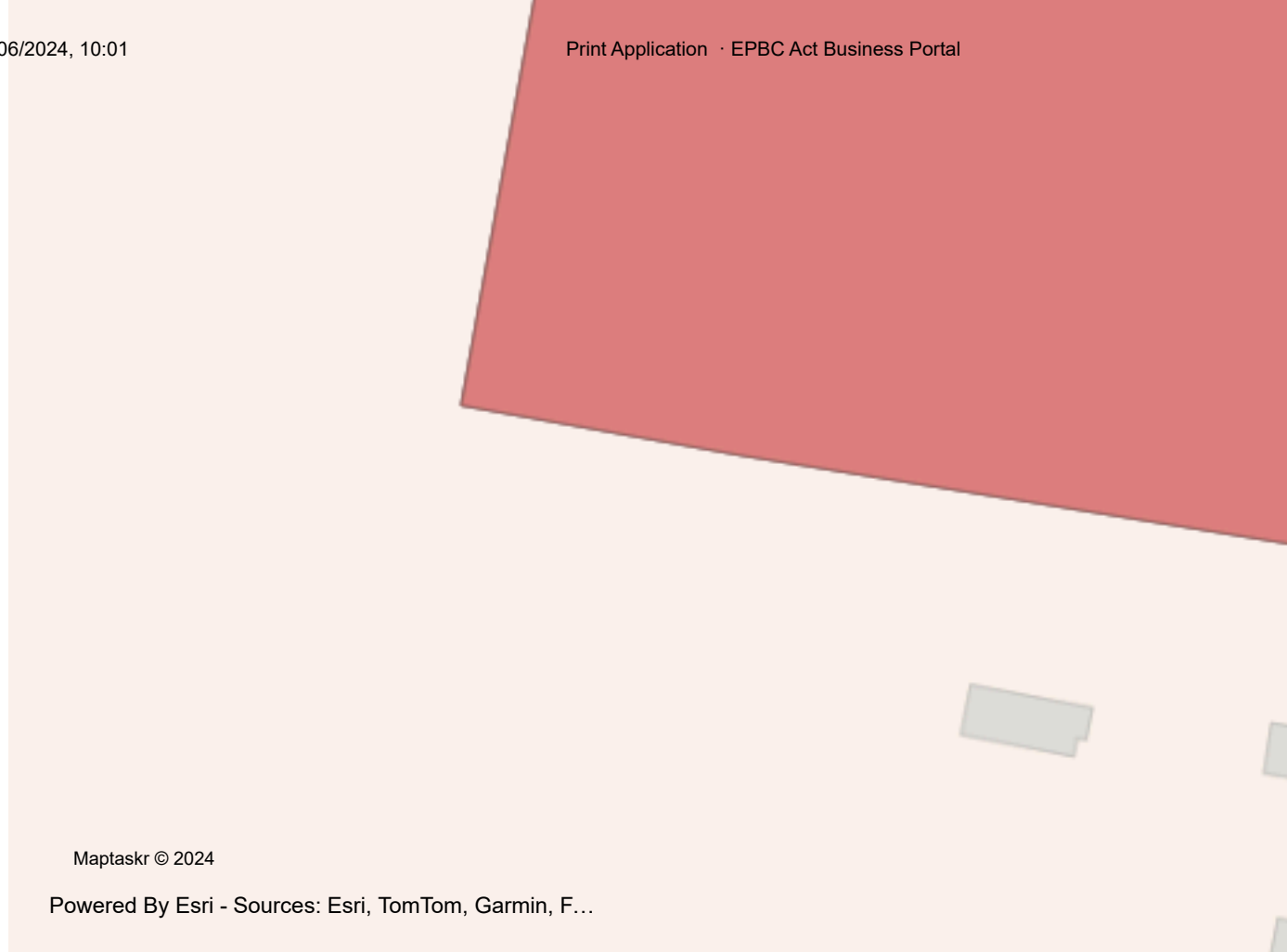
1.4.11 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint





2.2 Footprint details

2.2.1 What is the address of the proposed action? *

460 Pacific Highway, Wyong

2.2.2 Where is the primary jurisdiction of the proposed action? *

New South Wales

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

The project area has been subjected to historical disturbance such as vegetation clearing and earthworks. No key habitat features such as hollow-bearing trees, large water bodies or dense vegetation containing a complex structure occur within the site. Across the approximately 4.72 ha site, areas cleared of native vegetation occur across approximately 4.20 ha. Native vegetation was limited to approximately 0.33 ha of regenerating vegetation or isolated trees. Additionally, aquatic native species have colonised a constructed drainage channels and low-lying areas containing pooling water accounting for approximately 0.17 ha of the site.

The project area is located within the town of Wyong.

3.1.2 Describe any existing or proposed uses for the project area.

There are no ongoing current uses of the site. Most of the site has been historically cleared and there are several stockpiles of soil, gravel and large rocks (sandstone) located in the north-west of the site. A constructed channel runs along the western boundary which is connected to a perpendicular constructed channel which traverses the centre of the site (east to west).

Future uses of the site would be for light industrial purposes consistent with the zoning of the site under the Central Coast Local Environment Plan 2022.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

There are no natural features and/or any other important or unique values relevant to the project area. The site has been historically cleared and landforms have been modified, including from stockpiling soil, gravel and large rocks (sandstone) and construction of an east west channel through the centre of the site.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The site is relatively flat ranging in elevation from approximately 14m above sea level in the south-east corner to approximately 8m above sea level in the north-west corner of the site.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Vegetation is described in detail within Attachment A, chapter 3, page 21-31. Exotic Grassland is the dominant vegetation type within the project area. This vegetation occupies approximately 4.20 ha of the site and is dominated by exotic perennial grasses such as *Paspalum urvillei* (Kikuyu), *Paspalum dilatatum* (Paspalum) and *Cenchrus clandestinus* (Kikuyu). Several exotic herbs also occur including *Senecio madagascariensis* (Fireweed), *Hydrocotyle bonariensis* (Pennywort) *Trifolium repens* (White Clover) and *Medicago polymorpha* (Burr Medic).

The landscape of the site is described as containing texture-contrast soils on lithic sandstones and shales, loamy sand alluvium along creeks, and organic sand and mud in lagoons and swamps. However, within the site historic land use activities have disturbed the soil profile across the site including importation of fill across the site and a mosaic of clays, gravels and sandy loams were observed throughout the site.

Two native Plant Community Types (PCTs) were identified within the site, namely:

- PCT 1718: Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast: 0.33 ha total (0.28 ha area of regenerating forest in the western portion of the Study Area and 0.05 ha of isolated trees near the eastern boundaries).
- PCT 1737: Typha Rushland (0.17 ha area of aquatic emergent vegetation was identified within the constructed drainage channel and low-lying areas of the site).

PCT 1718 within the site is characterised by a canopy of regenerating Swamp Mahogany (*Eucalyptus robusta*) and occurs in fragmented and isolated patches of regenerating vegetation within the site; however, an intact canopy, shrub and groundcover is present. A large number of exotic plant species occur, including several High Threat Weeds. The PCT 1737 within the project area is restricted to constructed drainage channels and low-lying areas containing pooling water. A large number of exotic plant species occur, including several High Threat Weeds.

Vegetation identified as PCT 1718 is equivalent to the 'Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland' endangered ecological community. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification under the EPBC listing as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the site is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2

Based on the criteria listed above, the vegetation is commensurate with the EEC and is classified as Class
C2: A small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with
another large area of native vegetation.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

There are no Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the site. Additionally, the site is not identified as a heritage item or being within a heritage conservation area as per the Central Coast LEP 2022.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

The site is located on Darkinjung Country. No specific heritage values relevant to this region have been identified within the site.

hydrological investigations or surveys if applicable.

Hydrology of the site is detailed within the Stormwater management report (Attachment B - Stormwater Management Plan).

Review of Central Coast Council's online flood mapping system indicates that the subject site is impacted by flooding. However, landform modification associated with development to the west of the site would significantly alter the flow of floodwaters to what is indicated by the online flood mapping system. The flooding shown on the online mapping system would no longer be valid due to the extreme topography changes that have occurred since the time of the study. It can be observed that the extent of flooding shown is likely a result of the conveyance of the upstream runoff through the site, which has been assessed in detail as outlined in Attachment B, section 4.2, page 3. It demonstrates that adequate conveyance of the 1% Annual Exceedance Probability is provided by the proposed drainage infrastructure, with provision for overland surface flow to be conveyed with the road reserve.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes

S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no world heritage areas in proximity to the site. The action would not involve any direct or indirect impacts to any world heritage areas.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

There are no national heritage places in proximity to the site. The action would not directly or indirectly impact any national heritage places.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The site is located approximately 50 km away from, and in a separate catchment area, to the nearest RAMSAR Wetland, being the Hunter Estuary Wetlands. The proposed action would not directly or indirectly impact this or any other RAMSAR Wetland.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Acacia bynoeana
No	No	Angophora inopina
No	No	Anthochaera phrygia
No	No	Botaurus poiciloptilus
No	No	Caladenia tessellata
No	No	Calidris canutus
No	No	Calidris ferruginea
No	No	Callocephalon fimbriatum
No	No	Calyptorhynchus lathami lathami
No	No	Chalinolobus dwyeri
No	No	Charadrius leschenaultii
No	No	Climacteris picumnus victoriae
No	No	Cryptostylis hunteriana
No	No	Cynanchum elegans
No	No	Dasyurus maculatus maculatus (SE mainland population)

No	No	Erythrotriorchis radiatus
No	No	Eucalyptus camfieldii
No	No	Euphrasia arguta
No	No	Falco hypoleucos
No	No	Grantiella picta
No	No	Grevillea parviflora subsp. parviflora
No	No	Hirundapus caudacutus
Yes	Yes	Lathamus discolor
No	No	Litoria aurea
No	No	Melaleuca biconvexa
No	No	Melanodryas cucullata cucullata
No	No	Mixophyes balbus
No	No	Neophema chrysostoma
No	No	Notamacropus parma
No	No	Numenius madagascariensis
No	No	Persicaria elatior
No	No	Petauroides volans
No	No	Petaurus australis australis
No	No	Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)
No	No	Potorous tridactylus tridactylus
No	No	Pseudomys novaehollandiae
No	No	Pteropus poliocephalus
No	No	Pycnoptilus floccosus
No	No	Rhizanthella slateri
No	No	Rhodamnia rubescens

No	No	Rostratula australis
No	No	Rutidosis heterogama
No	No	Stagonopleura guttata
No	No	Sternula nereis nereis
No	No	Syzygium paniculatum
No	No	Tetratheca juncea
Yes	Yes	██████████
No	No	Thesium australe

Ecological communities

Direct impact	Indirect impact	Ecological community
No	No	Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community
Yes	No	Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland
No	No	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The proposed action would involve the loss of all habitat for a threatened species within the project area. However, it is noted that this habitat is heavily modified and does not currently support any identifiable native vegetation communities. This habitat is characterised further in the Biodiversity Development Assessment Report (BDAR) prepared for the project, Attachment A, section 4, page 32-43 and Attachment A, Table 13, page 53.

The proposed action would involve direct removal of 0.33 ha of regenerating vegetation which meets the definition of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact?

*

No

4.1.4.6 Describe why you do not consider this to be a Significant Impact. *

The proposed impacts to a threatened species include loss of all habitat and translocation as per the translocation plan, Attachment A, Appendix G, page 138. However, as detailed in Section 1.7 of the translocation plan (Attachment A, Appendix G, page 152) the risk associated with the action (including translocation) are considered less than the current risks to the species which would remain unaddressed in the absence of the project. Specifically, the prospects of long-term survival of the threatened species within the project area is very low due to the high degree of habitat modification which has occurred from historic disturbances including:

- An altered hydrological regime resulting from modified landforms across the project area. Stockpiling of soil has occurred across much of the project area, including where a threatened species has been recorded. The result of this landform modification includes prolonged ponding of water after rainfall. Additionally, soil stockpiles may face water stress due to more rapid drying out of soils compared to natural conditions.
- Competition from exotic species. Details of the extent and diversity of exotic species across the source site are detailed within Attachment A, Appendix B, page 91. A large number of exotic species are present within the source site including species identified as representing a specific risk to threatened species.
- The presence and persistence of necessary biotic interactions within the source site is questionable.

The proposed action would involve direct removal of 0.33 ha of regenerating vegetation which meets the definition of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. Therefore, an assessment of significance in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) was completed for the ecological community (see Appendix F of Attachment A).

This assessment concluded that although the extent of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community within the project area will be removed as part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

A portion of the 0.33 ha of native vegetation which forms part of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community (approx. 0.15 ha) is identified as 'important habitat' for the Swift Parrot (*Lathamus discolor*) under the NSW Biodiversity Assessment Method. Important habitat maps identify areas that are considered essential to support critical life stages of the species, in this case foraging habitat. Therefore, an assessment of significance in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) was completed for the Swift Parrot (see Appendix F of

4.1.4.7 Do you think your proposed action is a controlled action? *

No

4.1.4.9 Please elaborate why you do not think your proposed action is a controlled action.

*

The proposed action would involve the permanent loss of all habitat for a threatened species within the project area. For reasons stated above and included within Attachment A, Appendix G, section 1.7, page 152, the project is considered unlikely to have a significant impact as the proposed action represents less risk to the threatened species within the project area than the existing risks to this population. Therefore, the project is also considered unlikely to be a controlled action.

The project would represent the permanent loss of a small area (approx. 0.33 ha) of native vegetation comprising the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. A smaller proportion of this habitat (0.15) has been mapped as important foraging habitat for the Swift Parrot. However, due to the very small area of these impacts and the very highly degraded condition of the impacted habitat, these impacts are unlikely to be significant to either the threatened ecological community or Swift Parrot and therefore the proposed action is not considered to be a controlled action.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The project area has been chosen for the proposed development based upon the limited extent of native vegetation and the zoning of the land (which takes into account the perceived environmental values of the land). All areas of native vegetation within the project area are proposed to be removed. However, this is limited to a very small area of native vegetation. Due to the limited extent of native vegetation within the project area, its poor condition and lack of key habitat features such as hollow-bearing trees or habitat logs, further avoidance of native vegetation (other than choosing a project area with very limited cover of native vegetation) has not been proposed.

The proposed translocation of a threatened species within the project area in accordance with Attachment A , Appendix G, page 139 represents a mitigation action which aims to avoid and mitigate impacts to this species associated with the project.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	No	Actitis hypoleucos
No	No	Apus pacificus
No	No	Calidris acuminata
No	No	Calidris canutus
No	No	Calidris ferruginea
No	No	Calidris melanotos
No	No	Charadrius leschenaultii
No	No	Cuculus optatus
No	No	Gallinago hardwickii
No	No	Hirundapus caudacutus
No	No	Monarcha melanopsis
No	No	Motacilla flava
No	No	Myiagra cyanoleuca
No	No	Numenius madagascariensis

No

No

Symposiachrus trivirgatus

20/06/2024, 10:01

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No

No

Tringa nebularia

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.5.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project is unlikely to have any direct or indirect impacts on listed migratory species as the project area has undergone substantial historic modification and disturbance such that it does not represent suitable habitat for any migratory species. Therefore, the project would not reduce or fragment any available habitat for migratory species and would not cause a decrease in, or threaten the viability of, any populations of these species. Similarly, the project would not displace or substantially limit the movement or dispersal of any migratory species.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The proposed action is not a nuclear action, nor would it interact with any nuclear actions.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The proposed action would not impact any commonwealth marine areas, directly or indirectly.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project does not involve any coal mining or coal seam gas extraction and would not impact any water resources associated with these activities.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project would not involve any direct or indirect impacts to commonwealth land.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact.

*

The project would not involve any direct or indirect impacts to any commonwealth heritage places overseas.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

None

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

part of your referral? *

No

4.3.8 Describe why alternatives for your proposed action were not possible. *

In the context of the project, the only alternatives would involve either not undertaking the action, or undertaking the action in a way which would avoid impacts to threatened species. However, these alternatives are unlikely to improve the long-term survival prospects for threatened species within the project area. As detailed within Attachment A, Appendix G, section 1.7, page 152, the prospects of long-term survival of the threatened species within the project area is very low due to the high degree of habitat modification which has occurred from historic disturbances. Specifically, current threats to threatened species within the project area include:

- An altered hydrological regime resulting from modified landforms across the source site. Stockpiling of soil has occurred across much of the source site, including where threatened species have been recorded. The result of this landform modification includes prolonged ponding of water after rainfall.
- Competition from exotic species. Details of the extent and diversity of exotic species across the source site are detailed within Attachment A, Section 3.2, page 23-31. A large number of exotic species are present within the source site including species identified as representing a specific risk to threatened species.
- The presence and persistence of necessary biotic interactions for threatened species within the project area is questionable.

The risks of the proposed action are considered to be less than the current risks to threatened species.

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	12/09/2020	Low	High

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

	Type	Name	Date	Sensitivity	Confidence

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att D - Red Eye Trust Deed.pdf	20/10/2016	Low	High

1.3.2.18 (Person proposing to take the action) If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att C - Environmental Management Plan.pdf Environmental Management Plan	03/05/2018	Low	High

3.2.1 Flora and fauna within the affected area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

3.2.2 Vegetation within the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

3.4.1 Hydrology characteristics that apply to the project area

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att B - SWMP_460 Pacific Highway, Wyong.pdf Stormwater Management Report	02/05/2018	Low	High

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

4.1.4.6 (Threatened Species and Ecological Communities) Why you do not consider the direct and/or indirect impact to be a Significant Impact

Type	Name	Date	Sensitivity	Confidence
#1.	Document Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2020	Low	High

4.1.4.10 (Threatened Species and Ecological Communities) Avoidance or mitigation measures proposed for this action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2023	Yes	High

4.1.4.11 (Threatened Species and Ecological Communities) Proposed offsets relevant to avoidance or mitigation measures

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2023	Yes	High

4.3.8 Why alternatives for your proposed action were not possible

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Att A - BDAR_460 Pacific Highway_Wyong_redacted.pdf Biodiversity Development Assessment Report	11/09/2023	Yes	High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	48602713691
Organisation name	ECOPLANNING PTY. LTD.
Organisation address	2516 NSW
Representative's name	Brian Towle
Representative's job title	Senior Ecologist
Phone	0477 888 251
Email	brian.towle@ecoplanning.com.au
Address	428 Princes Highway, Woonona NSW 2517

By checking this box, I, **Brian Towle of ECOPLANNING PTY. LTD.**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	116100657
Organisation name	Red Eye Constructions Pty Ltd
Organisation address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261
Representative's name	Brad Ridge
Representative's job title	Director
Phone	02 4389 8933
Email	brad.ridge@redeyeconstructions.com.au
Address	Unit 2, 13 Bon Mace Close | Berkeley Vale NSW 2261

Check this box to indicate you have read the referral form. *

I would like to receive notifications and track the referral progress through the EPBC portal. *

I, **Brad Ridge of Red Eye Constructions Pty Ltd**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

- Check this box to indicate you have read the referral form. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *
- I, **Brad Ridge of Red Eye Constructions Pty Ltd**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *
- I would like to receive notifications and track the referral progress through the EPBC portal. *



Attachment A

Preliminary documentation additional information request

Torrens Title 8-Lot Industrial Subdivision, Wyong, NSW – EPBC 2023/09648

On 2 February 2024, the proposed action (above) was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), due to likely significant impacts to the following controlling provisions:

- Listed threatened species and communities (s18 & s18A)

It was also determined under section 87 that the proposed action will be assessed by preliminary documentation, and that further information is required under section 95A.

(Section 95A - This section of the Act applies if the Minister was not satisfied at the time of making the assessment approach decision, that there was enough information to allow for assessment of the relevant impacts.)

This document (Attachment A) specifies what further information is required to adequately assess the impacts of your proposed action (Part 1) as well as general preliminary documentation guidelines (Parts 2 - 6).

Your resulting preliminary documentation package will be published for comment.

It is important that you read this document carefully and make sure that you understand the requirements. If you have not followed the guidance in this document, your draft preliminary documentation may be rejected. Please contact the project manager, Kate Austen, at kate.austen@dcceew.gov.au as early as possible if you have any questions or concerns.

Terminology:

- **Action:** a project, development, undertaking, activity or series of activities.
- **Project area:** total area that includes the direct and indirect disturbance footprint/s, as well as avoidance area/s and retention area/s and can include (if applicable) any ancillary developments.
- **Disturbance footprint:** the areas within the project area that are directly impacted or indirectly impacted by the 'proposed action'. These areas can include upstream and downstream areas and often extend beyond the physical or ownership boundary of the project.
- **Avoidance area** (where relevant): any areas of national environmental significance within the project area that are intentionally not to be cleared or disturbed during the project action.

1 Further information required

In addition to the information supplied in your referral documentation, the following information must be included as part of your preliminary documentation package.

1.1 Listed threatened species and ecological communities (s18 & s18A)

Under this controlling provision, **any** listed threatened species or ecological community, which could be potentially impacted is relevant to this assessment. Based on the information provided in your referral, the department requires additional information in relation to the threatened species and ecological communities listed below.

Relevant guidance material (in particular survey guidelines, conservation advices, recovery plans, threat abatement plans and policy statements) is available through the department's Species Profile and Threats (SPRAT) database. It is your responsibility to ensure that you have identified the relevant documents.

1.2 Listed threatened species and ecological communities likely to be significantly impacted and to be addressed

Further information is required on the likelihood of **occurrence**, assessment of **direct and indirect impacts** against the significant impact criteria in the *Matters of National Environmental Significance Significant impact guidelines 1.1*, proposed **avoidance and mitigation measures**, and proposed **compensation (offset) measures**.

Based on the information provided in the referral documentation, the department considers the [REDACTED] ([REDACTED] [REDACTED]) is likely to be significantly impacted by the proposed action.

Please also include details of any other species or ecological communities which could be impacted by the proposed action, and whether you consider that impact to be significant (in accordance with the EPBC Act significant impact guidelines).

1.3 Information required

1.3.1 Occurrence

Threatened species

For each threatened species, provide information about the species' occurrence within the proposed project area and surrounds (see **Table 1** checklist), and details of the survey methodologies used for each species (see **Table 2** checklist).

Locations of [REDACTED] populations can be generalised to protect confidential data points. While sensitive information may not be made publicly available, it should be provided to the department as an addendum for assessment purposes. For more information on managing sensitive ecological data see the departments [Sensitive Ecological Data— Access and Management Policy V1.0](#).

Table 1 Threatened species occurrence checklist

Provide the known records of the species within and adjacent to the proposed project area , presented as a map , including:	
<ul style="list-style-type: none"> records from surveys undertaken for this proposed action 	<input type="checkbox"/>
<ul style="list-style-type: none"> any historical database records in and around the proposed project area ([REDACTED]) 	<input type="checkbox"/>
Provide the number of individuals of the species occurring in the proposed project area.	<input type="checkbox"/>
Detail the survey methodology used for each species.	<input type="checkbox"/>
Provide data on likely population size and extent (including populations that extend beyond the proposed project area), where available.	<input type="checkbox"/>
If relevant, provide information that identifies important populations .	<input type="checkbox"/>
Provide information on the extent of habitat for the species in the proposed project area:	
<ul style="list-style-type: none"> Refer to habitat requirements detailed in the species' listing advice, conservation advice, and/or recovery plan 	<input type="checkbox"/>
<ul style="list-style-type: none"> Specify the type(s) of habitat available (e.g., whether the habitat value is related to foraging, breeding, dispersal, etc.) 	<input type="checkbox"/>
<ul style="list-style-type: none"> Describe the quality of the habitat 	<input type="checkbox"/>
<ul style="list-style-type: none"> Describe key habitat features (e.g., hollow bearing trees) 	<input type="checkbox"/>
<ul style="list-style-type: none"> any other relevant information describing the species habitat (for example, whether the habitat is considered critical to the survival of the species). 	<input type="checkbox"/>
Consider occupancy trends relating to season and time of day. Longer term trends including climate change may also be relevant.	<input type="checkbox"/>

Table 2 Threatened species survey checklist

Describe the survey methodology in detail.	<input type="checkbox"/>
Surveys should follow the NSW Biodiversity Assessment Method (BAM), endorsed by the department	<input type="checkbox"/>
Append survey results to main document	<input type="checkbox"/>
If the proposed action is being assessed under the NSW BAM, append all relevant BAM documentation to the preliminary documentation (i.e., the Biodiversity Development Assessment Report (BDAR)).	<input type="checkbox"/>

1.3.2 Impact assessment

The preliminary documentation must include an assessment of all potential impacts (including direct, indirect, facilitated, and cumulative impacts) that may occur as a result of all project phases and elements of the proposed action on each threatened species and ecological community listed above. You must also consider the potential of the proposed action to impact on adjacent areas likely to contain threatened species and ecological communities (see **Table 3** checklist).

The department has identified the following impacts on [REDACTED] as being particularly relevant to your proposed action, which should be considered when preparing the preliminary documentation:

- The proposed action will permanently remove all [REDACTED] individuals within the 4.72 ha proposed project area.
- The proposed action will permanently remove all [REDACTED] habitat within the 4.72 ha proposed project area.

Additionally, according to the [EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act](#) (2013), the high risks associated with translocation means that unless it can be shown there is a high degree of certainty of success, the removal of individuals from a site for translocation should be considered as equivalent to the complete loss of those individuals.

Table 3 Impact assessment checklist

<p>Identify the nature and extent of the likely short-term and long-term impacts from the activities, elements, or stages of the proposed action, including translocation. When identifying impacts, refer to the significant impact criteria for threatened species and ecological communities in the <i>Matters of National Environmental Significance Significant impact guidelines 1.1</i>, noting that the impact criteria differ among threatened ecological communities and threatened species with different listing statuses.</p>	<input type="checkbox"/>
<p>The proponent has allowed two seasons for translocation. The BDAR states that translocation of the core population of [REDACTED] will not be undertaken until translocation of all isolate [REDACTED] individuals is achieved and the translocation approach is shown to be successful.</p> <ul style="list-style-type: none"> • What does ‘successful’ translocation look like? (What percentage and over what timeline.) • What happens if the translocation of the isolated individuals is deemed unsuccessful? <p>If it cannot be shown that the translocation will succeed with a high degree of certainty, the department considers that the translocation cannot be considered a mitigation action and constitutes an impact associated with the proposed action which should be considered in the preliminary documentation.</p> <p>For potential impacts of translocation refer also to EPBC Act Policy Statement – Translocation of Listed Threatened Species - Assessments under Chapter 4 of the EPBC Act (2013).</p>	<input type="checkbox"/>

Quantify the area of direct and indirect impacts for each species and community including the total area of impact in hectares, and the number of individuals impacted.	<input type="checkbox"/>
Provide an analysis of the likely impacts and the long-term viability of the species/community if the proposed action was to proceed, at a:	<input type="checkbox"/>
<ul style="list-style-type: none"> Local (site level) scale – discuss impacts to connectivity 	<input type="checkbox"/>
<ul style="list-style-type: none"> Regional scale – discuss impacts to connectivity, potential cumulative impacts within the broader region 	<input type="checkbox"/>
Provide details on whether any impacts are likely to be unknown, unpredictable or irreversible and what confidence is placed on the predictions or relevant impacts.	<input type="checkbox"/>
Provide justification for any conclusions regarding potential impacts in relation to specific needs and characteristics of each species and/or community, including references to conservation advices, listing advices, recovery plans, and any other technical data or information. If these are not applicable, a brief statement to this effect must be included.	<input type="checkbox"/>

1.3.3 Avoidance, mitigation, and management measures

The preliminary documentation must provide information on specific measures proposed to avoid, mitigate and manage each identified impact from the proposed action on the relevant threatened species or community. The measures must address all project phases (pre-construction, construction and operation) of the proposed action (see Table 4 checklist).

If it is necessary to rely on any confidential material, you should consult the department on the handling of that material before submitting your preliminary documentation for publication. While sensitive information may not be made publicly available, it should be provided as an addendum to the department for assessment purposes.

Table 4 Avoidance, mitigation, and management checklist

Provide a consolidated list of all avoidance/mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action. If considering translocation as a mitigation measure, justification and evidence is required to show that there will be a high degree of certainty of success. If this is not adequate, in accordance with the EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act (2013), translocation cannot be considered a mitigation action and should be discussed as an impact associated with the proposed action.	<input type="checkbox"/>
For each of the mitigation measures proposed:	
<ul style="list-style-type: none"> Discuss the likely cost effectiveness of proposed measures 	<input type="checkbox"/>
<ul style="list-style-type: none"> Provide an assessment of the predictive effectiveness for each protected matter and the degree of certainty of success 	<input type="checkbox"/>

<ul style="list-style-type: none"> Discuss any statutory or policy basis for the measures 	<input type="checkbox"/>
<ul style="list-style-type: none"> Discuss the relationship, if any, with measures identified in the department's conservation advices, recovery plans and threat abatement plans 	<input type="checkbox"/>
<ul style="list-style-type: none"> Discuss the relationship, if any, with measures proposed by state and/or local governments relevant to minimising the impacts of the action on protected matters 	<input type="checkbox"/>
<ul style="list-style-type: none"> Identify the roles and responsibilities associated with implementation 	<input type="checkbox"/>
The preliminary documentation must include a clear summary of the residual impacts from the proposed action having regard to the avoidance and mitigation measures that will be undertaken to minimise impacts.	<input type="checkbox"/>
Provide proposed environmental management plans if available. If not available, at minimum set out the framework for ongoing management, mitigation, and monitoring programs for the relevant impacts of the action.	<input type="checkbox"/>
Clearly state and discuss and variables or assumptions made in the assessment.	<input type="checkbox"/>
Discuss the extent to which limited availability of relevant information has the potential to influence the conclusions of the assessment.	<input type="checkbox"/>

1.3.4 Compensation measures (offsets)

The department is of the view that the proposal is likely to have a residual significant impact requiring compensatory measures (e.g., environmental offsets) to be implemented under the EPBC Act.

At the time of this request, the department considers that the residual significant impacts include:

- The removal of all [REDACTED] individuals
- The removal of at least 4.72 ha of [REDACTED] habitat

Please provide details of proposed offsets to compensate for these residual impacts including:

- The type of offset(s) proposed (note, the Commonwealth has endorsed the NSW BOS).
- The extent to which the proposed offset actions correlate to, and adequately compensate for, EPBC Act listed species and communities.
- The suitability of the location of any proposed offset site for EPBC Act listed species and communities, including evidence of the presence of, or usage by, relevant protected matter(s).
- The conservation gains to be achieved by the offset i.e., positive management strategies that improve the site or averting the future loss, degradation, or damage of the protected matter.
- The time it will take to achieve the proposed conservation gain.
- The level of certainty that the proposed offset will be successful.
- The current land tenure of any proposed land-based offset and the method of securing and managing that offset.

While offsets do not need to be secured before the decision on whether to approve the proposed action, should the proposed action be approved, conditions of an approval are likely to require that offsets are secured, and management measures are in place, before commencement of the proposed action.

EPBC Act Environmental Offsets

If offsets are to be secured in accordance with the EPBC Act Environmental Offsets Policy, the preliminary documentation must demonstrate that the proposed Offset Strategy meets the criteria outlined in **Table 5** below.

Table 5 EPBC Act Environmental Offsets checklist

The offset strategy must:	
<ul style="list-style-type: none"> Meet the principles specified in the EPBC Act Environmental Offsets Policy; 	<input type="checkbox"/>
<ul style="list-style-type: none"> Directly contribute to the ongoing viability of the relevant protected matters to deliver an overall conservation outcome that improves or maintains the viability of the protected matter in the region, as compared to what is likely to have occurred under the status quo, i.e., if neither the action nor the offset had taken place; and 	<input type="checkbox"/>
<ul style="list-style-type: none"> Compensate for the impacts over the entire duration of the proposed action (should impacts be in perpetuity, the offsets must also be delivered in perpetuity). 	<input type="checkbox"/>
The preliminary documentation must also provide and clearly justify the scores entered into the Offset assessment guide.	<input type="checkbox"/>

Other endorsed offset frameworks

If using an endorsed framework, the report detailing the outcomes (including credit report) prepared in accordance with the state requirements must be submitted with the preliminary documentation. For more information see Appendix B: Endorsed offsetting frameworks.

The NSW Biodiversity Assessment Method (BAM) and Biodiversity Offset Scheme (BOS) have been endorsed by the Commonwealth. This means that offsetting outcomes achieved through the BAM will be accepted for the purposes of the EPBC Act, provided that they are 'like-for-like' in relation to listed threatened species and communities as defined for the purposes of the EPBC Act. Payment into the Biodiversity Conservation Fund is also considered acceptable. If you are proposing offsets developed using the BAM, you should append all relevant BAM documentation to your preliminary documentation; this would generally include a Biodiversity Development Assessment Report (BDAR).

Outcomes based conditions

Outcomes-based conditions can provide approval holders with greater flexibility and autonomy while still holding them accountable for achieving sound environmental outcomes. The department

promotes the use of outcomes-based conditions where possible, in accordance with its Outcomes-based Conditions Policy 2016¹.

However, outcomes-based conditions are generally only appropriate where the person proposing to take the action has a good environmental record and the baseline condition of a site is well understood and documented.

Please advise the assessment officer if you would like to pursue this approach. **Table 6** provides a checklist for the information required if taking this approach.

Table 6 Outcomes based conditions checklist

Thoroughly document the baseline condition of the relevant impacted matter(s).	<input type="checkbox"/>
Identify conservation objectives (outcomes) for the relevant impacted matters, preferably with reference to any applicable conservation advices, recovery plans and threat abatement plans.	<input type="checkbox"/>
Outline how performance against specified objectives will be measured and reported.	<input type="checkbox"/>

Other requirements for the preliminary documentation

2 Description of the proposed action

2.1 General

The preliminary documentation must provide a detailed description of the proposed action, including the location and nature of all activities associated with the proposed action. **Table 7** provides a checklist for descriptions of the proposed action. While this information may have been included in your referral, for readability, it should also be included in the main preliminary documentation report.

Table 7 Proposed action description checklist

Descriptions of any proposed clearing, earthworks and construction activities or other elements proposed to be taken within the disturbance footprint.	<input type="checkbox"/>
Description of the current management of the project area , including whether it is still actively being used for stockpiling soil and whether the avoidance areas surrounding ██████ are maintained year-round.	<input type="checkbox"/>
Descriptions of the preconstruction, construction, and operational phases of the proposed action.	<input type="checkbox"/>

¹ See Outcomes-based conditions policy and guidance: [Outcomes-based conditions policy and guidance - DCCEEW](#)

The anticipated timing and duration (including start and completion dates) for each known activity, stage, or element of the proposed action.	<input type="checkbox"/>
Feasible alternatives to the proposed action or elements of the proposed action, and justification for the preferred option .	<input type="checkbox"/>
Consultation about the proposed action that is planned or has been completed, including any documented results or responses.	<input type="checkbox"/>
Requirements for assessment and approval under state legislation , including any conditions that apply (or will apply) to the proposed action, in addition to any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action.	<input type="checkbox"/>
Details of any local or State government planning scheme , or plan or policy under any local or State government planning system that deals with the proposed action.	<input type="checkbox"/>
How the action relates to any other action (of which the proponent is aware) that is being or will be taken in the region.	<input type="checkbox"/>

2.2 Maps and diagrams

The preliminary documentation must include maps, plans, and/or diagrams of the proposed action.

Table 8 provides a checklist for the maps or diagrams to be provided. The Department also recommends the *Guide to providing maps and boundary data for EPBC Act projects*² is reviewed in the preparation of the preliminary documentation maps.

Table 8 Proposed action maps, plans, and/or diagrams checklist

Clearly show the proposed action location within the wider area .	<input type="checkbox"/>
Clearly delineate the construction/clearing footprint boundary , and any wider boundaries (e.g., project area) where relevant.	<input type="checkbox"/>
Clearly show the precise layout of all works to be undertaken , including building structures or other infrastructure, number and location of lot subdivisions where relevant, proposed land use, or other elements of the action that may have relevant impacts.	<input type="checkbox"/>
Clearly identify any open spaces and buffer zones (see Appendix C), where relevant.	<input type="checkbox"/>
Clearly identify any avoidance areas, retained vegetation (in particular, for matters of national environmental significance (MNES)), and conservation areas , where relevant.	<input type="checkbox"/>
Clearly identify any areas adjoining the construction footprint which may be affected by indirect or offsite impacts as a result of the proposed action, where relevant.	<input type="checkbox"/>

² Department of Agriculture, Water and the Environment (2021). *Guide to providing maps and boundary data for EPBC Act projects*. Commonwealth of Australia, Canberra. [Maps and boundary data for EPBC Act projects \(dcceew.gov.au\)](https://www.dcceew.gov.au)

3 Description of the environment

The preliminary documentation must provide a detailed description of the environment, which includes but is not limited to:

- a) a detailed description of the terrestrial and aquatic environment affected (in the short and the long term) by the proposed action.
- b) a detailed description of the land use within and adjacent to the proposed project area.

Table 9 Description of the environment checklist

Include a full description of the project area including the area of land within the 1000 metre buffer zone (assessment area) surrounding the project area for site-based development, or 500 metre buffer for linear development.	<input type="checkbox"/>
Identify Interim Biogeographic Regionalisation for Australia (IBRA) bioregions and IBRA subregions within the project area and assessment area.	<input type="checkbox"/>
Describe the landscape features identified within the project area and assessment area including rivers, streams, estuaries and wetlands , and any karst, caves, crevices, cliffs, rocks or other geological features of significance within the project area and assessment area.	<input type="checkbox"/>
Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable.	<input type="checkbox"/>
Describe any Commonwealth places or Indigenous heritage values that apply to the project area.	<input type="checkbox"/>
Clearly outline the existing ecosystem, including the plants, animals and ecological communities present within the project area and assessment area.	<input type="checkbox"/>
Clearly identify any EPBC Threatened Ecological Communities (TEC) . Include field assessment results and analysis of information in the Listing Advice and/or Conservation Advice made by the Threatened Species Scientific Committee to list the EC including any condition thresholds associated with the community.	<input type="checkbox"/>
Ensure the reader is directed to the specific information by attaching or hyperlinking to any supporting documentation following the guidance provided.	<input type="checkbox"/>

4 Economic and social matters

The preliminary documentation must provide information about the expected long- and short-term economic and social impacts of the proposed action, both positive and negative. This must include, but not necessarily be limited to, the points outlined in **Table 10**.

Table 10 Economic and social matters checklist

Consideration of negative impacts (e.g., disruption to existing community infrastructure, environmental features, and/or cultural and traditional activities)	<input type="checkbox"/>
Consideration of positive impacts (e.g., increased housing, employment, or social amenity)	<input type="checkbox"/>
Consideration of different scales of impact (e.g., local, regional, and national)	<input type="checkbox"/>

Estimated capital value and ongoing economic value , using specific dollar or other numerical values where relevant	<input type="checkbox"/>
Discussion of relevant public consultation undertaken, including any issues raised in objection or support of the proposed action	<input type="checkbox"/>
Discussion of any contributions (for example, government funding, or ‘gifting’ of land to the NSW Government under a voluntary planning agreement, as discussed in the referral information)	<input type="checkbox"/>

5 Environmental history of the person proposing to take the action

The preliminary documentation must provide details of any proceedings under a Commonwealth, state or territory law for the protection of the environment, or the conservation and sustainable use of natural resources, against the person proposing to take the action (or if the person is a corporation, its executive officers).

If the person proposing to take the action is a corporation, details of the corporation’s environmental policy and planning framework must be provided.

6 Conclusion

The preliminary documentation must summarise the key impacts on protected matters, proposed avoidance and mitigation measures, and offsets proposed for any unavoidable impacts. Provide an overall conclusion on the environmental acceptability of the proposed action, and whether proposed avoidance, mitigation and offset measures are sufficient to manage the additional impacts to the environment arising from the proposed action.

Include a discussion on the consistency of the proposal with principles of ecologically sustainable development of the EPBC Act (see Appendix A).

Appendix A. Environment Protection and Biodiversity Conservation Act 1999 Principles of ecologically sustainable development

Section 3A Principles of Ecologically Sustainable Development

The following principles are *principles of ecologically sustainable development*:

- a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
- e) improved valuation, pricing and incentive mechanisms should be promoted.

Appendix B. Endorsed offsetting frameworks

In the interests of streamlining regulatory requirements for proponents, the Commonwealth has endorsed some state government policies, as reflected in the department's EPBC Act Condition-setting Policy 2016 at <http://www.environment.gov.au/epbc/publications/condition-setting-policy>.

The Department of Climate Change, Energy, the Environment and Water has endorsed the NSW Biodiversity Offsets Scheme (BOS), which includes the BAM, the biodiversity credit system, and the offset rules set out in the Biodiversity Conservation Regulation.

Where a project demonstrates compliance with an endorsed state or territory policy, the proponent will not be required to simultaneously comply with the corresponding Australian Government policy. This means, if you are using the BOS you will not be required to use the EPBC Act offset assessment guide.

If you are proposing offsets developed and delivered using the BOS, you must append all relevant BAM documentation to your preliminary documentation – this would generally include a BDAR.

Appendix C. Buffer zone

A buffer zone is an area adjacent to an area of ecological community that is important for protecting the integrity of the ecological community. The purpose of a buffer zone is to minimise the risk of indirect impacts by physically separating the ecological community from direct impacts and by identifying it to land managers. For instance, a buffer zone will help protect the root zone of edge trees and other components of the ecological community from spray drift (fertiliser, pesticide or

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herbicide sprayed in adjacent land), weed invasion, polluted water runoff and other damage. Typically, the most effective buffer zones are comprised of native vegetation.

The department may not consider that a retained patch of an ecological community has been effectively avoided if the design of a development does not include a buffer zone. In these cases, the department will generally consider the outer edge of the patch (typically up to 30 m) to have been impacted or partially impacted, requiring an appropriate offset. Buffer zones can be similarly applied to species habitat.

Appendix C Requested information Checklist

Table 1 Threatened species occurrence checklist

Provide the known records of the species within and adjacent to the proposed project area , presented as a map , including: <ul style="list-style-type: none"> records from surveys undertaken for this proposed action any historical database records in and around the proposed project area (For ██████████, include 2020 survey data numbers from Central Coast Council) 	Section 4.1.2 Section 4.1.2
Provide the number of individuals of the species occurring in the proposed project area.	Section 4.1.2
Detail the survey methodology used for each species.	Section 4.1.2 Section 4.2.1
Provide data on likely population size and extent (including populations that extend beyond the proposed project area), where available.	Section 4.1.1 Section 4.2.1
If relevant, provide information that identifies important populations .	N/A
Provide information on the extent of habitat for the species in the proposed project area: <ul style="list-style-type: none"> Refer to habitat requirements detailed in the species' listing advice, conservation advice, and/or recovery plan Specify the type(s) of habitat available (e.g., whether the habitat value is related to foraging, breeding, dispersal, etc.) Describe the quality of the habitat Describe key habitat features (e.g., hollow bearing trees) any other relevant information describing the species habitat (for example, whether the habitat is considered critical to the survival of the species). 	Section 4.1.3 Section 4.1.2 Section 4.2.1 Section 4.2.2
Consider occupancy trends relating to season and time of day. Longer term trends including climate change may also be relevant.	Section 4.1.2 Section 4.2.1

Table 2 Threatened species survey checklist

Describe the survey methodology in detail.	Section 4.1.2
Surveys should follow the NSW Biodiversity Assessment Method (BAM), endorsed by the department	Section 4.1.2 Section 4.2.1
Append survey results to main document	Appendix E
If the proposed action is being assessed under the NSW BAM, append all relevant BAM documentation to the preliminary documentation (i.e., the Biodiversity Development Assessment Report (BDAR)).	Appendix E

Table 3 Impact assessment checklist

<p>Identify the nature and extent of the likely short-term and long-term impacts from the activities, elements, or stages of the proposed action, including translocation. When identifying impacts, refer to the significant impact criteria for threatened species and ecological communities in the <i>Matters of National Environmental Significance Significant impact guidelines 1.1</i>, noting that the impact criteria differ among threatened ecological communities and threatened species with different listing statuses.</p>	<p>Section 2 Section 4.1.4 Section 4.2.2 Section 4.3.2</p>
<p>The proponent has allowed two seasons for translocation. The BDAR states that translocation of the core population of [REDACTED] will not be undertaken until translocation of all isolated [REDACTED] individuals is achieved and the translocation approach is shown to be successful.</p> <ul style="list-style-type: none"> • What does ‘successful’ translocation look like? (What percentage and over what timeline.) • What happens if the translocation of the isolated individuals is deemed unsuccessful? <p>If it cannot be shown that the translocation will succeed with a high degree of certainty, the department considers that the translocation cannot be considered a mitigation action and constitutes an impact associated with the proposed action which should be considered in the preliminary documentation.</p> <p>For potential impacts of translocation refer also to EPBC Act Policy Statement – Translocation of Listed Threatened Species - Assessments under Chapter 4 of the EPBC Act (2013).</p>	<p>Section 1 outlines that translocation is now proposed over one season.</p> <p>Section 4.2 of Appendix D including Table 4.1 defines success of translocation.</p> <p>As detailed in section 4.1.4 and Section 4.1.6, impacts assume all plants would be lost and are to be offset in accordance with the BAM</p>
<p>Quantify the area of direct and indirect impacts for each species and community including the total area of impact in hectares, and the number of individuals impacted.</p>	<p>Section 4.1.4 Section 4.2.2 Section 4.3.2.</p>
<p>Provide an analysis of the likely impacts and the long-term viability of the species/community if the proposed action was to proceed, at a:</p> <ul style="list-style-type: none"> • Local (site level) scale – discuss impacts to connectivity • Regional scale – discuss impacts to connectivity, potential cumulative impacts within the broader region 	<p>Section 4.1.4 Section 4.2.2 Section 4.2.3</p>
<p>Provide details on whether any impacts are likely to be unknown, unpredictable or irreversible and what confidence is placed on the predictions or relevant impacts.</p>	<p>Section 4.1.4 Section 4.2.2 Section 4.2.3</p>
<p>Provide justification for any conclusions regarding potential impacts in relation to specific needs and characteristics of each species and/or community, including references to conservation advices, listing advices, recovery plans, and any other technical data or information. If these are not applicable, a brief statement to this effect must be included.</p>	<p>Section 4.1.4 Section 4.2.2 Section 4.3.2</p>

Table 4 Avoidance, mitigation, and management checklist

<p>Provide a consolidated list of all avoidance/mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action.</p> <p>If considering translocation as a mitigation measure, justification and evidence is required to show that there will be a high degree of certainty of success. If this is not adequate, in accordance with the EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act (2013), translocation cannot be considered a mitigation action and should be discussed as an impact associated with the proposed action.</p>	Section 2.2
<p>For each of the mitigation measures proposed:</p> <ul style="list-style-type: none"> • Discuss the likely cost effectiveness of proposed measures • Provide an assessment of the predictive effectiveness for each protected matter and the degree of certainty of success • Discuss any statutory or policy basis for the measures • Discuss the relationship, if any, with measures identified in the department's conservation advices, recovery plans and threat abatement plans • Discuss the relationship, if any, with measures proposed by state and/or local governments relevant to minimising the impacts of the action on protected matters • Identify the roles and responsibilities associated with implementation 	<p>Section 2.2 Section 2.3</p> <p>Section 2.4</p> <p>Table 1.1 of Appendix D</p>
<p>The preliminary documentation must include a clear summary of the residual impacts from the proposed action having regard to the avoidance and mitigation measures that will be undertaken to minimise impacts.</p>	<p>Section 2 Section 4.14 Section 4.2.2 Section 4.3.2</p>
<p>Provide proposed environmental management plans if available. If not available, at minimum set out the framework for ongoing management, mitigation, and monitoring programs for the relevant impacts of the action.</p>	<p>Section 5.3 of Appendix D</p>
<p>Clearly state and discuss and variables or assumptions made in the assessment.</p>	<p>Section 2.2 Section 2.3</p>
<p>Discuss the extent to which limited availability of relevant information has the potential to influence the conclusions of the assessment.</p>	N/A

Table 5 EPBC Act Environmental Offsets checklist

<p>The offset strategy must:</p> <ul style="list-style-type: none"> • Meet the principles specified in the EPBC Act Environmental Offsets Policy; • Directly contribute to the ongoing viability of the relevant protected matters to deliver an overall conservation outcome that improves or maintains the viability of the protected matter in the region, as compared to what is likely to have occurred under the status quo, i.e., if neither the action nor the offset had taken place; and • Compensate for the impacts over the entire duration of the proposed action (should impacts be in perpetuity, the offsets must also be delivered in perpetuity). 	<p>N/A as detailed in Section 4.1.6 another endorsed offset framework (BAM) has been followed</p>
<p>The preliminary documentation must also provide and clearly justify the scores entered into the Offset assessment guide.</p>	N/A

Table 6 Outcomes based conditions checklist

Thoroughly document the baseline condition of the relevant impacted matter(s).	N/A
Identify conservation objectives (outcomes) for the relevant impacted matters, preferably with reference to any applicable conservation advices, recovery plans and threat abatement plans.	N/A
Outline how performance against specified objectives will be measured and reported.	N/A

Table 7 Proposed action description checklist

Descriptions of any proposed clearing, earthworks and construction activities or other elements proposed to be taken within the disturbance footprint.	Section 2.0
Description of the current management of the project area , including whether it is still actively being used for stockpiling soil and whether the avoidance areas surrounding [REDACTED] are maintained year-round.	Section 2.1
Descriptions of the preconstruction, construction, and operational phases of the proposed action.	Section 2.0
The anticipated timing and duration (including start and completion dates) for each known activity, stage, or element of the proposed action.	Section 2.0
Feasible alternatives to the proposed action or elements of the proposed action, and justification for the preferred option .	Section 2.2
Consultation about the proposed action that is planned or has been completed, including any documented results or responses.	Section 2.2
Requirements for assessment and approval under state legislation , including any conditions that apply (or will apply) to the proposed action, in addition to any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action.	Section 2.4
Details of any local or State government planning scheme , or plan or policy under any local or State government planning system that deals with the proposed action.	Section 2.4
How the action relates to any other action (of which the proponent is aware) that is being or will be taken in the region.	N/A

Table 8 Proposed action maps, plans, and/or diagrams checklist

Clearly show the proposed action location within the wider area .	Figure 3.1
Clearly delineate the construction/clearing footprint boundary , and any wider boundaries (e.g., project area) where relevant.	N/A
Clearly show the precise layout of all works to be undertaken , including building structures or other infrastructure, number and location of lot subdivisions where relevant, proposed land use, or other elements of the action that may have relevant impacts.	Figure 2.1
Clearly identify any open spaces and buffer zones (see Appendix C), where relevant.	N/A
Clearly identify any avoidance areas, retained vegetation (in particular, for matters of national environmental significance (MNES)), and conservation areas , where relevant.	N/A
Clearly identify any areas adjoining the construction footprint which may be affected by indirect or offsite impacts as a result of the proposed action, where relevant.	N/A

Table 9 Description of the environment checklist

Include a full description of the project area including the area of land within the 1000metre buffer zone (assessment area) surrounding the project area for site-based development, or 500 metre buffer for linear development.	Section 3
Identify Interim Biogeographic Regionalisation for Australia (IBRA) bioregions and IBRAsubregions within the project area and assessment area.	Section 3.1
Describe the landscape features identified within the project area and assessment area including rivers, streams, estuaries and wetlands , and any karst, caves, crevices, cliffs, rocks or other geological features of significance within the project area and assessment area.	Section 3.2
Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable.	Section 3.2
Describe any Commonwealth places or Indigenous heritage values that apply to the project area.	N/A
Clearly outline the existing ecosystem, including the plants, animals and ecological communities present within the project area and assessment area.	Section 3.4
Clearly identify any EPBC Threatened Ecological Communities (TEC). Include field assessment results and analysis of information in the Listing Advice and/or Conservation Advice made by the Threatened Species Scientific Committee to list the EC including any condition thresholds associated with the community.	Section 4.3
Ensure the reader is directed to the specific information by attaching or hyperlinking to any supporting documentation following the guidance provided.	Appendix A to F

Table 10 Economic and social matters checklist

Consideration of negative impacts (e.g., disruption to existing community infrastructure, environmental features, and/or cultural and traditional activities)	Section 5.1
Consideration of positive impacts (e.g., increased housing, employment, or social amenity)	Section 5.1
Consideration of different scales of impact (e.g., local, regional, and national)	Section 5.1
Estimated capital value and ongoing economic value , using specific dollar or other numerical values where relevant	Section 5.1
Discussion of relevant public consultation undertaken, including any issues raised in objection or support of the proposed action	Section 2.2
Discussion of any contributions (for example, government funding, or 'gifting' of land to the NSW Government under a voluntary planning agreement, as discussed in the referral information)	N/A



ecoplanning
ecology | planning | offsets

Translocation plan



460 Pacific Highway (Lot 1212 // DP 818944), Wyong NSW

Prepared for: Red Eye Constructions Pty Ltd

20 June 2024 Version: 3.0

PROJECT NUMBER	2023-087			
PROJECT NAME	Translocation plan			
PROJECT ADDRESS	460 Pacific Highway (Lot 1212 // DP 818944), Wyong NSW			
PREPARED FOR	Red Eye Constructions Pty Ltd			
AUTHOR/S	Brian Towle			
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Contents

1	Introduction.....	1
1.1	Project title	3
1.2	Project team	3
1.3	Contact details	4
1.4	Species name and conservation status	5
1.5	Nature of translocation	5
1.6	Background information	6
1.6.1	[REDACTED]	6
1.6.2	[REDACTED] translocations	8
1.7	Justification	9
1.8	Stakeholder consultation.....	12
1.9	Other approvals / authorities.....	12
1.10	Risk assessment.....	12
2	Source population	14
2.1	Source site	14
2.2	Source population	14
2.3	Composition of population for translocation.....	15
3	A. Recipient site	18
3.1	A. Location	18
3.2	A. Land management.....	18
3.3	A. Ecological suitability	18
3.4	A. Ecological impacts.....	19
3	B. Ex situ population.....	21
3.1	B. Existing ex situ populations	21
3.2	B. Long-term objective	21
3.3	B. Strategy	21
4	Objectives and targets.....	22
4.1	Objectives	22
4.2	Targets and criteria for success and failure	22
5	Methods.....	24
5.1	Timeline.....	24
5.2	Excavation, storage, transport and replanting	27
5.3	Monitoring	28
5.4	Pest and disease management	29
5.5	Genetic management.....	29
5.6	Research questions or opportunities	29
6	Project management	30
6.1	Roles and responsibilities	30
6.2	Volunteer, contractor or community engagement.....	30
6.3	Evaluation	30



6.4	Reporting.....	30
6.5	Contingency plan and exit strategy.....	30
6.6	Budget.....	30
6.7	Funding.....	32
7	References.....	33

Figures

Figure 1.1:	The source site location.....	2
Figure 2.1:	The source population including the ‘core population’ and ‘isolated individuals (Source: Habitat Environmental Services).....	17
Figure 3.1:	The recipient site location.....	20

Tables

Table 1.1:	Project team.....	3
Table 1.2:	Contact details for the project team.....	4
Table 2.1:	Recorded locations for [REDACTED] within the source site.....	16
Table 4.1:	Targets and criteria for success and failure.....	23
Table 5.1:	Translocation timeline.....	25
Table 5.2:	Project timeline – Year one.....	26
Table 5.3:	Project timeline – Year two.....	26
Table 5.4:	Project timeline – Year three.....	26
Table 6.1:	Translocation budget.....	31

Plates

Plate 1.1:	Modified landforms within the source site including recorded locations for [REDACTED] [REDACTED], as indicated by star-pickets.....	10
Plate 1.2:	Ponding water within recorded locations of [REDACTED], as indicated by star-pickets.....	10
Plate 1.3:	[REDACTED] growing within an exotic grassland.....	11

Glossary and abbreviations

Acronym	Description
BC Act	<i>Biodiversity and Conservation Act 2016</i>
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment (former, now DPE)
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
IBRA	Interim Biogeographic Regionalisation for Australia
OMF	[REDACTED]
PCT	Plant Community Type
SoS	Saving our Species

1 Introduction

This translocation plan has been prepared as part of an application for environmental management works at 460 Pacific Highway (Lot 1212 // DP 818944), Wyong NSW ('the source site'; **Figure 1.1**). The environmental management works propose translocation of an estimated 30-50 individuals of [REDACTED] ([REDACTED]), a species listed as critically endangered under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This translocation plan has been prepared in consultation with Council and the NSW Department of Planning and Environment (DPE) to support the conservation of the target species ([REDACTED]). The overall objective of this translocation plan, i.e., to support the conservation of [REDACTED] and to establish or maintain one or more self-sustaining populations capable of surviving in the long term, is consistent with the '*Guidelines for the Translocation of Threatened Plants in Australia*' ('the guidelines'; Commander et al. 2018). These guidelines represent the current best practice for translocation of threatened plants.

Similarly, consistent with the guidelines, this plan defines 'translocation' as:

"... the deliberate transfer of plants or regenerative plant material from an ex situ collection or natural population to a new location, usually in the wild. It includes reintroduction, introduction, reinforcement, assisted migration and assisted colonization. Translocations involve a diverse range of methods including: seed collection and propagation; propagation via cuttings or tissue culture; planting of containerised plants; direct seeding; transplantation of whole plants from one site to another...."

At the request of Council, the layout of this translocation plan, including all sub-heading, follows the DPE 'Translocation Proposal Template' ('the template'; DPE 2022a) with all relevant sections of the template addressed within this plan.

Version 3.0 of this report has been prepared in June 2024 and updates the translocation plan following delays in project approval under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*. Earlier version of this plan proposed translocations across two seasons commencing with 'isolated individuals' in the first year (summer months of 2023-24) and the 'core population' in the second year (summer months of 2024-25). However, due to delays in the project approvals and an ongoing decline in the number of individuals detected within the 'core population' from 2022 to 2023 (18 individuals detected in 2022 and only 12 detected in 2023), translocation is now proposed to occur across a single season in the summer months of 2024-25.



Figure 1.1: The source site location

1.1 Project title

The project has been titled the '[REDACTED] translocation project – 460 Pacific Highway, Wyong'.

1.2 Project team

The project team, including their respective roles, are detailed in **Table 1.1**.

Table 1.1: Project team

Name & Organisation	Role
Brian Towle (Senior Ecologist, Ecoplanning)	Project lead
Dr Zoe Joy-Newby (Mt Annan Botanic Gardens)	Management of ex-situ population
Dr Nathan Emery (Mt Annan Botanic Gardens)	Seed processing
Dr. Stephen Bell [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Independent advice
Jed Field (Ecologist, Council)	Project approvals
Rochelle Lawson (Natural Assets & Biodiversity Manager, Council)	Management of Council-owned recipient sites
Dr. Gilbert Whyte (Habitat Environmental Services) – Project Ecologist	5-part test preparation

1.3 Contact details

The contact details for the project team are outlined in **Table 1.2**.

Table 1.2: Contact details for the project team

Project team	Contact details
Landowner	Brad Ridge Director, Red Eye Constructions Pty Ltd Unit 2, 13 Bon Mace Close, Berkeley Vale NSW 2261 Email: Brad.Ridge@redeyeconstructions.com.au Mobile: 0410 650 491 Phone: 02 4389 8933
Project lead	Brian Towle Senior Ecologist, Ecoplanning 428 Princes Highway, Woonona NSW 2517 Email: brian.towle@ecoplanning.com.au Mobile: 0477 888 251
Central Coast Council	Jed Field Ecologist PO Box 20 Wyong, NSW 2259 Email: Jed.Field@centralcoast.nsw.gov.au Mobile: 0437 383 072 Rochelle Lawson Natural assets & Biodiversity manager PO Box 20 Wyong, NSW 2259 Email: Rochelle.lawson@centralcoast.nsw.gov.au Mobile: 0429 124 316
Mt Annan Botanic Gardens	Dr Zoe-Joy Newby Australian Institute of Botanical Science, Royal Botanic Gardens and Domain Trust Locked Bag 6002, Mount Annan, NSW 2567, Australia Email: ZoeJoy.Newby@botanicgardens.nsw.gov.au Mobile: 0401 818 364 Dr Nathan Emery Manager Seedbank & Conservation Collections Locked Bag 6002, Mount Annan, NSW 2567, Australia Email: nathan.emery@botanicgardens.nsw.gov.au Mobile: 0400 389 802
Eastcoast Flora Surveys	Dr. Stephen Bell Eastcoast Flora Surveys PO Box 216, Kotara NSW 2289



Project team	Contact details
	Email: stephen.bell@newcastle.edu.au Mobile: 0407 284 240
Habitat Environmental Services	Dr. Gilbert Whyte Habitat Environmental Services Email: gilbert@hbtenvironment.com Mobile: 0456 097 605

1.4 Species name and conservation status

The target species for this translocation plan is [REDACTED] ([REDACTED]), which is listed as critically endangered under the BC Act and EPBC Act.

1.5 Nature of translocation

The translocation project includes two separate stages, as follows:

Stage 1:

- A 'salvage' translocation involving whole plants at the source site being excavated and maintained as an ex-situ population at the Australian Botanic Garden at Mt Annan (hereafter referred to as Mt Annan').
- An experimental 'reinforcement' translocation utilising seed collected from the source site prior to plant excavation would also occur as part of Stage 1. The seed collected from the source site would be direct seeded into pre-prepared plots at the Wyong Hockey Complex located at 375-385 Pacific Highway (Lot 201 // DP787471), Wyong (hereafter referred to as the 'recipient site').

Stage 2:

- Planting of salvaged plants and/or propagules from the ex-situ population to appropriate recipient site or sites.

Salvage translocations, involving excavation of individuals during their dormancy phase, will occur for all identified individuals within the source site over two seasons. This approach has been adopted due to the current highly modified condition of the source site and uncertainty regarding the long-term prospects for survival of this population.

Maintaining the salvaged population as an ex-situ population for a period of time before planting at a suitable recipient site is to occur to allow for ongoing genetic and pollinator studies (as part of the NSW Government's Saving our Species [SoS] Program) to be completed prior to planting at selected recipient sites. By waiting until ongoing pollinator and genetic studies have been completed before undertaking Stage 2, selection of recipient sites will be informed by the most up to date understanding of the species' ecology.

Aspects of Stage 1 of the plan represent a 'reinforcement translocation' involving translocation to a recipient site which already supports the species. A direct seeding experiment using



[REDACTED] collected from the source site is to occur to identify the micro-habitat requirements for germination and specifically the role of soil disturbance/aeration in germination of the species, whilst also reinforcing an existing population of the species within a recipient site.

1.6 Background information

1.6.1 [REDACTED]

[REDACTED]

Habitat

[REDACTED]

Generally, most recorded locations of [REDACTED] appear to be associated with vegetation communities which are equivalent to the following PCTs:

- ‘Hunter Coast Lowland Apple-Bloodwood Forest’ (PCT 3582)
- ‘Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest’ (PCT 3433), and
- ‘Lower North Creekflat Mahogany Swamp Forest’ (PCT 3998)

Of particular note, the habitat of [REDACTED] within these vegetation types (and other PCTs in which the species has been recorded) is mostly in previously disturbed habitats and along roadsides. [REDACTED]

[REDACTED] Additional records of the species made since 2005, have frequently been associated with slashed easements, roadsides and other modified habitats. [REDACTED]

[REDACTED] This suggests that the species favours areas where soils have been disturbed. Soil disturbance, including soil aeration to relieve compaction, has been hypothesised as positively impactin [REDACTED]

Pollination

[REDACTED]

[REDACTED]

Dispersal

[REDACTED]

[REDACTED]



[REDACTED]
[REDACTED]

Threats

A range of threats have been identified as contributing to the extinction risk of [REDACTED] [REDACTED] (DoE 2014; DPE 2023), including:

- Loss and fragmentation of habitat associated with clearing and development across its narrow range.
- Competition from invasive weed species, including *Andropogon virginicus* (Whisky Grass), *Bidens pilosa* (Cobblers Pegs), *Cenchrus clandestinus* (Kikuyu), and *Asparagus asparagoides* (Asparagus Fern).
- Habitat degradation including in association with road maintenance activities and unauthorised recreational vehicle use.
- Damage to plants associated with stock grazing and illegal collection.
- The restricted distribution and small total population size of the species places it at risk from demographic and environmental uncertainties, and natural catastrophes.
- Insufficient understanding of the species ecology, including genetics, pollination, seed germination, mycorrhizae, reproductive ecology and response to fire.

[REDACTED]
[REDACTED] threats outlined above including habitat loss and habitat degradation have contributed to the extinction of at least five populations of the species [REDACTED]

1.6.2 [REDACTED] translocations

Reviews of plant translocations identify translocations as relatively high-risk, high-cost and challenging (Silcock et al 2019.). Nonetheless, the number of plant translocations occurring continues to grow (Commander et al. 2018) and translocations are becoming a standard mitigation approach where development projects have impacts on populations of rare and threatened species and are increasingly considered as part of a mitigation hierarchy (Silcock et al. 2019).

In their review of translocations across Australia, Silcock et. al. (2019) found that translocation performance is highly variable between plant species, lifeforms, habitats, propagule types and types of translocations. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] This supports the conclusion that the outcomes of translocations, [REDACTED], are high-risk and challenging. However, Bell (2020) demonstrates that well-planned projects within an adaptive framework can achieve success as evidenced by established translocated orchids which are flowering and fruiting at rates similar to benchmark populations. Bell (2020) concludes that translocation of terrestrial orchids is feasible, although environmental conditions and threats need to be acknowledged and managed in any assessments of success. [REDACTED]
[REDACTED]
[REDACTED]

1.7 Justification

In accordance with the guidelines (Commander et al. 2018), proposed translocations should only occur after all possible measures have been taken to avoid and minimise impacts. In accordance with the NSW 'Translocation Operational Policy' (DPIE 2019), justification for translocation includes situations where the risks of not translocating (to the target species) are greater than the risks of translocating (to the target species and recipient ecosystem). In the case of this plan, the prospects of long-term survival of the population of [REDACTED] within the source site is very low due to the high degree of habitat modification which has occurred from historic disturbances. Specifically, current threats to [REDACTED] within the source site include:

- An altered hydrological regime resulting from modified landforms across the source site. Stockpiling of soil has occurred across much of the source site, including where [REDACTED] has been recorded (**Plate 1.1**). The result of this landform modification includes prolonged ponding of water after rainfall (**Plate 1.2**). Additionally, some plants which are currently growing in soil stockpiles may face water stress due to more rapid drying out of soils compared to natural conditions.
- Competition from exotic species. A large number of exotic species are present within the source site (**Plate 1.3**) including species identified as representing a specific risk to [REDACTED]; [REDACTED]; [REDACTED]; DoE 2014; DPE 2023).
- The presence and persistence of necessary biotic interactions within the source site, including [REDACTED], is questionable.

While in-situ restoration of habitat is recognised as having higher priority than translocation in the hierarchy of conservation techniques (Commander et al. 2018; DPIE 2019), the degree of habitat modification which has occurred across the source site means that the chance of success from restoration activities is low. Additionally, restoration of such a degraded habitat would only be possible through dedication of extensive resources across a long period, and this may still prove unsuccessful at improving the prospects of survival for the source population. Given the context of the source site, the dedication of sufficient resources to restore habitat for [REDACTED] is considered unlikely to occur.

During consultation between Habitat Environmental Services, Council and representatives from DPE, it was agreed that translocation of the species from the source site to a suitable recipient site was likely to have a better conservation outcome for the species than in-situ conservation.



Plate 1.1: Modified landforms within the source site [REDACTED]



Plate 1.2: Ponding water within recorded locations of [REDACTED]



Plate 1.3: [REDACTED]

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1.8 Stakeholder consultation

Initial consultation with the landowner (Redeye Construction Pty Ltd), Council (Jed Field), Habitat Environmental Services (Gilbert Whyte), and DPE (Lucinda Ransom & Paul Hillier) was undertaken on the 12 October 2022, 15 December 2022 and 16 March 2023. Following this initial consultation, during which the decision to undertake a translocation was conceived, regular email consultation has occurred with Central Coast Council, Mount Annan Botanic Gardens and DPE.

1.9 Other approvals / authorities

It is an offence under section 2.4 of the BC Act to damage any habitat of a threatened species unless authorised to do so by other legislation. Authorisations by other legislation form a defence to this offence and include actions necessary for development in accordance with a development consent under the NSW *Environmental Planning and Assessment Act 1979*. Therefore, a development consent issued for the project, which includes the translocation of [REDACTED] in accordance with this plan, would represent authorisation to undertake the translocation. In the absence of a development consent, a biodiversity conservation licence in accordance with Division 3 of Part 2 of the BC Act would be required for the translocation.

Additionally, under the EPBC Act a person must not take an action that is likely to have a significant impact on a critically endangered species. Therefore, the project must be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) to determine if the action is a controlled action.

Therefore, the translocation project cannot proceed until a determination has been made by DCCEEW and either a development consent granted by Council or a biodiversity conservation licence issued under the BC Act.

1.10 Risk assessment

As detailed within **Section 1.7**, risks to the source population associated with the translocation are considered less than the risk to the population associated with weed invasion and habitat modification. The following two risks have been identified for the translocation project:

- Translocation failure/unsuccessful and local extinction of the source population.
- Impacts to biodiversity values at recipient sites.

Based upon outcomes for documented translocations (Reiter et al. 2016; Commander et. al. 2018) there is at least a moderate likelihood that the translocation could be unsuccessful at various stages due to death of some or all salvaged plants. However, Bell (2020) identifies that a well-planned project with an adaptive framework can increase chances of success. This translocation plan includes an experimental approach which aims to increase understanding of the species ecology, even if the translocation project is ultimately unsuccessful.

The risk of unintended negative impacts to biodiversity values at recipient sites during Stage 1 (direct seeding trial) and Stage 2 is considered to be low. As detailed in **Section 3A**, the risk of impacts during the direct seeding trial is low as the micro-siting of the trial would avoid areas which support known individuals of [REDACTED] to avoid any impacts to these individuals. Additionally, the direct seeding trial would occur in areas currently supporting

exotic vegetation. Thus, the translocation would avoid impacts to other native flora species within the recipient site. As [REDACTED] is already present within the recipient site and has historically occurred in greater numbers than the most recent population counts [REDACTED], the direct seeding trial would not alter the functioning of the ecosystem of the recipient site. To further minimise the risks of negative impacts such as weed and disease spread, standard hygiene protocols are to be implemented as detailed in **Section 5.4**.

Risks associated with Stage 2 of the project would be assessed at the time of planting and would be minimised through appropriate planning and consultation with the SoS program, Council and any relevant landholders. Fencing and access restriction to recipient sites may be required as part of stage 2 of the translocation, however this would be dependent upon the selected recipient site.

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2 Source population

2.1 Source site

As already detailed, the source site for this translocation plan is located at 460 Pacific Highway, Wyong. The propagative material for the translocation would include seed from flowering during any season preceding excavation, and [REDACTED] collected within soil cores post-flowering.

The sampling strategy would involve salvaging of all identifiable individuals across a single season (**Figure 2.1**). This would involve the following steps:

1. Additional marking of the location of all flowering plants in the flowering season preceding excavation (all known locations of plants were demarcated during spring 2023).
2. Returning to the marked location following flowering to excavate [REDACTED]. Ideally, excavation should occur a short time post [REDACTED]

Details of the source site are as follows:

- **IBRA region:** Sydney Basin and the Wyong IBRA subregion.
- **Land management:** The source site has a history of disturbance including vegetation clearing, fill importation, drainage channel excavation and weed invasion.
- **Vegetation community/habitat:** The [REDACTED] individuals within the source site are located within areas of exotic vegetation which has colonised fill imported into the site.
- **Interspecific interactions:** Flora species recorded across the source site by Habitat Environmental Services are included in **Appendix A**. Generally, the [REDACTED] individuals within the source site were associated with areas supporting exotic vegetation. No observations of pollinator presence within the source site have been documented.
- **Pest and disease status:** The pest and disease status of the source site remains unknown. Appropriate quarantine measures will be implemented by the Mt Annan Botanic Gardens as part of the receipt and management of the ex-situ population.

2.2 Source population

The source population is estimated to include between 27-52 mature individuals of [REDACTED]. A total of 38 individuals were recorded from the source site during the 2020 flowering period (BioNet Atlas data, DPE 2023) with 27 individuals recorded in 2022 by Habitat Environmental Services (**Figure 2.1**). During the 2022 surveys 14 previously undetected individuals were observed, although 25 previously observed individuals were not found (**Table 2.1**). It is unknown what proportion of the individuals observed in 2020 but not found in 2022 had died, [REDACTED] or were simply undetected. Therefore, there is uncertainty regarding the total population size of the source site and it is estimated to be between 27 (the number observed in 2022) and 52 (the combined maximum assuming all unrecorded plants in 2022 were either dormant or undetected) [REDACTED]



[REDACTED]
[REDACTED]

The [REDACTED] within the subject site has been identified as including a 'core population' consisting of an estimated 20-30 mature individuals located within approximately 60 m of each other. An estimated 10 – 20 mature individuals also occur as 'isolated individuals' across the site (**Figure 2.1**).

2.3 Composition of population for translocation

As detailed above, due to the likely fate of the source population all individuals of [REDACTED] detected during 2023 and any subsequent flowering periods are to be utilised in the translocation program. Additionally, all locations where the species has been previously detected would be excavated to recover [REDACTED]. The translocation program aims to maximise the number of individuals involved due to the likely fate of the source population. Additionally, in flora translocations the major factor contributing to translocation success has been identified as the use of a sufficient number of individuals at planting, with the strongest predictor of translocation performance being the number of propagules used (Silcock et al 2019). While the estimated number of [REDACTED] within the site is comparatively low (estimated 27-52 individuals) compared to translocations in general, the translocation of all individuals within the site will maximise the chance of translocation success.

To date there have been no investigations into the genetic composition of the source population. A current project investigating the genetic composition of multiple [REDACTED] populations is underway as part of the SoS program. This translocation project will aim to contribute to the ongoing genetic project and to be informed by the results of this study during Stage 2 of the project.

3 A. Recipient site

The recipient site, or sites, for Stage 2 of this plan will be determined within 12 – 36 months following completion of excavations during Stage 1. This delay will allow an opportunity to consult with all relevant stakeholders to determine the most appropriate recipient site, or sites, incorporating the results of genetic studies and pollinator studies which are underway as part of the SoS program.

For Stage 1 of the project, specifically the direct seeding trial, a recipient site has been selected and details are provided below.

3.1 A. Location

The direct seeding experiment which involves seeds collected from the flowering season preceding excavation of the 'core population', and any subsequent flowering seasons, aims to improve our understanding of the micro-habitat requirements for germination and specifically the role of soil disturbance/aeration in germination of the species, whilst also reinforcing an existing population of the species within the recipient site. [REDACTED]

[REDACTED] As the experimental direct seeding trial would occur within the habitat of a known population (a reinforcement translocation), it is within the known range, climate envelope and habitat types of [REDACTED].

3.2 A. Land management

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

3.3 A. Ecological suitability

The recipient site for the direct seeding trial represents the closest known extant population of [REDACTED] to the source site. As the recipient site supports a known population of [REDACTED], this site has been determined to be ecologically suitable for the direct seeding trial in terms of:

- climate (current).
- soil/geology and hydrological characteristics.
- [REDACTED]

- presence of appropriate vegetation community and structure (competition and light availability).
- topography and aspect.

There have been no completed studies of the presence of pollinators for [REDACTED] within the recipient site, although the persistence of the species within this site for over 20 years suggests that the species is able to complete its' lifecycle within the site.

No genetic analysis of the source population or the population at the recipient site has been completed to justify the selection of the recipient site. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

3.4 A. Ecological impacts

The micro-siting of the direct seeding trial would avoid areas which support known individuals of [REDACTED] to avoid any impacts of these individuals. Additionally, the direct seeding trial would occur in areas currently supporting exotic vegetation. Thus, the translocation would avoid impacts to other native flora species within the recipient site. As [REDACTED] is already present within the recipient site and has historically occurred in greater numbers than the most recent population counts ([REDACTED]), the direct seeding trial would not alter the functioning of the ecosystem of the recipient site.

[REDACTED]
[REDACTED] the risk of inadvertent introduction of pests, pathogens and parasites with/to the target species and transmission to/from other individuals or species is low. Standard hygiene protocols, including cleaning of equipment, would be undertaken and are detailed in **Section 5.4**.

3 B. Ex situ population

The establishment of an ex-situ population is only proposed to occur across a short time frame of 12 to 36 months. After which it is proposed to plant excavated plants back into a suitable recipient site, or sites, as part of Stage 2 of this plan.

3.1 B. Existing ex situ populations

Only one existing ex-situ population of [REDACTED] currently exists [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The salvaged plants from the source site would be under the same maintenance regime as the existing ex-situ population (Mt Annan Botanic Gardens) and the planting strategy for the plants from the source site would be informed by the same knowledge which would inform any re-introductions of this existing ex-situ population.

3.2 B. Long-term objective

There is currently no long-term objective to establish an ex-situ population, although this may change as understanding of the genetics and ecology of the species changes.

3.3 B. Strategy

The strategy for maintaining the ex-situ plants will be controlled by Mt Annan Botanic Gardens using their current best practice methods in relation to monitoring plant health and quarantine/biosecurity measures.

4 Objectives and targets

4.1 Objectives

The overarching objective of the translocation is to reduce the extinction risk of the species and directly support the conservation of [REDACTED] by maintaining one or more self-sustaining populations capable of surviving in the long term. To achieve this objective the translocation aims to conserve the genetic diversity present within the source site through translocation, improve our understanding of key knowledge gaps including the role of disturbance in maintaining suitable micro-habitats for germination of the species, and reinforce or reintroduce the species during Stage 2.

4.2 Targets and criteria for success and failure

Table 4.1 identifies the specific targets that will be met to help achieve the objectives of the translocation project. As the translocation is a salvage translocation, incorporating experimental aspects, targets relate to the completion of actions rather than numerical targets for the number of plants/propagules to be salvaged and planted.

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Table 4.1: Targets and criteria for success and failure

Target	Performance indicator	Timing
Stage 1		
Salvage as many individuals as possible from the source site.	No known occurrences of [REDACTED] remaining within source site after 48-36 months from commencement.	Salvage excavations are proposed over a single season. Translocation of the plants would occur in summer 2024/25.
Collect all [REDACTED] (seed) from the 'core population' in the season prior to excavation of these plants.	Seed successfully collected from the 'core population' at the recipient site.	Seed collection would occur post flowering in summer months of 2024/25.
Complete direct seeding trial.	Seed of [REDACTED] applied to experimental plots.	As soon as possible after seed collection and processing (within 1 month of completion of seed processing).
Stage 2		
Planting of [REDACTED] individuals into selected recipient site, or sites.	[REDACTED] individuals salvaged from the source site planted at recipient sites.	Within 1 - 3 years of completion of Stage 1.

5 Methods

5.1 Timeline

The intended timeline for the major tasks relevant to this plan are outlined in **Table 5.1**, with Gantt charts for the first three years of the project provided in **Table 5.2**, , and **Table 5.3**. Timeframes are indicative only and will be determined by flowering and fruiting times of [REDACTED] within the source site and the timing of relevant approvals.

The project timeline has been designed to coincide with the phenology of the species, with actions such as seed collection determined by the flowering period of the species. Initially, staged salvage excavations were planned involving translocation of the ‘outlier plants’ in the first season (planned for summer 2023/24) followed by translocation of the ‘core population’ the following season (planned for summer 2024/25). However, due to delays in project approval and ongoing declines of plants within the ‘core population’, salvage of all individuals from the source site is now proposed to as soon as possible following capsule dehiscence (typically early summer) in the summer months of 2024/25. . This timing aims to minimise stress to plants associated with disturbance during periods of active growth [REDACTED]
[REDACTED]
[REDACTED]

Direct seeding trials are to occur early in the active growth period to maximise the growing period of any germinated seed prior to the onset of hot summer conditions which can cause water stress and death [REDACTED] Direct seeding trials are to occur following seed collection from the ‘core population’. Where sufficient seed is collected from the source site in any subsequent seasons, there may be an opportunity to repeat the seeding trials although this would be dependent upon results from the first trials and the quantity off seed available.

Table 5.1: Translocation timeline

Task	Indicative timing
1. Population census and marking of all [REDACTED] within source site	September to November 2024.
2. Collect all seed from entire population within the source site	December 2024.
3. Excavate 'outlier plants' and 'core population' of [REDACTED] within source site	December 2024.
4. Delivery of excavated [REDACTED] from source site to Mt Annan Botanic Gardens	Within 48 hours of completion of excavation.
5. Direct seeding into pre-prepared plots at the recipient site	Summer/autumn 2025 (within 1 month of seed being processed by Mt Annan Botanic Gardens).
6. Monitoring of direct seeding experiment plots	Monthly for the first 12 months following direct seeding; followed by bi-monthly (every two months) during the active growth period (May to November) for up to five years (see section 5.3)
7. Stage 2 of translocation plan, planting excavated plants into recipient site.	Within 12-36 months of completion of Stage 1 (excavation of plants).

Table 5.2: Project timeline – Year one

Task	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
1. Population census	█											
2. Seed collection			█									
3. Excavate 'outlier plants' and 'core population'			█	█								
4. Delivery of plants to Mt Annan Botanic Gardens			█	█								
5. Direct seeding				█	█	█						
6. Monitoring of direct seeding					█	█	█	█	█	█	█	█
7. Stage 2 - planting & monitoring.								█	█	█	█	█

Table 5.3: Project timeline – Year two

Task	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
10. Monitoring of direct seeding	█	█	█	█				█		█		█
11. Stage 2 - planting & monitoring.	Commencing between March 2026 to March 2028 with post planting, monitoring, and management of threats for a five-year period.											

5.2 Excavation, storage, transport and replanting

The method for each stage of the translocation plan is detailed as follows.

Salvage and maintenance

All works associated with the salvage of the [REDACTED] within the source site would be completed by Ecoplanning staff under the direction of Brian Towle. Upon delivery of these plants to Mt Annan Botanic Gardens, staff under the direction of Dr. Zoe-Joy Newby would be responsible for maintenance of the plants until Stage 2 of the plan. The method for the salvage of individuals of [REDACTED] will be as follows:

- A population census, using appropriate targeted survey techniques, will be conducted during the flowering period to locate and mark all observed individuals of [REDACTED] within the source site.
- Salvage of [REDACTED] will be carried out manually using a spade or shovel. The plants will be removed in a block of soil without breaking the soil, if possible, which requires careful excavation. Where break-up of the soil block occurs, water may be applied to soils, or extraction of a larger block will be attempted to minimise soil breakup around the tubers.
- Following excavation, soil blocks will be placed into pots (125 ml square round) and soils from the excavated hole will be used to fill any gaps or air pockets around the margins of the pot.
- Where plants are not observed at locations where the species has been previously found and marked, careful excavation of soils will occur attempting to locate [REDACTED]. Where [REDACTED] are located, they will be placed into 125 ml square round pots and filled with in-situ soils.
- Excavated plant [REDACTED] will be translocated in trays (to minimise movement) by vehicle to Mt Annan Botanic Gardens. Mt Annan Botanic Gardens will be contacted at least 10 working days prior to excavation to arrange receipt of the translocated plants.
- The maintenance regime for the ex-situ plants will be determined by Mt Annan Botanic Gardens using their current best practice methods.

Direct seed experiment

Seed collection and application would be completed by Ecoplanning staff under the direction of Brian Towle (Senior Ecologist). Seed processing would be undertaken by staff at Mt Annan Botanic Gardens under the direction of Dr. Nathan Emery. The method for the direct seeding experiment will be based upon the direct seeding experiment [REDACTED] as follows:

- Seed collection would occur in accordance with the guidelines of the 'Plant Germplasm Conservation in Australia' (Martyn Yenson et al. 2021). [REDACTED] will be harvested as close as possible to the timing of natural dispersal which occurs as capsules dehisce. This will require repeat visits to the population to monitor [REDACTED] development.
- All collected seed would be delivered to Mt Annan Botanic Gardens. Seeds would be partitioned so that a proportion from each inflorescence/individual is added together to

form a pooled curated collection. Remaining portions of the seed would be retained by the Mt Annan Botanic Gardens for the purposes of seed-banking.

- A seed mix would be produced by diluting seed from the pooled collection with sterile white silica sand at a ratio of approximately 0.1 g of seeds with 80 g of sand. This seed mix would be applied to pre-prepared treatment plots undergoing soil disturbance to various depths and control plots with no treatment.
- The exact quantity and dimensions of plots would be determined based upon the quantity of seed collected, however a preliminary experimental design has been developed involving two factors (direct seeded and not seeded) with each factor having three treatments (deep soil disturbance, shallow soil disturbance, soil exposed but not disturbed) and a control. Three replicates of each combination of factor and treatment plus control are proposed which would involve 24 plots, 12 of which would undergo direct seeding as part of the experiment.
- All plots would be watered to saturation point at the time of seed application. Follow-up watering would only occur where natural rainfall across any fortnightly period was less than 50 % of the average for the region. Watering would be equal across all plots.
- Plots would be monitored monthly for the first 12 months, followed by bi-monthly (every two months) during the active growth period (May to November) for up to five years (see **section 5.3** for further details).

At the selected recipient site, long-term monitoring data does not indicate that trampling or poaching has occurred (or at least not at a detectable scale). Consequently, the direct seeding trial would not include any measures to restrict access. Any fencing or demarcation of the direct seeding trial location is considered likely to attract attention and may increase the risk of poaching or trampling.

Replanting

The detailed method for Stage 2 of this plan would be determined within reference to best practice guidelines (e.g., Commander et al. 2018) and in consultation with experts, Council and the SoS program, incorporating most up-to-date knowledge from ongoing genetic and pollinator studies.

5.3 Monitoring

The exact monitoring strategy for translocated [REDACTED] as part of Stage 2 of the project would be determined as part of the recipient site selection. However, the monitoring strategy would to be designed to address the targets and criteria as detailed in **Section 4** including collecting data on survivorship and emergence. Post planting, monitoring and management of threats is required for a five-year period (as per Council requirements). Additionally, monitoring should include multiple inspections per season, with at least one inspection prior to flowering, which Bell (2020) found to increase detection of translocated plants by up to 12 %.

The monitoring of the direct seeding trial would involve monthly monitoring from the timing of the direct seeding for the first 12 months. Thereafter, bi-monthly (every two months) monitoring would occur during the active growth period (May to November). Monitoring would continue up to a maximum of five years and would terminate earlier if no alive individuals are observed

across consecutive flowering seasons. Depending upon the quantity of germination, and the ability to identify early [REDACTED] life stages amongst other colonising monocots, data would include the quantity or presence of germinants in each plot and their life-stage. All monitoring works would be undertaken by suitably qualified ecologists and funded by Red Eye Constructions Pty Ltd. Any variation to monitoring, including monitoring personnel and timing, would be subject to approval from Central Coast Council.

5.4 Pest and disease management

The following hygiene procedures will be undertaken by all personnel working within the source site, and the recipient site for the direct seeding trial, to reduce the introduction or spread of associated pests and pathogens:

- All equipment, clothing and footwear (noting that no machinery or vehicle movements are to occur within the source site as part of the translocation) should be free from soil and organic matter on entry and exit from the source site.
- Clean equipment and footwear is to be sprayed with a 70% methylated spirits solution (diluted with water) to disinfect the surface of these items. Clothing, gloves, hats etc. should be washed with detergent and hot water between site visits.
- Due to the high cover of weeds within the source site, movements through the site should avoid travelling through weed infested areas which have seeding weed species.
- Plan to avoid working during wet conditions which are conducive to weed and disease spread. During drier conditions, soil is less likely to adhere to tools and footwear.
- Water for irrigation will be sourced from mains supply (or treated water) rather than dams or natural waterways where pathogens may be present.

It is noted that hygiene and quarantine protocols associated with the ex-situ management of the salvaged plants will be undertaken by Mt Annan Botanic Gardens, applying their standard, best practice hygiene controls.

5.5 Genetic management

As no propagation of [REDACTED] as part of the ex-situ population management is proposed, this section is not relevant. Propagation utilising the salvaged individuals would only occur where it was recommended by either Mt Annan Botanic Gardens or DPE, based upon the results of ongoing genetic studies.

5.6 Research questions or opportunities

As previously detailed, the purpose of the direct seeding trials is to better understand the role soil disturbance plays in the germination of [REDACTED]. The habitat preferences of the species show an association with areas where some soil disturbance has occurred. The direct seeding trial may lead to a better understanding of conditions in which germination of the species is promoted, which would inform better management of conserved populations of the species.

Individuals managed as an ex-situ population at Mt Annan Botanic Gardens would be available to the SoS program to conduct additional research including ongoing genetic and pollinator studies.

6 Project management

6.1 Roles and responsibilities

The roles and responsibilities of project team members are detailed in **Section 1.2** and **Table 1.1**.

6.2 Volunteer, contractor or community engagement

There are no external parties, other than those listed in **Section 1**, who will be engaged in the translocation.

6.3 Evaluation

Project evaluation will be completed regularly via project monitoring reports. Details of these reports are discussed in the following section (**Section 6.4**).

6.4 Reporting

Per the requirements of Central Coast Council, project monitoring reports are to be submitted quarterly during Stage 1 and annually for a minimum five years during Stage 2. These reports will detail what and how translocations actions have been completed to date as well as evaluation against the timelines, aims, objectives, and performance measures of this translocation plan. Additionally, any challenges or necessary variations from this plan would be detailed including the lessons learned whilst undertaking the translocation. Subject to acceptance by a relevant journal, the outcomes of the direct seeding trial will be published in a scientific journal or bulletin.

6.5 Contingency plan and exit strategy

As this project represents a salvage translocation in a situation where individuals at the source site are at high risk of extinction, targets and objectives for the project do not include numerical targets for the number of translocations and survivorship. Success of the project would involve completion of all actions outlined in this plan and any contributions to an improved understanding of the ecology of the species. Following completion of the plan, any surviving individuals would be reliant on natural processes for completion of their life-cycle and no ongoing management as part of this plan is proposed.

6.6 Budget

An indicative budget for the translocation plan is detailed in **Table 6.1**. Actual costs of the translocation plan would be subject to fee agreements between the landholder and respective contractors. The purpose of the budget detailed within **Table 6.1** is to communicate likely costs associated with this translocation plan, so that sufficient resources are available over the period of its implementation. Funding for all items required as part of the translocation plan would be the responsibility of the landowner of the source site, namely Redeye Constructions Pty Ltd.

* Budget is indicative only and will be subject to fee agreements between landholder and contractors undertaking works

6.7 Funding

All funding required for this translocation plan, as detailed in **Section 6.6**, would be the responsibility of the landowner of the source site, namely Redeye Constructions Pty Ltd.

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7 References

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[REDACTED]

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Appendix A Flora species list (source: Habitat Environmental Services)

Family	Scientific Name
Apiaceae	* <i>Foeniculum vulgare</i>
	* <i>Cyclospermum leptophyllum</i>
Araliaceae	* <i>Hydrocotyle bonariensis</i>
Asteraceae	* <i>Ambrosia tenuifolia</i>
	* <i>Cirsium vulgare</i>
	* <i>Conyza bonariensis</i>
	* <i>Conyza sumatriensis</i>
	* <i>Gamochaeta americana</i>
	* <i>Hypochaeris radicata</i>
	* <i>Lactuca serriola</i>
	* <i>Tagetes minuta</i>
Cyperaceae	* <i>Cyperus brevifolius</i>
	* <i>Cyperus eragrostis</i>
Fabaceae - Faboideae	* <i>Erythrina crista-galli</i>
	* <i>Lupinus sp.</i>
	* <i>Medicago polymorpha</i>
	* <i>Trifolium arvense</i>
	* <i>Trifolium repens</i>
	* <i>Vicia sativa</i>
	* <i>Medicago sativa</i>
Gentianaceae	* <i>Centaurium erythraea</i>
Iridaceae	* <i>Gladiolus angustus</i>
	* <i>Watsonia meriana</i>
Juncaceae	* <i>Juncus cognatus</i>
	* <i>Juncus effusus</i>



Family	Scientific Name
Lamiaceae	* <i>Stachys arvensis</i>
Malvaceae	* <i>Sida rhombifolia</i>
Phytolaccaceae	* <i>Phytolacca octandra</i>
Pinaceae	* <i>Pinus radiata</i>
Plantaginaceae	* <i>Plantago lanceolata</i>
Poaceae	* <i>Briza maxima</i>
	* <i>Briza minor</i>
	* <i>Lachnagrostis filiformis</i>
	* <i>Lolium perenne</i>
	* <i>Paspalum urvillei</i>
	* <i>Setaria parviflora</i>
	* <i>Sporobolus africanus</i>
Polygonaceae	* <i>Rumex conglomeratus</i>
Verbenaceae	* <i>Verbena bonariensis</i>
Zingiberaceae	* <i>Hedychium gardnerianum</i>



Biodiversity Development Assessment Report

460 Pacific Highway, Wyong NSW

Version 5.0

12/09/2023



Biodiversity Development Assessment Report

460 Pacific Highway, Wyong NSW

Document No: HBT0045_BDAR_V5.0

12/09/2023

BAAS Case Number: 00036952/BAAS18041/22/00036953

Prepared for

Redeye Constructions Pty Ltd c/o SLR Consulting Australia Pty Ltd

Prepared by

Habitat Environmental Services Pty Ltd

Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).



Signature:

Date: 12/09/2023

BAM Accredited Assessor: Dr. Gilbert Whyte

BAM Assessor Accreditation no: BAAS18041

Document Control

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Contents

1	Introduction	6
1.1	Background.....	6
1.2	Scope.....	6
1.3	Site Description.....	8
1.4	Proposed Development.....	8
1.5	Information Sources.....	11
1.6	Legislative Context	11
1.6.1	Biodiversity Conservation Act 2016	12
1.6.2	Biosecurity Act 2015	13
1.6.3	Water Management Act 2000.....	13
1.6.4	State Environmental Planning Policy (Biodiversity and Conservation) 2021	13
1.6.4.1	Koala Habitat Protection 2021 (Chapter 4).....	13
1.6.4.2	Wetlands Protection Area (Part 10.6)	13
1.6.5	State Environmental Planning Policy (Resilience and Hazards) 2021	14
1.6.5.1	Coastal Management (Chapter 2)	14
1.6.6	Environmental Considerations (Chapter 4).....	15
1.6.7	Vegetation Management (Chapter 12).....	15
1.6.8	Central Coast Local Environmental Plan 2022.....	15
1.6.9	Central Coast Development Control Plan 2022.....	15
1.6.10	Environment Protection and Biodiversity Conservation Act 1999	15
2	Landscape Features	17
3	Native Vegetation.....	21
3.1	Methodology	21
3.1.1	Data Review	21
3.1.2	Vegetation Mapping Surveys.....	21
3.1.3	Plant Community Type and Determination	21
3.1.4	Vegetation Zones	22
3.1.5	Vegetation Integrity	22
3.1.6	Floristic Identification and Nomenclature	22
3.2	Results.....	23
3.2.1	Floristic Diversity	23
3.2.2	Exotic Vegetation.....	23
3.2.3	Plant Community Types	24
3.2.4	Threatened Ecological Communities (BC Act)	30

3.2.5	Threatened Ecological Communities (EPBC Act)	30
3.2.6	Assessment of Patch Size	31
3.2.7	Vegetation Integrity Score.....	31
4	Threatened Species Assessment.....	32
4.1	Habitat Assessment.....	32
4.1.1	Key Habitat Features.....	32
4.1.2	Habitat Assessment – Threatened Flora	32
4.1.3	Habitat Assessment – Threatened Fauna	32
4.1.4	Ecosystem Credit Species	33
4.1.5	Species Credit Species	35
4.1.6	Candidate Species – Further Justification	37
4.2	Threatened Species Surveys	37
4.2.1	Threatened Flora Surveys.....	37
4.2.2	Fauna Survey Methods.....	39
4.2.3	Fauna Survey Results	39
4.3	Identified Threatened Species	41
5	Avoiding and Minimising Impacts.....	44
5.1	Native Vegetation	44
5.2	Threatened Species	44
5.3	Impacts on Native Vegetation.....	46
5.4	Impacts on Threatened Species	46
5.5	Indirect Impacts	47
5.6	Prescribed Biodiversity Impacts	47
5.7	Mitigation Measures	48
5.7.1	.....	48
5.7.2	Further Mitigation Measures.....	49
6	Impact Summary	53
6.1	Serious and Irreversible Impacts	53
6.2	Impacts Not Requiring Offsets	61
6.3	Impacts on Native Vegetation.....	61
6.4	Impacts on Threatened Species	61
7	Legislative Review	66
7.1	Environment Protection and Biodiversity Conservation Act 1999.....	66
7.2	Biosecurity Act	66
7.3	Koala Habitat Protection SEPP 2021.....	67

8	References	69
	Appendix A – Threatened Species Database Search	72
	Appendix B – Flora Species List	74
	Appendix C – Fauna Species List	75
	Appendix D – Biodiversity Credit Reports	76
	Appendix E – BAM Plot Data Sheets	77
	Appendix F – Assessments of Significance (EPBC Act)	78
	Appendix G – Translocation Protocol	79
Figure 1	Locality Map	7
Figure 2	Study Area & General Site Features	9
Figure 3	Proposed Development	10
Figure 4	Landscape Assessment (Native Vegetation Extent)	19
Figure 5	Landscape Assessment (IBRA Bioregion & Mitchells Landscapes)	20
Figure 6	Plant Community Types and Plot Locations	29
Figure 7	Threatened Flora Survey Effort	38
Figure 8	Fauna Survey Effort	40
Figure 9	[REDACTED]	43
Figure 10	Avoidance and Mitigation	45
Figure 11	[REDACTED]	64
Figure 12	Species Polygon – Swift Parrot	65
Table 1	Landscape Features	17
Table 2	Components of Vegetation Integrity	22
Table 3	Plant Community Type Information – PCT 1718	25
Table 4	Plant Community Type Information – PCT 1737	27
Table 5	Vegetation Integrity	31
Table 6	Ecosystem Credit Species	34
Table 7	Species Credit Species	36
Table 8	[REDACTED]	42
Table 9	Impacts on Native Vegetation	46
Table 10	[REDACTED]	46
Table 11	Impacts to Swift Parrot Important Habitat	47
Table 12	Mitigation Measures	50
Table 13	[REDACTED]	53
Table 14	SAll Assessment – Swift Parrot	57
Table 15	Summary of Ecosystem Credit Requirements	61
Table 16	[REDACTED]	63
Table 17	Summary of Swift Parrot Species Credit Requirements	63
Table 18	Weed species requiring control within the Study Area	67

1 Introduction

1.1 Background

Habitat Environmental Services Pty Ltd (Habitat) have been engaged by Redeye Constructions Pty Ltd c/o SLR Consulting Australia Pty Ltd, to prepare a Biodiversity Development Assessment Report (BDAR) to support the proposed industrial subdivision of lands located at 460 Pacific Highway, Wyong NSW (Lot 1212, DP 818944), hereafter referred to as the Study Area (**Figure 1**).

This assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) (Department of Planning, Infrastructure and Environment [DPIE] 2020a) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Regulation) to support a Development Application (DA) for the Project.

The following terms are used throughout this report:

- **Study Area:** 460 Pacific Highway, Wyong NSW (Lot 1212, DP 818944).
- **Development Site:** The area within the Study Area to be directly impacted by the proposed development.
- **Locality:** Land within a ten-kilometer (km) radius of the Study Area
- **Assessment Area:** Land within a 1,500-meter (m) buffer of the Development Site.

1.2 Scope

This BDAR aims to quantify impacts of the proposed development upon biodiversity values based upon the methods described within the BAM (DPIE 2020a), including threatened biota listed under the BC Act. The assessment includes:

- **Stage 1** – Biodiversity Assessment – Mapping of Plant Community Types (PCTs) including Endangered Ecological Communities (EECs), an assessment of the potential occurrence of threatened species and their habitats, and the potential occurrence of candidate threatened species returned by the BAM Calculator (BAM-C).
- **Stage 2** – Impact Assessment – Identification of potential impacts of the proposed development, avoidance and mitigation measures, and biodiversity offset requirements based upon residual impacts.

The Biodiversity Accredited Assessor System (BAAS) Case number for the Project is BAAS Case Number: 00036952/BAAS18041/22/00036953.



Figure 1 - Locality



Legend

Study Area (Lot 1212, DP 818944)

1.3 Site Description

The Study Area zoned *B6: Enterprise Corridor* under the Central Coast Local Environmental Plan 2022 and is located in North Wyong within the Central Coast Local Government Area (LGA). The Pacific Highway borders the eastern boundary of the site (**Figure 2**). Industrial development occurs to the north and south, and residential development occurs to the east.

The Study Area is approximately 4.70 hectares (ha) in area, rectangular in shape, and has a relatively flat topography. The majority of the site has been historically cleared of native vegetation. Bare areas and stockpiles of soil, gravel, and rock occur in several locations.

No mapped watercourses occur within or adjacent to the Study Area. Constructed drainage channels run north-south along the western boundary and east-west through the centre of the site (**Figure 2**). The central channel meets with the western channel near the western boundary.

Due to previous vegetation clearing activities and bulk earth works within the site, the extent of native vegetation is limited to a small area of regenerating forest and narrow bands of regenerating wetland vegetation (within the constructed channels).

1.4 Proposed Development

A one-into-eight subdivision of the Study Area is proposed via a Development Application (DA) to Central Coast Council (Council). The proposed development layout is shown in **Figure 3**.

In a previous DA for a proposed machinery, product and plant storage depot, site access from the Pacific Highway was proposed; however, this proposal was not accepted by Transport for NSW. Entry to the site for the current DA is proposed via construction of a 10m wide road from Brussels Road to the north and a 20m wide road from the south. These roads will connect to a 20m wide central road that will provide access to each of the proposed lots.



Figure 2 - Study Area & General Site Features



Legend

- Study Area (Lot 1212, DP 818944)
- Lot Boundaries (SixMaps 2023)
- Constructed Channels
- Regenerating Native Forest

Aerial Imagery (nearmap) is dated 11/08/2022



Figure 3 - Proposed Development



Legend

- Study Area (Lot 1212, DP 818944)
- Proposed Subdivision
- Temporary Road Profile (7m Width)

1.5 Information Sources

The following sources of information were used to inform the assessment:

- The NSW DPE, BioNet Atlas (DPE 2023a) for previous records of threatened species, populations and ecological communities within a five km radius of the Study Area.
- The NSW DPE, BioNet Vegetation Classification Database (DPE 2023b) for identification and allocation of Plant Community Types (PCTs) to vegetation zones on site.
- The NSW DPE, BioNet Threatened Biodiversity Data Collection (DPE 2023c), Threatened Species Profiles (DPE 2023d) and Final Determinations (DPIE 2023e) for information on threatened species, populations, and ecological communities.
- The Department of Climate Change, Energy, the Environment and Water - Protected Matters Search Tool (PMST) (DCCEEW 2023a) for Matters of National Environmental Significance (MNES) including predicted threatened species, populations and ecological communities.
- Department of Planning and Environment (DPE). Biodiversity Assessment Method – Important Area Mapping (DPE 2023f).
- The NSW State Vegetation Type Map (DPE 2023g) and the Lower Hunter and Central Coast Vegetation Community Map (Lower Hunter and Central Coast Regional Environment Management Strategy (LHCCREMS 2003)
- Relevant published literature (see **Section 8**).

1.6 Legislative Context

The assessment was undertaken in accordance and consideration of the following Acts and Policies:

State:

- *Biodiversity Conservation Act 2016* (BC Act)
- *Biodiversity Conservation Regulation 2017* (BC Regulation)
- *Biosecurity Act 2015*
- *Coastal Management Act 2016*
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Local Land Services Act 2013* (LLS Act)
- *Water Management Act 2000* (WM Act)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021
- State Environmental Planning Policy (Resilience and Hazards) 2021
- Central Coast Environmental Plan (LEP) 2022
- Central Coast Development Control Plan (DCP) 2022.

Federal:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Information pertaining to the above list is presented in the following subsections.

1.6.1 Biodiversity Conservation Act 2016

The NSW BC Act together with the NSW BC Regulation outlines the framework for addressing impacts on biodiversity from development and clearing. The framework details a pathway to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offset Scheme (BOS).

Entry into the NSW Biodiversity Offset Scheme (BOS) is triggered by developments, projects and activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act.

Criteria to which the BOS applies include the following:

- Local Development (assessed under Part 4 of the EP&A Act) that triggers the BOS Threshold or is “likely to significantly affect threatened species” (based on a test of significance pursuant to Section 7.3 of the BC Act). The BOS Threshold has two parts, and is triggered by the following:
 - Clearing of vegetation that exceeds an area threshold (based on the minimum lot size), or
 - Impacts are predicted to occur within an area mapped on the NSW Biodiversity Values Map (BV Map) (DPIE 2023f).
- State Significant Development (SSD) and State Significant Infrastructure projects (SSI), unless “the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact.
- Biodiversity certification proposals.
- Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
- Clearing of native vegetation that requires approval by the Native Vegetation Panel under the LLS Act.
- Activities assessed and determined under Part 5 of the EP&A Act (generally, proposals by government entities) if proponents choose to ‘opt in’ to the Scheme.

Conclusion

Review of the NSW Biodiversity Values Map (BV map) on 29/11/22 revealed that a small area near the western boundary of the Study Area is mapped as having high biodiversity value. The Biodiversity Offset Scheme Entry Threshold (BOSET) Class for this area is *Threatened species or communities with potential for serious and irreversible impacts*.

The minimum lot size for the Study Area is 4.72 ha. In accordance with the BAM, the vegetation clearing threshold that triggers entry to the BOS is 0.5 ha. The extent of native vegetation within the Study Area is limited to 0.28 of regenerating swamp forest, 0.17 ha of wetland vegetation, and 0.04 ha of isolated native trees. The vegetation clearing threshold will not be exceeded.

Council determined that the proposed development has the potential to have a significant impact on the [REDACTED] ([REDACTED] [REDACTED]), which was detected within the Study Area in 2020. In accordance with the criteria to which the BOS applies a BDAR is required to support the project.

The minimum lot size for the Study Area is 4.72 ha and the maximum clearing limit for the application of the small area development module is 2 ha. Given that less than 2 ha of native vegetation will be impacted by the proposed development, the small area development module is the appropriate assessment method for the project.

1.6.2 Biosecurity Act 2015

Under the *Biosecurity Act 2015* all plants are regulated with a general biosecurity duty “to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.” Under the Act, a biosecurity impact “is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter.” This legislation is addressed in **Section 7.2**.

1.6.3 Water Management Act 2000

Controlled activities carried out in, on or under waterfront land are regulated by the WM Act. ‘Waterfront land’ is defined as the bed of any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high water mark.

No water courses are mapped within the Study Area. The proposed development does not constitute a ‘controlled activity’ as per the WM Act. Approval from the Natural Resources Access Regulator (NRAR) is not required. Consideration of indirect impacts to aquatic and riparian habitat is provided in **Section 5**. Mitigation measures are detailed in **Section 5.7**.

1.6.4 State Environmental Planning Policy (Biodiversity and Conservation) 2021

1.6.4.1 Koala Habitat Protection 2021 (Chapter 4)

Chapter 4 of the SEPP contains provisions aimed to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.

The chapter applies to each LGA listed under Schedule 1 of the SEPP. Central Coast LGA is listed under Schedule 1 of the SEPP, in which it applies to land within the LGA that is not zoned rural, i.e., land not zoned RU1, RU2 or RU3. The Study Area was assessed by a suitably qualified and experienced person to determine if the land contains ‘Core Koala Habitat’ as defined by the SEPP. See **Section 7.3** for a summary of the Koala habitat assessment.

1.6.4.2 Wetlands Protection Area (Part 10.6)

The objectives of Part 10.6 of the SEPP in relation to wetlands are as follows:

- To preserve, protect and encourage the restoration and rehabilitation of wetlands.
- To maintain and restore the health and viability of wetlands.

- To prevent the fragmentation of wetlands.
- To preserve the scenic qualities of wetlands.

To ensure that wetlands continue to perform their natural ecological functions (such as the provision of wetland habitat, the preservation of water quality, the control of flooding and erosion).

The Study Area does not contain or adjoin Wetland Protection Area; therefore, Part 10.6 of the SEPP does not apply.

1.6.5 State Environmental Planning Policy (Resilience and Hazards) 2021

The Resilience and Hazards SEPP consolidates, transfers and repeals the provisions of three SEPPs into a single environmental planning instrument, including: the SEPP (Coastal Management) 2018 (Coastal Management SEPP), SEPP 33 – Hazardous and Offensive Development (SEPP 33), and SEPP 55 – Remediation of Land (SEPP 55). The Resilience and Hazards SEPP aims to promote the protection and improvement of key environmental assets for their intrinsic value and the social and economic benefits they provide. Relevant chapters of the Resilience and Hazards SEPP are considered below:

1.6.5.1 Coastal Management (Chapter 2)

The aim of this Chapter is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the CM Act including the management objectives for each coastal management area by:

- Managing development in the coastal zone and protecting the environmental assets of the coast.
- Establishing a framework for land use planning to guide decision-making in the coastal zone.
- Mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the CM Act.

The Coastal Management Chapter incorporates the provisions of the now repealed Coastal Management SEPP which commenced on 3 April 2018 and consolidated the provisions of: SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection).

The Coastal Management Chapter defines the four coastal management areas in accordance with the Coastal Management Act and details mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas.

The four coastal management areas are:

- Coastal wetlands and littoral rainforests area – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26.
- Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation.

- Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included.
- Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

The Study Area does not contain areas mapped as any of the four coastal management areas above. The CM Act does not apply to this proposed development.

1.6.6 Environmental Considerations (Chapter 4)

The objectives of this chapter are to ensure that development is designed in a manner that avoids, mitigates or offsets negative impacts on biodiversity and the quality and function of the natural environment, and responds to relevant ecological constraints and opportunities.

1.6.7 Vegetation Management (Chapter 12)

The objective of this chapter is to identify vegetation for protection for the purposes of the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 and to provide a trigger for assessment under the Vegetation Management Policy.

This objective is specifically considered in **Section 5** of this report.

1.6.8 Central Coast Local Environmental Plan 2022

The Study Area is located within the Central Coast LGA and is zoned B6: Enterprise Corridor. The Central Coast LEP 2022 controls development within the Study Area through zoning and development controls. These controls are described in greater detail by the supporting Central Coast DCP 2022.

1.6.9 Central Coast Development Control Plan 2022.

The Central Coast Development DCP 2022 supports the Central Coast LEP by providing additional detail and guidance on addressing biodiversity issues associated with development. The purpose of the DCP is to provide Council's requirements for sustainable quality development and environmental outcomes within Central Coast LGA.

1.6.10 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, approval is required for actions that are likely to have a significant impact on MNES. An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action, which they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Environment. The Act identifies the following nine MNES:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance (Ramsar Convention).
- Listed threatened species and communities.
- Migratory species listed under international agreements.
- Great Barrier Reef Marine Park.

- Commonwealth marine areas.
- Nuclear actions.
- Water resources in respect to CSG and large coal mines.

While this BDAR is not required to address MNES, the proponent is required to address the EPBC Act as part of their development application to Council. Items 4 and 5 are relevant to the current proposal. A summary of this assessment is presented in **Section 7.1**.

2 Landscape Features

The landscape features detailed in Section 3 of the BAM (DPIE 2020a), which are applicable to the Study Area are described in **Table 1**. These landscape features are shown on **Figure 4**.

Table 1 Landscape Features

Landscape Features	Information
IBRA Region	Sydney Basin
IBRA Sub Region	Wyong
Local Government Area (LGA)	Central Coast Council
Mitchell Landscape	The Study Area is within the Gosford – Cooranbong Coastal Slopes (DECC, 2002 and Mitchell 2002). This landscape is described as: Coastal fall of the Sydney Basin, rolling hills and sandstone plateau outliers of Triassic Narrabeen sandstones, extensive rock outcrop and low cliffs along ridge margins, general elevation of 0 to 75 m. The extent of each Mitchell Landscape within the locality is presented in Figure 5 .
Rivers, streams and estuaries	No mapped watercourses occur within or adjacent to the Study Area. A constructed channel runs along the western boundary. This channel is connected to a perpendicular constructed channel that traverses the centre of the site (east to west).
Wetlands	No Coastal wetlands mapped on the Coastal Wetlands and Littoral Rainforests Area Map (DPIE 2023) occur within the Study Area.
Connectivity of different areas of habitat	The surrounding land use is predominantly comprised of industrial and residential development. Native vegetation is largely restricted to a small patch of regenerating forest that occurs near the western boundary. This vegetation is fragmented and largely isolated within the landscape. A narrow forest connection occurs to the south where it adjoins a larger area of forest outside the Study Area.
Areas of geological significance and soil hazard features	The Study Area is not located with an area identified as having any particular geological significance. No mapping was identified that would indicate the site contains any soil hazard features.
Areas of outstanding biodiversity value	There are no areas of “outstanding biodiversity value” (in accordance with Section 3.1.3 of the BAM (DPIE 2020a) mapped within the Study Area.
Geology and Soils	Mitchell (2002) described the landscape as containing texture-contrast soils on lithic sandstones and shales, loamy sand alluvium along creeks, and organic sand and mud in lagoons and swamps. Historic land use activities have disturbed the soil profile, a mosaic of clays, gravels and sandy loams were observed throughout the Study Area.

Landscape Features	Information
Native Vegetation Cover	<p>Native Vegetation was assessed as per Section 3.2 of the BAM 2020 (DPIE 2020a) as shown in Figure 4. Native vegetation constitutes 33.72% (206 ha) of the projected 1,500 m site buffer (611 ha) associated with the Development Site. Native Vegetation Cover was classed as >30-70%.</p>



Figure 4 - Landscape Assessment (Native Vegetation Extent)



Legend

- Study Area (Lot 1212, DP 818944)
- Native Vegetation Extent (206 ha - 33.72%)
- 1500m Buffer (611 ha)
- Mapped Watercourses (Six Maps 2022)

IBRA Bioregion - Sydney Basin
IBRA Sub Region - Wyong

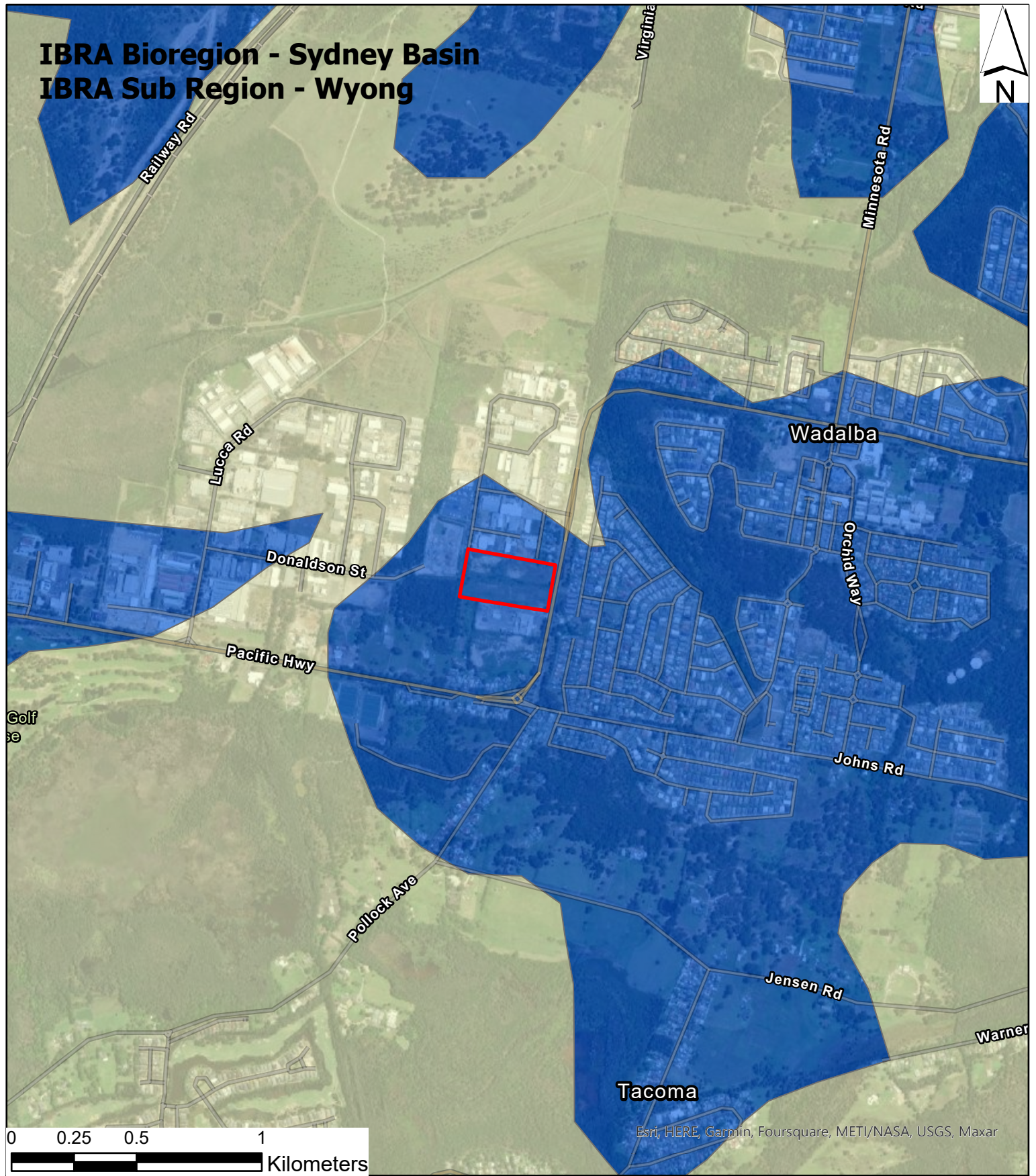





Figure 5 - Landscape Assessment (IBRA Bioregion & Mitchells Landscapes)



Legend

-  Study Area (Lot 1212, DP 818944)
- Mitchells landscapes
 -  Gosford - Cooranbong Coastal Slopes
 -  Sydney - Newcastle Coastal Alluvial Plains

3 Native Vegetation

3.1 Methodology

Native vegetation was assessed in accordance with Section 4 of the BAM (DPIE 2020a).

3.1.1 Data Review

Vegetation mapping completed as part of *the Lower Hunter and Central Coast Vegetation Community Map (Lower Hunter and Central Coast Regional Environment Management Strategy (LHCCREMS 2003))* was reviewed to assist with the determination of PCTs within the Study Area. Regional vegetation mapping indicates that the dominant vegetation types within and adjacent to the Study Area are comprised of Wyong Paperbark Swamp Forest.

3.1.2 Vegetation Mapping Surveys

Detailed vegetation surveys were conducted across the Study Area on 10/05/22 and 28/11/22. Areas of vegetation to be impacted by the proposed development, as well as areas to be retained, were mapped during this period. The boundaries of each of the identified vegetation communities within the Study Area were mapped using a combination of rapid data points (RDP) and walking transects, using the polygons produced through aerial photo interpretation (API) to assist in targeting survey effort.

The RDPs involved collecting waypoints over the Study Area using a handheld GPS unit and recording dominant species, structure, and condition. Walking transects involved verifying polygons where homogenous in floristic composition and condition, as well as walking vegetation ecotones and using the recorded tracks to define vegetation community boundaries. The RDPs and survey tracks were then overlaid on an aerial photograph and used to delineate and/or clarify vegetation boundaries. The RDPs and plots were classified and tagged with a PCT by field surveyors. Polygons produced from the API work adopted the PCT of the sample point that they intersected.

3.1.3 Plant Community Type and Determination

Each vegetation community identified within the Study Area was assigned to the closest equivalent PCT from those listed in the BioNet Vegetation Classification database (DPE 2023b). The closest equivalent PCT for each vegetation community was determined through a comparison of the floristic descriptions of PCTs in the database with the plot / transect data collected. In addition to floristic and structural similarity, the landscape position, soil type and other diagnostic features of the vegetation communities on the site were compared to the descriptions in the database to determine the most suitable PCT. Threatened ecological communities (TECs) as defined in NSW and Commonwealth legislation were also identified if present.

3.1.4 Vegetation Zones

Vegetation zones were identified and delineated in accordance with Section 4.3 of the BAM (DPIE 2020a). A vegetation zone is defined in the BAM as a relatively homogenous area that is the same vegetation type and broad condition.

3.1.5 Vegetation Integrity

Following stratification of the Study Area into vegetation zones, plots/transects were undertaken to collect site condition data for the composition, structure and function attributes listed in **Table 2** in accordance with Section 4.3 of the BAM (DPIE 2020a). The location of the plots/transects were selected through stratified random sampling to provide a representative sample of the variation in vegetation composition and condition within each vegetation zone.

Table 2 Components of Vegetation Integrity

Growth form groups	Function attributes
<ul style="list-style-type: none"> • Tree (TG) • Shrub (SG) • Grass and grass-like (GG) • Forb (FG) • Fern (EG) • Other (OG) 	<ul style="list-style-type: none"> • Number of large trees • Tree regeneration (presence/absence) • Tree stem size class (presence/absence) • Total length of fallen logs • Litter cover • High threat exotic vegetation cover (HTE) • Hollow-bearing trees (HBT)

The number of plots/transects undertaken across the site meets the minimum number of transects required for each vegetation zone area as detailed in Section 4.3.4, Table 3 of the BAM (DPIE 2020a). A total of four vegetation plots were sampled across the Study Area (**Figure 6**).

3.1.6 Floristic Identification and Nomenclature

Floristic identification and nomenclature were based on Harden (1992, 1993, 2000 and 2002) with subsequent revisions as published on NSW PlantNet (<http://plantnet.rbgsyd.nsw.gov.au>)

3.2 Results

3.2.1 Floristic Diversity

A total of 91 flora species were identified during field surveys, 60 of these species are exotic species, of which 14 are considered ‘High Threat Exotics’ and three are listed Priority Weeds for the Central Coast LGA (discussed further in **Section 7.2**). A list of the flora species identified within the Study Area is provided in **Appendix B**.

3.2.2 Exotic Vegetation

Exotic Grassland is the dominant vegetation type within the Study Area. This vegetation occupies approximately 4.20 ha of the site and is dominated by exotic perennial grasses such as *Paspalum urvillei* (Kikuyu), *Paspalum dilatatum* (Paspalum) and *Cenchrus clandestinus* (Kikuyu). Several exotic herbs also occur including *Senecio madagascariensis* (Fireweed), *Hydrocotyle bonariensis* (Pennywort) *Trifolium repens* (White Clover) and *Medicago polymorpha* (Burr Medic).

A representative photograph of this vegetation is shown in **Plate 1**.



Plate 1 Exotic Grassland within the Study Area

3.2.3 Plant Community Types

Two Plant Community Types (PCTs) were identified within the Study Area:

- *PCT 1718 Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast*: 0.33 ha total (0.28 ha area of regenerating forest in the western portion of the Study Area and 0.05 ha of isolated trees near the eastern boundaries).
- *PCT 1737 Typha Rushland*: 0.17 ha area of aquatic emergent vegetation was identified within the constructed drainage channel and low-lying areas of the site.

The vegetation within the Study Area was assigned to three vegetation zones based on broad condition state. Note that for the purposes of calculating Vegetation Integrity (VI), areas of Exotic Grassland were identified as a cleared form of PCT 1716. Detailed descriptions of PCT 1716 and PCT 1737 are presented respectively in **Table 3** and **Table 4**. The extent of each PCT and Vegetation Zones are shown in **Figure 6**.

Table 3 Plant Community Type Information – PCT 1718

Criteria	PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Vegetation Formation and Class	Forested Wetlands Coastal Swamp Forest
Scientific Name	Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Area within the Study Area	Vegetation Zone 02 (0.33 ha: 0.28 ha (Regenerating Forest), 0.05 ha (Isolated Trees))
Survey Effort	Required: 1 plot/transect. Conducted: 3 plot/transects.
Floristic description	The canopy is dominated by regenerating <i>Eucalyptus robusta</i> (Swamp Mahogany). The shrub layer is also regenerating and dominated by <i>Glochidion ferdinandi</i> (Cheese Tree), <i>Melaleuca ericifolia</i> (Swamp Paperbark), <i>Melaleuca nodosa</i> (Prickly-leaved Paperbark) and <i>Acacia longifolia</i> (Sydney Golden Wattle). The ground layer contains a mix of native and exotic species. Native species include <i>Ranunculus plebeius</i> (Forest Buttercup), <i>Hypolepis muelleri</i> (Harsh Ground Fern) and <i>Machaerina juncea</i> (Bare Twig-rush). Wetter areas also contain <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Several weed species occur including <i>Cortaderia selloana</i> (Pampas Grass), <i>Cenchrus clandestinus</i> (Kikuyu), <i>Ipomoea cairica</i> (Coastal Morning Glory) and <i>Ageratina adenophora</i> (Crofton Weed). Representative photographs of the vegetation are provided in Plate 2 and Plate 3 .
Condition within Development Site	The vegetation is fragmented and isolated within the landscape; however, an intact canopy, shrub and groundcover is present. A large number of exotic plant species occur, including several High Threat Weeds (see previous). Due to the levels of fragmentation and encroachment of weeds the vegetation is in a moderate condition state.
Justification for PCT selection	The vegetation within this zone is modified, although the presence of Swamp Mahogany as the canopy dominant indicates that Swamp Sclerophyll Forest would have occurred within the site prior to development. Swamp Mahogany is listed as one of the key diagnostic canopy species within PCT 1718. Additionally, key diagnostic shrub species such as Cheese Tree and Flax-leaved Paperbark also occur. Key diagnostic groundcover species that were detected within the vegetation zone include Blady Grass and Bracken.
Status	BC Act: The vegetation represents a low condition form of <i>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> , which is listed as an EEC under the BC Act. EPBC Act: The vegetation represents a low condition form of <i>Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</i> , which is listed as an EEC under the EPBC Act. Further information regarding the above determinations is provided in Section 3.2.3 .
SAII	No
PCT % Cleared	74%



Plate 2 Regenerating PCT 1716 - Prickly-leaved Paperbark Forest in the western portion of the Study Area



Plate 3 Regenerating PCT 1716 - Prickly-leaved Paperbark Forest in the western portion of the Study Area

Table 4 Plant Community Type Information – PCT 1737

Criteria	PCT 1737 – Typha Rushland
Vegetation Formation and Class	Freshwater Wetlands Coastal Freshwater Lagoons
Scientific Name	Typha Rushland
Area within the Study Area	Vegetation Zone 02 (0.17 ha - Wetland)
Survey Effort	Required: 1 plot/transect. Conducted: 1 plot/transect
Floristic description	The canopy is absent. The shrub layer is sparse to absent with occasional occurrences of <i>Melaleuca ericifolia</i> (Swamp Paperbark), <i>Melaleuca nodosa</i> (Prickly-leaved Paperbark) and <i>Acacia longifolia</i> (Sydney Golden Wattle). A dense cover of emergent rush species occurs. The dominant species are <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Other native species that occur to a lesser extent include <i>Ranunculus plebeius</i> (Forest Buttercup), <i>Hypolepis muelleri</i> (Harsh Ground Fern) and <i>Machaerina juncea</i> (Bare Twig-rush). Several weed species occur. The dominant weeds are <i>Cortaderia selloana</i> (Pampas Grass) and <i>Ageratina adenophora</i> (Crofton Weed). Representative photographs of the wetland vegetation are provided in Plate 4 and Plate 5 . These photographs show that most of the wetland vegetation has regenerated in the past six months following heavy rainfall within the locality.
Condition within Development Site	The vegetation restricted to constructed drainage channels and low-lying areas containing pooling water within the Study Area. A large number of exotic plant species occur, including several High Threat Weeds (see previous). Due to the dense coverage of native emergent vegetation, the vegetation is in a moderate condition state.
Justification for PCT selection	The vegetation is dominated by aquatic wetland species including <i>Typha orientalis</i> (Broad-leaved Cumbungi) and <i>Schoenoplectus validus</i> . Broad-leaved Cumbungi is a key diagnostic species within PCT.
Status	BC Act: Not listed. EPBC Act: Not listed. Further information regarding the above determinations is provided in Section 3.2.3
SAIL	No
PCT % Cleared	70%



Plate 4 PCT 1737 – Typha Rushland within the central drainage channel within the Study Area (May 2022)



Plate 5 PCT 1737 – Typha Rushland within the central drainage channel within the Study Area (November 2022)



Figure 6 - Plant Community Types and Plot Locations



Legend

- Study Area (Lot 1212, DP 818944)
- BAM Plots

Plant Community Types and Vegetation Zones

- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

3.2.4 Threatened Ecological Communities (BC Act)

Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

One threatened ecological community (TEC) was identified within the Study Area. Areas of vegetation identified as PCT 1718 are also commensurate with *Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions*, which is an EEC listed under the BC Act. Justifications for the EEC determination include the following:

- The Study Area occurs within the Sydney Basin Bioregion where the EEC is known to occur.
- The vegetation is associated with waterlogged soils within periodically inundated drainage channels (constructed).
- The structure of the vegetation is an open forest, although partial clearing has reduced the canopy to scattered trees.
- Key diagnostic canopy species occur such as Swamp Mahogany, Sydney Golden Wattle, and Cheese Tree.
- Key diagnostic shrub species occur such as Swamp Paperbark and Prickly-leaved Paperbark.

Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

Wetland vegetation is restricted to drainage channels within the site that have been specifically constructed for the purposes of stormwater management. The Final Determination for the EEC states:

“Artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of this community, although they may provide habitat for threatened species.”

The vegetation identified as PCT 1737 within the Study Area does not meet the criteria of the EEC.

3.2.5 Threatened Ecological Communities (EPBC Act)

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland

The *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland* ecological community was listed in the Endangered category of the threatened ecological communities list under the EPBC Act on 08 December 2021. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification under the EPBC listing as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the Study Area is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.

- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the vegetation is commensurate with the EEC and is classified as Class C2: A small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.

3.2.6 Assessment of Patch Size

The patch size for all vegetation zones was assessed as >100 ha as this vegetation is connected to larger intact areas of native forest vegetation extending to the south. Spatial analysis showed that the largest gap between smaller vegetation patches is less than 100 m (appropriate for woody vegetation).

3.2.7 Vegetation Integrity Score

The current vegetation integrity score of the vegetation zones within the Study Area are presented in **Table 5**. Note that for the purposes of providing information on the vegetation integrity of the Exotic Grassland, this vegetation was allocated to Vegetation Zone 1 (PCT 1718). Based on the topography of the site, it is likely that areas of Exotic Grassland were previously vegetated with PCT 1718 or another PCT within the Swamp Forests Class.

Table 5 **Vegetation Integrity**

Zone	PCT	Condition class	Area (ha)	Condition scores (Current Score)			Vegetation integrity score
				Composition	Structure	Function	
1	1718	Cleared	4.20	6.4	49.3	0	2.4
2	1718	Moderate	0.33	26.2	62.2	24.2	34.0
3	1737	Moderate	0.17	41.3	5.9	-	15.7

4 Threatened Species Assessment

4.1 Habitat Assessment

To inform the assessment of suitable habitat for threatened species and populations within the Study Area, a database search was conducted using the NSW DPE BioNet Atlas (DPE 2023a). Results of the database search and ‘likelihood of occurrence’ assessment are provided in **Appendix A**.

4.1.1 Key Habitat Features

The Study Area has been subjected to historical disturbance such as vegetation clearing and earthworks. No key habitat features such as hollow-bearing trees, large water bodies or dense vegetation containing a complex structure occur within the site.

4.1.2 Habitat Assessment – Threatened Flora

Vegetation Zone 1: This vegetation zone is cleared and comprised mainly of a groundcover that is dominated by exotic grasses and forbs. A low diversity of native flora species is present, and the habitat is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality. [REDACTED] ([REDACTED] [REDACTED])
[REDACTED]

Vegetation Zone 2: This vegetation zone is comprised of a small area of regenerating Swamp Sclerophyll Forest. The canopy and shrub layers are in the early stages of regeneration and the groundcover contains a mix of native and exotic species. Due to the disturbance history of the site, this habitat is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality.

Vegetation Zone 3: This vegetation zone is comprised of aquatic emergent vegetation that is restricted to the constructed drainage channels. Site photographs shown previously demonstrate that most of the native vegetation present has regenerated in the past six months. Due to the artificial nature of the wetland habitat, this area is likely to be too degraded to support populations of most threatened plant species that are known to occur in the locality.

4.1.3 Habitat Assessment – Threatened Fauna

Fauna habitat within the Study Area is characterised by a mosaic of cleared areas, small areas of regenerating forest and ephemeral wetlands (constructed). No trees containing hollows occur within the site.

A summary of threatened fauna habitat suitability is presented below:

Vegetation Zone 1: Due to historical management, the vegetation within this vegetation zone lacks a complex vegetation structure. Refugia for terrestrial fauna species is limited to dense exotic

groundcover and are areas containing thickets of weeds such as Pampas Grass. Mature trees are generally absent.

Vegetation Zone 2: This vegetation zone is fragmented and generally lacks a complex vegetation structure. Foraging habitat is also limited by the small area of forest present. It is likely that fauna species such as birds and mammals would forage within the area as part of larger network of habitat within the locality.

Vegetation Zone 3: The aquatic habitat within the drainage channels is ephemeral and may provide suitable breeding habitat for common amphibian species and aquatic insect species. Larger fauna species may also utilise the habitat periodically as a water source.

In summary, the habitats present within the Study Area do not represent important habitat for any threatened fauna species. Such species are likely to utilise the habitats present as part of a broader network of habitats within the locality.

4.1.4 Ecosystem Credit Species

The following assessment of habitat suitability for ecosystem credit species was conducted in accordance with Section 6.2 of the BAM. Ecosystem credits represent threatened species that can be reliably predicted to occur based on the type and condition of vegetation within the Development Site. Targeted surveys are not required for Ecosystem Credit species.

Step 1: Identify threatened species for assessment.

A list of Predicted Ecosystem Credit species for the Study Area was reviewed in the BAM calculator, according to PCTs present on the subject land. Predicted Species Report is within **Appendix D**.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land.

The potential for Ecosystem Credit species to occur on the Study Area was assessed according to species-specific habitat requirements, as detailed in **Table 6**. Where habitat features were not present due to the degraded condition of the site vegetation, Ecosystem Credit species were determined to not be predicted species and no further assessment was required within these vegetation zones.

Table 6 Ecosystem Credit Species

Scientific name	Common name	Confirmed Predicted Species
<i>Anseranas semipalmata</i>	Magpie Goose	Yes
<i>Anthochaera phrygia</i>	Regent Honeyeater (Foraging)	Yes
<i>Botaurus poiciloptilus</i>	Australian Bittern	Yes
<i>Calidris tenuirostris</i>	Great Knot (Foraging)	Yes
<i>Circus assimilis</i>	Spotted Harrier	Yes
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Yes
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Yes
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Yes
<i>Epthianura albifrons</i>	White-fronted Chat	Yes
<i>Falco subniger</i>	Black Falcon	Yes
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Yes
<i>Glossopsitta pusilla</i>	Little Lorikeet	Yes
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Foraging)	Yes
<i>Hieraaetus morphnoides</i>	Little Eagle (Foraging)	Yes
<i>Hirundapus caudacutus</i>	White-throated Needletail	Yes
<i>Irediparra gallinacea</i>	Comb-crested Jacana	Yes
<i>Ixobrychus flavicollis</i>	Black Bittern	Yes
<i>Lathamus discolor</i>	Swift Parrot (Foraging)	Yes
<i>Limicola falcinellus</i>	Broad-billed Sandpiper (Foraging)	Yes
<i>Limosa limosa</i>	Black-tailed Godwit (Foraging)	Yes
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Yes
<i>Miniopterus australis</i>	Little Bent-winged Bat (Foraging)	Yes
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Foraging)	Yes
<i>Neophema pulchella</i>	Turquoise Parrot	Yes
<i>Ninox connivens</i>	Barking Owl (Foraging)	Yes
<i>Oxyura australis</i>	Blue-billed Duck	Yes
<i>Pandion cristatus</i>	Eastern Osprey (Foraging)	Yes
<i>Phoniscus papuensis</i>	Golden-tipped Bat	Yes
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	Yes
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox (Foraging)	Yes
<i>Rostratula australis</i>	Australian Painted Snipe	Yes
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Yes
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Yes

Scientific name	Common name	Confirmed Predicted Species
<i>Stictonetta naevosa</i>	Freckled Duck	Yes
<i>Xenus cinereus</i>	Terek Sandpiper (Foraging)	Yes

4.1.5 Species Credit Species

Step 1: Identify threatened species for assessment.

A preliminary list of Candidate Species Credit species for the Development Site was reviewed in the BAM calculator. Species Credits pertain to threatened species that cannot be reliably predicted by the vegetation type present. A Candidate Species Report is presented within **Appendix E**.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land

The potential for Candidate Species Credit species to occur on the Development Site was assessed according to species-specific habitat requirements as detailed in **Table 7**.

Step 3: Identify candidate species credit species for further assessment.

A number of Species Credit species were excluded as Candidate species due to their geographic or habitat constraints not being met by the Study Area, and no further assessment of these species was required (**Table 7**). The Swift Parrot was retained as a candidate species due to the presence of mapped important habitat in the western portion of the Study Area. [REDACTED]

[REDACTED]

Table 7 Species Credit Species

Scientific name	Common name	Confirmed Candidate Species	Justification
<i>Anthochaera phrygia</i>	Regent Honeyeater	No	Not mapped as Important Area
<i>Calidris ferruginea</i>	Curlew Sandpiper	No	Not mapped as Migratory Shorebird Habitat
<i>Calidris tenuirostris</i>	Great Knot (Foraging)	No	Not mapped as Migratory Shorebird Habitat
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	No	Absence of Cliffs within the Study Area The Study Area is not within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels.
<i>Corunastylis sp. Charmhaven (NSW896673)</i>	Corunastylis sp. Charmhaven (NSW896673)	No	Habitat Degraded
<i>Genoplesium insigne</i>	Variable Midge Orchid	No	Habitat Degraded
<i>Lathamus discolor</i>	Swift Parrot	Yes	Mapped as Important Habitat
<i>Miniopterus australis</i>	Little Bent-winged Bat	No	Habitat constraints – no potential breeding habitat within 200m of the Study Area
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	No	Habitat constraints – no potential breeding habitat within 200m of the Study Area
<i>Petalura gigantea</i>	Giant Dragonfly	No	Habitat Degraded
██████	████████████████	██	██

4.1.6 Candidate Species – Further Justification

In accordance with Section 5.2.3 of the BAM (DPIE 2020a) a candidate species credit species is considered unlikely to occur on the subject land (or specific vegetation zones) if one of the following applies:

(a) After carrying out a field assessment:

- a. the assessor determines that microhabitats required by a species are absent from the subject land (or specific vegetation zone). The assessor must include a description of the microhabitats assessed as being required by the species in the BAR. This must be based on evidence such as published literature, or
- b. the assessor determines that the habitat constraints or microhabitats are degraded to the point that the species is unlikely to use the subject land (or specific vegetation zones).

(b) An expert report (prepared as per Box 3) states that the species is unlikely to be present on the subject land or specific vegetation zones.

A candidate species credit species that does not have suitable habitat as per (2.a.) [point 'a' above] or (2.b.) [point 'b' above] does not require further assessment (BAM 2020a).

[REDACTED]

4.2 Threatened Species Surveys

Step 4: Determine presence or absence of candidate species credit species.

4.2.1 Threatened Flora Surveys

In accordance with Section 3.3 of the *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020h), surveys targeted the most suitable habitat within the Study Area for candidate threatened flora and fauna species, using information collected from the TBDC (DPE, 2023c), the DPE threatened species profile website (DPE, 2023d) and knowledge other threatened species within the site's locality.

[REDACTED]

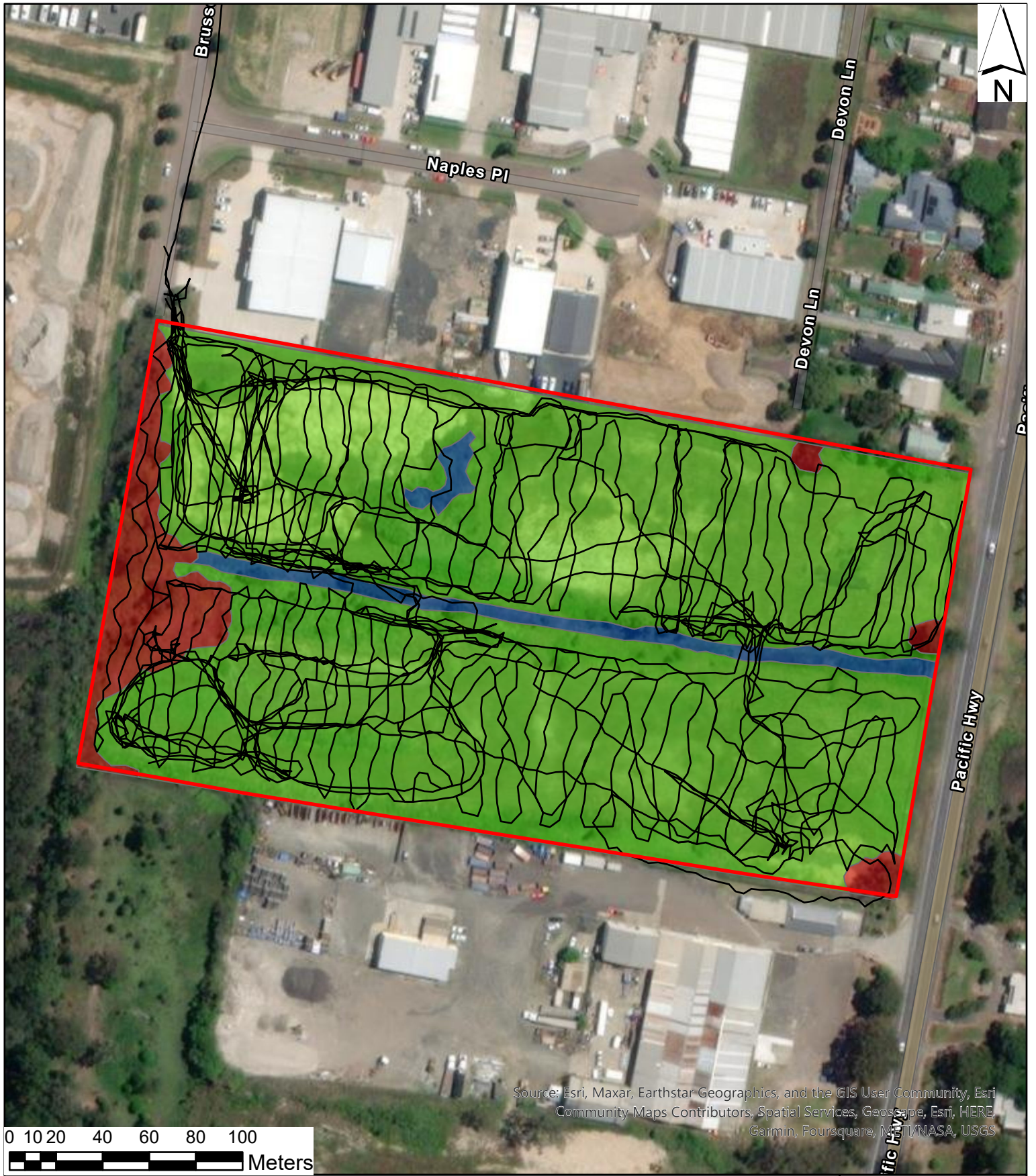


Figure 7 - Threatened Flora Survey Effort



Legend

- Study Area (Lot 1212, DP 818944)
- Threatened Flora Survey Tracks (September - October 2022)

Plant Community Types and Vegetation Zones

- Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)
- PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)
- PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

4.2.2 Fauna Survey Methods

Diurnal Fauna Surveys

Diurnal Fauna Surveys were conducted within the Study Area on 14/11/22 and 15/11/22. All fauna species, including birds, mammals and reptiles were recorded opportunistically. Due to a general lack of native vegetation within the site, and a lack of key habitat features such as hollow-bearing trees or habitat logs, targeted surveys for diurnal fauna species were not conducted.

Arboreal Mammals

Spotlighting surveys were conducted within the Study Area on 14/11/22 and 15/11/22 (**Figure 8**). Call playback surveys were completed during spotlighting through the broadcast of recorded calls through a megaphone to attract individuals or to incite a response. After an initial listening period of 15 minutes calls were broadcast for 5 minutes. Directly after the final broadcast, a quiet listening period of 5 minutes was conducted followed by 1-2 minutes of stationary spotlighting.

One Koala scat survey (Spot Assessment Technique – SAT) (as per Phillips and Callaghan, 2011) was undertaken in an area of the site containing listed Swamp Mahogany (*Eucalyptus robusta*), which is a Koala feed tree, listed under the Biodiversity & Conservation SEPP 2021 – Chapter 4, Schedule 3. An assessment discussing impacts to the Koala and Koala habitat is presented in **Section 7.3**.

Amphibians and Reptiles

Targeted nocturnal amphibian surveys were carried out within suitable locations within the Study Area on 14/11/22 and 15/11/22 following as per the methods described in the *NSW Survey Guide for Threatened Frogs* (DPIE 2020g). Targeted amphibian surveys involved the completion of nocturnal aural-visual surveys along a transect through available breeding habitat. Surveys involved active searches inspecting of emergent vegetation with a spotlight or head torch, with listening points positioned within suitable habitat. Adult frogs encountered were identified by visual confirmation or by their distinct advertisement calls.

4.2.3 Fauna Survey Results

A total of 15 fauna species were detected within the Study Area during field surveys (**Appendix C**). This includes nine (9) bird species and six (6) amphibian species. All of the fauna species detected were common species that are known to be well represented within the locality. No threatened fauna species were detected.



Figure 8 - Threatened Fauna Survey Effort



Legend

Study Area (Lot 1212, DP 818944)

— Nocturnal Fauna Survey Tracks (14-15/11/22)

+ Koala SAT

Plant Community Types and Vegetation Zones

Exotic Vegetation (Vegetation Zone 01 - 4.20 hectares)

PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark Swamp Forest on Coastal Lowlands of the Central Coast (Vegetation Zone 02 - Regenerating - 0.33 ha)

PCT 1737 - Typha Rushland (Vegetation Zone 03 - Wetland - 0.17 ha)

4.3 Identified Threatened Species

Step 5: Determine the area or count, and location of suitable habitat for Species Credit species and Step 6: Determine the habitat condition within the species polygon for species assessed by area.

[Redacted content]

5 Avoiding and Minimising Impacts

5.1 Native Vegetation

All areas of native vegetation within the Study Area are proposed to be removed. Due to the limited extent of native vegetation, its low condition and lack of key habitat features such as hollow-bearing trees or habitat logs, removal of the vegetation is likely to have a negligible impact.

5.2 Threatened Species

[Redacted content]

5.3 Impacts on Native Vegetation

All areas of native vegetation within the Study Area will be impacted by the proposed development. A summary of these impacts is presented in **Table 9**.

Table 9 Impacts on Native Vegetation

Veg Zone	PCT	Condition class	Study Area (ha)	Current VI Score	Future VI Score	Impact (ha)
1	1718	Cleared	4.20	2.4	0	4.20
2	1718	Moderate	0.32	34.0	0	0.33
3	1737	Moderate	0.17	15.7	0	0.17
Total						4.70

5.4 Impacts on Threatened Species

[Redacted text block]

Impacts to areas mapped as important habitat for the Swift Parrot are shown in **Table 11**.

[Redacted text]

[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
					[Redacted]

Table 11 Impacts to Swift Parrot Important Habitat

Veg Zone	PCT	Condition class	Study Area	Habitat Score	Impact
1	1718	Cleared	4.20	2.4	0.03
2	1718	Moderate	0.28	34.0	0.12
3	1737	Moderate	0.17	15.7	-
Total					0.15

5.5 Indirect Impacts

Potential indirect impacts associated with the project include:

- Increased weed invasion and potential spread or introduction of pathogens from the site to adjacent vegetation
- Reduced viability of adjoining habitats due to increased noise, vibration, dust or light spill during the construction phase
- Runoff causing erosion, sedimentation, and the pollution of adjacent and retained habitats.

Mitigation measures to reduce the potential for these impacts are detailed in **Section 5.7**.

5.6 Prescribed Biodiversity Impacts

The following are prescribed impacts which need to be considered as per Section 8.3 of the BAM (DPIE 2020a).

Impacts of the development on the habitat of threatened species or ecological communities associated with significant geological features, human made structure or non-native vegetation.

The proposed development will not result in impacts to human-made structures. [REDACTED]

Impacts of the development on the connectivity of different habitat which facilitates movement of threatened species.

The vegetation within the Study Area is highly fragmented and is unlikely to form part of a locally important habitat corridor. Habitat connectivity through the Study Area will be largely unaffected by the proposed development.

Impact of the development on movement of threatened species that maintains their life cycle.

As discussed above, the proposed development would have limited impacts on the movement of threatened species in the local area. While areas of native vegetation would be removed, movement corridors and higher quality vegetation (retained vegetation) within the locality will be unaffected.

Impacts of the development on water quality, bodies and hydrological processes that sustain threatened species or ecological communities.

No mapped watercourses occur within or adjacent to the Study Area. Mitigation measures have been provided to reduce the potential for indirect impacts to downstream aquatic habitats.

Impact of wind turbine strikes on protected animals.

Not applicable to the current application.

Impacts of vehicle strikes on threatened species or on animals that are part of a TEC.

Given the nature of the proposed development (construction of a subdivision) it is likely that there will be an increase in vehicle movement within proximity to the Study Area. However, separation of the proposed development and areas of vegetation to be retained will ensure impacts (such as vehicle strikes) during operation will be minimised. Measures to minimise impacts of vehicle movements during the construction phase are outlined in **Section 5.7**.

5.7 Mitigation Measures

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

5.7.2 Further Mitigation Measures

The mitigation measures outlined in **Table 12** are proposed to minimise potential environmental impacts associated with the proposed development.

Table 12 Mitigation Measures.

Impact	Action and Outcome	Responsibility	Timing
Direct impacts			
Clearing of native vegetation	<ul style="list-style-type: none"> Avoid and minimise clearing impacts to native vegetation where possible. Clearly delineate the boundaries of the Development Site and exclusion areas to prevent any unnecessary clearing beyond its extent. This includes the installation of appropriate fencing along the eastern extent of the Development Site. Fencing should prohibit entry into the retained vegetation area and minimise indirect impacts during construction such as the movement of dust and rubbish into adjacent habitat. Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in close proximity (five m) to, areas of native vegetation retained under the proposed development. Appropriate signage such as ‘no go zone’ or ‘environmental protection area’ should be installed surrounding the area of retained vegetation. Clearly identify and communicate the location of any ‘no go zones’ in site inductions. Tree protection measures will be implemented to protect retained trees surrounding the Development Site. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009). 	Construction site manager	Prior to and during vegetation clearing
Impacts to surface and groundwater quality and quantity due to sediment run-	<ul style="list-style-type: none"> Source controls such as sediment fences, mulching and jute matting will be used where appropriate. Site-based vehicles will carry spill kits. 	Construction site manager	During vegetation clearing, construction and operation

Impact	Action and Outcome	Responsibility	Timing
off and/or contaminant runoff	<ul style="list-style-type: none"> Erosion and sediment control will be required for the development in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction. Limit the use of pesticides in the Development Site to reduce the potential risk of contamination. 		
Vehicle collision with fauna	<ul style="list-style-type: none"> Speed limits within the Development Site should be limited to 40 km/hr. This limit should be clearly signed at all entry points to site. The Development Site should be separated from vegetated areas throughout the construction and operational phase. This separation should be achieved through physical barriers including fencing and appropriate signage. 	Construction site manager	During construction and operation
Indirect Impacts			
Transfer of weeds and pathogens to and from site	<ul style="list-style-type: none"> The fungal pathogens <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>) can have devastating impacts on native plant communities and inhabiting fauna if not properly managed. Appropriate wash down facilities will be available to clean vehicles and equipment prior to arrival on-site and prior to departure. Ensure soil and seed material are not transferred by vehicles or machinery. 	Construction site manager	During vegetation clearing, construction, and operation
Noise, vibration, lighting, waste, and air pollution impacts to adjacent sensitive habitat areas	<ul style="list-style-type: none"> Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. Impacts from construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on-site during construction. 	Construction site manager	During construction and operation

Impact	Action and Outcome	Responsibility	Timing
	<ul style="list-style-type: none"> • Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation pre, during and post construction • Fence sensitive areas to delineate 'no go' zones. • Levels of lighting during construction will be reduced to a minimal level and directed away from retained vegetation areas to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. • Lighting design should be in accordance with Appendix A of the National Light Pollution Guidelines for Wildlife (DEE 2020) and the Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting. • Noise minimization practices. • Dust control measures - covering loads, amending operations under excessive wind conditions, use of water tankers to control dust, rehabilitation of surfaces with vegetation and washing of truck wheels when entering the site. 		

6 Impact Summary

6.1 Serious and Irreversible Impacts

Two threatened species at risk of Serious and Irreversible Impact (SAII) are relevant to the assessment [redacted] and important habitat for the Swift Parrot occurs near the western boundary. SAII assessments for these species are presented respectively in **Table 13** and **Table 14**.

Table 13 SAII Assessment – [redacted]

Criteria	Comments
1. Impact Avoidance	
<i>What actions and measures were taken to avoid direct and indirect impacts on the species at risk of an SAII?</i>	[redacted] [redacted]
2. Current Population	
<i>Evidence of rapid decline</i>	[redacted] [redacted] [redacted] [redacted] [redacted]

Criteria	Comments
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
<i>Evidence of small population size</i>	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
	[Redacted]
<i>Evidence of limited geographic range</i>	[Redacted]
	[Redacted]

Criteria	Comments
	<p>[Redacted]</p>
<i>Evidence that the species is unlikely to respond to management</i>	<ul style="list-style-type: none">• [Redacted]

3. Impacts of the proposal on the SAI species

Impact on the species' population
i) *Estimate of the number of individuals present in the subpopulation on the subject land and as a percentage of the total NSW population*

[Redacted]

Criteria	Comments
<p>ii) an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or</p> <p>iii) if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>
<p>Impact on geographic range</p> <p>i) the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW</p> <p>ii) the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted.</p> <p>ii) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species</p> <p>iv) to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation,</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>

Criteria	Comments
<i>increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.</i>	
4. New Information	
<i>The assessor may also provide new information that can be used to demonstrate that the principle identifying the species as at risk of an SAI, is inaccurate.</i>	Not applicable.
Summary	
[Redacted]	
[Redacted]	
[Redacted]	
[Redacted]	
[Redacted]	
[Redacted]	
[Redacted]	

Table 14 SAI Assessment – Swift Parrot

Criteria	Comments
1. Impact Avoidance	
<i>What actions and measures were taken to avoid direct and indirect impacts on the species at risk of an SAI?</i>	The area of Swift Parrot habitat to be impacted by the proposed development is comprised of a small area of low condition vegetation with few regenerating eucalypts (Swamp Mahogany). Areas of mapped habitat reflect the BAM Important Habitat Mapping for the species. The habitat is likely to be of low importance as foraging habitat to the Swift Parrot; therefore, avoidance is not proposed. While not necessarily avoided, large area of BAM Important Habitat Mapping exists to the north-west (Watanobbi) and the south (in proximity to Wyong Golf Course). These areas are concentrated around or in proximity to low-lying swampy areas with remnant vegetation (likely swamp sclerophyll forest) which provide abundant foraging resources for the species. BAM Important Habitat Mapping is buffered off areas where Swift Parrots have been detected in multiple years or in significant numbers. The Study Area is on the outer

Criteria	Comments
	<p>extremity of this buffered area and is unlikely to be an important resource for the species.</p> <p>Mitigation measures will be implemented to ensure that indirect impacts to the species do not occur during the construction and operational phases of the project. These would include but are not limited to the following:</p> <ul style="list-style-type: none"> • Delineation of the Development Site to ensure that areas of native vegetation occurring outside the site are not impacted during the construction phase. • Best practice erosion and sediment control measures.
2. Current Population	
<i>Evidence of rapid decline</i>	<p>The Swift Parrot is a migratory species that breeds in Tasmania during the Australian summer. The species then migrates north to mainland Australia for the winter. It is estimated that the population contains around 2,000 mature individuals. Population analysis by Heinsohn et al. (2015) predicts that due to various threats, the population will decline by an average of 87% (79-95%) over three generations (12-18 years). Various threats to the population have been identified:</p> <ul style="list-style-type: none"> • Nest predation by Sugar Gliders (<i>Petaurus breviceps</i>) introduced to Tasmania poses a severe threat (Stojakovic et al. 2014) and is estimated to cause severe declines over the next three generations (Heinsohn et al. 2015). On mainland Tasmania almost 79% Swift Parrot nests were predated and 65% of adult females were killed by Sugar Gliders. • Habitat loss and alteration within breeding and drought refuge habitats remains a key threat. • Furthermore, Climate Change threatens to alter habitat phenology and climatic conditions such that habitat availability may be significantly reduced.
<i>Evidence of small population size</i>	<p>Significant declines in the Swift Parrot population were observed in the late 1980s to mid-1990s. The estimated population size of the Swift Parrot ranges from 1000 – 2499 individuals (Heinsohn et al. 2015).</p>
<i>Evidence of limited geographic range</i>	<p>On the mainland of Australia, the Swift Parrot forages in eucalypt forest and woodlands, mainly box-ironbark habitats on the inland slopes of the Great Dividing Range and in coastal forests. Critical food resources occur within this habitat, principally nectar from prolific flowering species. The extent of occurrence, including breeding and resident areas, is approximately 57 000 kilometres square (TSSC 2016).</p> <p>The estimated area of occupancy for the Swift Parrot ranges from 18.5 to 355 kilometres square. Models predict warmer drier conditions in south-east Tasmania which will increase the frequency of fire in the breeding habitat. Over 50% of the original grassy <i>E. globulus</i> forest in Tasmania has</p>

Criteria	Comments
	been cleared (Brereton et al. 2004). Selective logging has resulted in the removal of larger trees from the remaining forest patches.
<i>Evidence that the species is unlikely to respond to management</i>	<p>The availability and flowering of the feed trees can severely affect the availability of breeding habitat for the Swift Parrot (Tzaros et al. 2009). Most breeding birds are found in remnant forest patches of less than 0.01 square kilometers. Recovery efforts have focused on habitat improvement and attempts to reduce the impacts of Sugar Gliders, these are beneficial but will need to be amplified to reverse negative population trends.</p> <p>Furthermore, the species appears to be very susceptible to Allee effects, where survival and reproductive success decline with decreasing population density. The Swift Parrot nests in hollows of both live and dead eucalypt trees. The Swift Parrot is threatened by disturbance, Psittacine beak and feather disease and also illegal bird capture and trade (Saunders 2007).</p> <p>Based on the number of threats to the Swift Parrot, the species is unlikely to respond to management.</p>

3. Impacts of the proposal on the SAI species

Impact on the species' population

i) Estimate of the number of individuals present in the subpopulation on the subject land and as a percentage of the total NSW population

ii) an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, or

iii) if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.

No individuals of the Swift Parrot were recorded within the Study Area during opportunistic fauna species. An estimate of the number of individuals within the Project area as a percentage of the total NSW population is not proposed. Very few records exist of the species with the locality. The closest records are approx. 700m to the south-east (behind Wyong Hockey Complex). Tuggerawong Public School and Wadalba Water Tower are the next closest locations where the species has been recorded. As such, it can be concluded that the species sporadically forages (according to flowering trees) as they move up the NSW coast.

As the Swift Parrot breeds in Tasmania, the proposed development will not impact breeding habitat. A total of 0.33 hectares of suitable foraging habitat for the species occurs within the Project area. All of this vegetation will require removal for the proposed development.

Impact on geographic range

i) the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW

ii) the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but

The Project would affect some suitable habitat, but no individuals of the species would be directly impacted. Movement corridors within the locality would remain intact, where the Project would not contribute further to fragmentation.

The Swift Parrot is a highly mobile species, which migrates annually from Tasmania. During construction, the Project would remove 0.33 hectares of suitable foraging habitat. The species demonstrate high site fidelity and

Criteria	Comments
<p><i>no individuals of the species will be directly impacted.</i></p> <p><i>ii) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species</i></p> <p><i>iv) to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.</i></p>	<p>are known to regularly return to the same sites, however, they often move in repose to feeding resources.</p> <p>Due to the low condition and isolated location of the foraging habitat within the Development Site, the proposed development is unlikely to contribute greatly to fragmentation of habitat.</p>

4. New Information

<p><i>The assessor may also provide new information that can be used to demonstrate that the principle identifying the species as at risk of an SAll, is inaccurate.</i></p>	<p>Not applicable.</p>
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Summary

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that the habitat to be removed is important to the long-term survival of the Swift Parrot.

6.2 Impacts Not Requiring Offsets

The proposed development will impact 4.2 ha of cleared land (PCT 1718) and 0.17 ha of wetland vegetation (PCT 1737). Due to the low vegetation integrity of this vegetation, Ecosystem Credits are not required. [REDACTED]

Mitigation measures have been presented to reduce the potential for indirect impacts to areas of retained native vegetation. No offsets have been generated for indirect impacts.

6.3 Impacts on Native Vegetation

This section provides an assessment of the direct impacts to native vegetation requiring offsetting, and those not requiring offsets in accordance with Section 10.1 of the BAM (DPIE 2020a).

In accordance with the BAM (Section 9.2.1 [DPIE 2020a]) assessors must determine the offset obligation for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity (VI) score of:

- ≥ 15 , where the PCT is representative of an EEC or a CEEC
- ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.
- ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

All areas within the Study Area have been included in the current offset calculations. A summary of the impacts on native vegetation and the required ecosystem credits is provided in **Table 15**.

Table 15 Summary of Ecosystem Credit Requirements

Veg Zone	PCT	Condition class	Study Area (ha)	Current VI Score	Future VI Score	Credit Requirements
1	1718	Cleared	4.20	2.4	0	0
2	1718	Moderate	0.33	34.0	0	6
3	1737	Moderate	0.17	15.7	0	0

6.4 Impacts on Threatened Species

This section provides an assessment of the direct impacts to threatened species requiring offsetting, and those not requiring offsets in accordance with BAM.

[Redacted text block]

Table 16

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

An area of important habitat for the Swift Parrot in the western portion of the Study Area will be impacted by the proposed development. A summary of the species credits required to offset residual impacts is provided in **Table 17**. The species polygon for the Swift Parrot is presented on **Figure 12**.

Table 17 Summary of Swift Parrot Species Credit Requirements

Veg Zone	PCT	Condition class	Unit of Measure Area (ha)	Habitat Score	Biodiversity Risk Weighting	Credit Requirements
1	1718	Cleared	0.03	2.4	3	1
2	1718	Moderate	0.12	34.0	3	3



Figure 12 - Species Polygon - Swift Parrot



Legend

Study Area (Lot 1212, DP 818944)

Species Polygon - Swift Parrot

Plant Community Type (PCT)

Exotic Grassland / Cleared (VZ01 - 4.20 ha)

PCT 1718 - Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast (VZ02 - Regenerating - 0.28 ha)

PCT 1737 - Typha Rushland (VZ03 - Wetland - 0.17)

Isolated Native Trees (0.04 ha)

7 Legislative Review

7.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act requires that developments or undertakings that are likely to have a significant impact on MNES be referred for a determination as to whether they are a controlled action which requires approval under the EPBC Act (Section 1.5.1). Of the nine MNES listed under the Act, the following are considered relevant to the Project:

- [REDACTED] ([REDACTED])
- Swift Parrot (*Lathamus discolor*)
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.

Assessments of significance have been undertaken in accordance with the EPBC Act Significant Impact Guidelines (DOE 2013) in **Appendix F**.

[REDACTED]

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that the habitat to be removed is important to the long-term survival of the Swift Parrot.

Although the extent of the *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* within the site will be removed as part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

7.2 Biosecurity Act

Species which require control prior to and post construction of the Project to ensure they are not spread due to construction and clearing works, include the high threat species listed in **Table 18**.

Table 18 Weed species requiring control within the Study Area.

Family	Scientific Name	Common Name	Weeds of National Significance (WONS)	Priority weeds (Biosecurity Act)	High Threat Weeds (BAM)
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	Yes	Yes	Yes
Poaceae	<i>Cortaderia selloana</i>	Pampas Grass	-	Yes	Yes
Oleaceae	<i>Ligustrum lucidum</i>	Large-leaved Privet	Yes	Yes	Yes
Rosaceae	<i>Rubus anglocandicans</i>	Blackberry	Yes	Yes	Yes
Verbenaceae	<i>Lantana camara</i>	Lantana	Yes	Yes	Yes

7.3 Koala Habitat Protection SEPP 2021

The Study Area is located within the Central Coast LGA, which is listed within Schedule 1 of Chapter 4 of the Biodiversity and Conservation SEPP (Koala Habitat Protection 2021). Chapter 4 of the Biodiversity and Conservation SEPP was therefore deemed applicable to the proposal. As such, an assessment of Koala habitat suitability was conducted in accordance with the SEPP including the determination of 'Highly Suitable Koala Habitat' and 'Core Koala Habitat' within the Study Area. These are defined as the following:

- **Highly Suitable Koala Habitat** – Where 15% or greater of the total number of trees within any PCT are the regionally relevant species of those listed in Schedule 2 of the Koala SEPP 2021, the site meets the definition of highly suitable Koala habitat.
- **Core Koala Habitat** – is defined as:
 - a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
 - b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years. Historical koala occupation of the site area is determined by considering koala records within the last 18 years, within the following maximum distances from the external boundary of the site area:
 - i. 2.5 km of the site (for North Coast, Central Coast, Central Southern Tablelands, South Coast KMAs)
 - ii. Five km of the site (for Darling Riverine Plains, Far West, North West Slopes, Riverina, Northern Tablelands KMAs).

An assessment of the presence of ‘Highly Suitable Koala Habitat’ and ‘Core Koala Habitat’ within the Study Area in accordance with Chapter 4 of the SEPP is presented below.

Presence of Highly Suitable Koala Habitat

Koala use tree species listed under Schedule 3 of the SEPP (Central Coast Koala Management Area) were identified within the Study Area, including *Eucalyptus robusta* (Swamp Mahogany). This species constitutes more than 15% of the total number of trees within the regenerating areas of the site (Vegetation Zone 2 – PCT 1718). As such, this vegetation zones represents “highly suitable habitat” under the SEPP.

Presence of Core Koala Habitat

No evidence of a Koala population within the Study Area was found during the assessment. The nearest record of Koalas to the site was recorded to the west at Watanobbi in 1994. No records of Koalas within the past 18 years occur within 2.5 km of the Study Area. Therefore, the habitats within the Study Area do not meet the definition of ‘Core Koala Habitat’ under the SEPP.

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Appendix A – Threatened Species Database Search

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Angophora inopina</i>				This species is endemic to the central coast region of NSW and is known to occur in four main vegetation communities: <ul style="list-style-type: none"> <i>Eucalyptus haemastoma</i> / <i>Corymbia gummifera</i> / <i>Angophora inopina</i> woodland / forest. <i>Hakea teretifolia</i> / <i>Banksia oblongifolia</i> wet heath <i>Eucalyptus resinifera</i> / <i>Melaleuca sieberi</i> / <i>Angophora inopina</i> sedge / woodland. <i>Eucalyptus capitellata</i> / <i>Corymbia gummifera</i> / <i>Angophora inopina</i> woodland / forest. Flowering generally poor and sporadic.		Habitat is considered to be too degraded.
Charmhaven Apple	V	V	2569		Nil	Not recorded during site assessment.
<i>Caladenia tessellata</i>	E1,P,2	V	2	Occurs from Central Coast NSW to southern VIC. Mostly coastal but extends inland to Braidwood in southern NSW. In NSW grows in grassy dry sclerophyll woodland on clay loam or sandy soils, and less commonly in heathland on sandy loam soils.	Low	Habitat is considered to be too degraded. Few records within locality. Not recorded during site assessment.
<i>Callistemon linearifolius</i>	V,3	-	5	This shrub grows up to 3-4 m tall, with red flowers that are clustered into the typical "bottlebrushes". The species grows in dry sclerophyll forest on the coast and adjacent ranges.	Low	Habitat is considered to be too degraded. Few records within locality. Not recorded during site assessment.
Netted Bottle Brush						
<i>Corunastylis</i> sp. Charmhaven (NSW896673)	E1, P,2	CE	28	<i>Corunastylis</i> sp. Charmhaven (NSW896673) is currently only known from the Wyong Shire of NSW where it is restricted to a few locations in the Charmhaven, Warnervale and Tooheys Road (Bushells Ridge) areas. It occurs within low woodland to heathland with a shrubby understorey and ground layer. Dominants include Black She-oak (<i>Allocasuarina littoralis</i>), Prickly Tea-tree (<i>Leptospermum juniperinum</i>), Prickly-leaved Paperbark (<i>Melaleuca nodosa</i>), Narrow-leaved Bottlebrush (<i>Callistemon linearis</i>) and Zig-zag Bog-rush (<i>Schoenus brevifolius</i>).	Low	Habitat is considered to be too degraded. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Cryptostylis hunteriana</i>	V,P,2	V	3	The species occurs in coastal areas from East Gippsland to southern Queensland. Habitat preferences for this species are not well defined, however it is known to grow in coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest. Prefers open areas in the understorey and is often found in association with <i>Cryptostylis subulata</i> and <i>Cryptostylis erecta</i> .	Low	Habitat is considered to be too degraded.
Leafless Tongue Orchid						Not recorded during site assessment.
<i>Eucalyptus camfieldii</i>						Habitat is considered to be too degraded.
Camfield's Stringybark	V	V	10	Occurs from Raymond Terrace to Waterfall, with populations known from Norah Head (Tuggerah Lakes), Peats Ridge, Mt Colah, Elvina Bay Trail (West Head), Terrey Hills, Killara, North Head, Menai and the Royal NP. Occurs in exposed situations on sandstone plateaus, ridges and slopes near the coast, often on the boundary of tall coastal heaths or low open woodland. It grows in shallow sandy soils overlying Hawkesbury sandstone.	Nil	Not recorded during site assessment.
<i>Eucalyptus parramattensis subsp. decadens</i>	V	V	112	Generally occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant.	Nil	Habitat is considered to be too degraded.
-						Not recorded during site assessment.
<i>Genoplesium insigne</i>				Appears to be associated with PCT 1636 Scribbly Gum – Red Bloodwood – <i>Angophora inopina</i> (not always present) heathy woodland on lowlands of the Central Coast and variations containing <i>Angophora costata</i> (Smooth-barked Apple). Grows in patches of <i>Themeda triandra</i> (Kangaroo Grass), which can be ephemeral. Other associated species include, but are not limited to, <i>Mirbelia speciosa</i> , <i>Ptilothrix deusta</i> , <i>Leptospermum trinervium</i> and <i>Leptospermum juniperinum</i> in wet (seasonal) heath settings, <i>Banksia spinulosa</i> and <i>Xanthorrhoea latifolia</i> , and <i>Xanthorrhoea media</i> .	Low	Habitat is considered to be too degraded.
Variable Midge Orchid	E4A, P	CE	24			Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flower Grevillea	V	V	114	The species distribution is between Moss Vale/Bargo and the lower Hunter Valley, with most occurrences in Appin, Wedderburn, Picton and Bargo. The habitat for the species is broad including heath, shrubby woodland and open forest on light clay or sandy soils, and often in disturbed areas such as on the fringes of tracks.	Nil	Habitat is considered to be too degraded. Not recorded during site assessment.
<i>Maundia triglochinos</i>	V	-	17	Restricted to coastal NSW and extending into southern Queensland. The current southern limit is Wyong; former sites around Sydney are now extinct. Grows in swamps, lagoons, dams, channels, creeks or shallow freshwater 30 - 60 cm deep on heavy clay, low nutrients.	Moderate	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
<i>Melaleuca biconvexa</i> Biconvex Paperbark	V	V	444	Scattered, disjunct populations in coastal areas from Jervis Bay to Port Macquarie, with most populations in the Gosford-Wyong areas. Grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Nil	Habitat is considered to be too degraded. Not recorded during site assessment.
<i>Prostanthera askania</i> Tranquility Mint-bush	E1	E	1	Occurs over a very restricted geographic range (of less than 12 km) in the upper reaches of creeks that flow into Tuggerah Lake or Brisbane Water within the Wyong and Gosford local government areas. Eight populations are known from the catchments of Ourimbah Creek, Narara Creek, Dog Trap Gully, Chittaway Creek and Berkeley Creek. A further two populations are known from the Erina Creek-Fires Creek catchment. The species may also have occurred in West Gosford. Occurs adjacent to, but not immediately in, drainage lines on flat to moderately steep slopes formed on Narrabeen sandstone and alluvial soils derived from it. Occurs in moist sclerophyll forest and warm temperate rainforest communities, and the ecotone between them. These communities are generally tall forests with a mesic understorey; Sydney Blue Gum Eucalyptus saligna and Turpentine Syncarpia glomulifera are usually present, though canopy species present can be highly variable.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Rhodamnia rubescens</i>	E4A	-	4	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
Scrub Turpentine						
<i>Rhodomyrtus psidioides</i>	E4A	-	2	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
Native Guava						
<i>Rutidosia heterogama</i>	V	V	274	Small perennial herb of the daisy family to 30cm. Grows in heath on sandy soils and moist areas in open forest, and has been recorded along disturbed roadsides. The species has a scattered distribution in coastal locations between Wyong and Evans Head and on the New England Tablelands from Torrington and Ashford south to Wandsworth south-west of Glen Innes.	Low	Habitat is considered to be too degraded. Not recorded during site assessment.
Heath Wrinklewort						
<i>Syzygium paniculatum</i>	E1	V	5	The species occurs in a narrow coastal strip from Bulahdelah to Conjola State Forest. Rainforest on sandy soils or stabilised Quaternary sand dunes at low altitudes in coastal areas, often in remnant littoral or gallery	Nil	No suitable habitat within the Subject Site. Few records within the locality.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Magenta Lilly Pilly				rainforests Plants produce white flower-clusters at the end of each branch is the preferred habitat for this species. The petals are small accompanied by prominent long stamens.		Not recorded during site assessment.
<i>Tetratheca juncea</i>	V	V	77	Regarded as extinct within the Sydney area, current range from Wyong north to Bulahdelah and inland 50km to edge of Sugarloaf Range. Occurs predominately in areas of over 1000 mm annual rainfall, within dry sclerophyll forest, and sometimes heath and moist forest, with a preference for Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland.	Low	Habitat is considered to be too degraded.
Black-eyed Susan						Not recorded during site assessment.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Anthochaera phrygia</i>	E4A,P	CE	12	In NSW the species is confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Non-breeding flocks are seen occasionally in coastal areas foraging in flowering Spotted Gum and Swamp Mahogany forests. Habitat for the species includes dry open forest	Low	Foraging habitat only. Not mapped as important habitat

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Regent Honeyeater				and woodlands, particularly Box-Ironbark woodland and riparian forests of River Sheoak, with an abundance of mature trees, high canopy cover and abundance of mistletoes.		Not recorded during site assessment.
<i>Anseranas semipalmata</i>	V,P		1	The Magpie Goose is still relatively common in the Australian northern tropics, but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes.	Low	Foraging habitat only. Not mapped as important habitat. One record in the locality
Magpie Goose						Not recorded during site assessment.
<i>Artamus cyanopterus cyanopterus</i>	V,P	-	3	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Low	Foraging habitat only.
Dusky Woodswallow						Not recorded during site assessment.
<i>Burhinus grallarius</i>	E1,P		13	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	Nil	No suitable habitat within the Subject Site. Lack of woody debris.
Bush Stone-curlew						Not recorded during site assessment.
<i>Botaurus poiciloptilus</i>	E1,P	E	5	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours	Low	Broadly suitable habitat within the Subject Site.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Australasian Bittern				permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.).		Not recorded during site assessment.
<i>Calidris ferruginea</i>	E1,P	CE,C,J,K	14	The species occurs along the entire coast of NSW, particularly in the Hunter Estuary, and freshwater wetlands in the Murray-Darling Basin. Breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales can be found mainly in intertidal mudflats of sheltered coasts.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
Curlew Sandpiper						
<i>Calidris tenuirostris</i>	V,P	CE,C,J,K	1	In NSW, occurs in scattered sites along the coast to Narooma – it has been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.	Nil	No suitable habitat within the Subject Site. No records within the locality. Not recorded during site assessment.
Great Knot						
<i>Callocephalon fimbriatum</i>	E2,V,P,3	-	2	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Gang-gang Cockatoo						
<i>Calyptorhynchus lathami</i>	V,P,2	-	28	Widespread but uncommon from coast to southern tablelands and central western plains. Feeds almost exclusively on the seeds of Allocasuarina species. Prefers	Low	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Glossy Black-Cockatoo				woodland and open forests, rarely away from Allocasuarina. Roost in leafy canopy trees, preferably eucalypts, usually <1 km from feeding site. Nests in large (approx. 20 cm) hollows in trees, stumps or limbs, usually in Eucalypts.		Not recorded during site assessment.
<i>Chthonicola sagittata</i>	V,P	-	1	Within NSW most frequently reported from the hills and tablelands of the Great Dividing Range, rarely from the coast. The species inhabits a wide range of Eucalypt-dominated communities with a grassy understorey, a sparse shrub layer, often on rocky ridges or in gullies. Sedentary and requires large, relatively undisturbed remnants to persist in an area. Forages on the ground for seeds and insects, and nests in a slight hollow in the ground or at the base of low dense plants.	Low	Marginally suitable aerial foraging habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
Speckled Warbler						
<i>Circus assimilis</i>	V,P	-	14	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Low	Marginally suitable aerial foraging habitat within the Subject Site. Not recorded during site assessment.
Spotted Harrier						
<i>Daphoenositta chrysoptera</i>	V,P	-	40	Sedentary, occurs across NSW from the coast to the far west. Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Sensitive to habitat isolation and loss of structural complexity, and adversely affected by dominance of Noisy Miners. Cleared agricultural land is potentially a barrier to movement. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
Varied Sittella						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Ephippiorhynchus asiaticus</i>	E1,P	-	47	Primarily inhabits permanent freshwater wetlands and surrounding vegetation including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters. Will also forage in inter-tidal shorelines, mangrove margins and estuaries. Feeds in shallow, still water. This species breeds during summer, nesting in or near a freshwater swamp.	Nil	Broadly suitable foraging habitat within the Subject Site. Not recorded during site assessment.
Black-necked Stork						
<i>Epthianura albifrons</i>	V,P	-	2	Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
White-fronted Chat						
<i>Glossopsitta pusilla</i>	V,P	-	53	The species occurs from the coast to western slopes of the Great Dividing Range and inhabits dry, open eucalypt forests and woodlands. Occurrence is positively associated with patch size, and with components of habitat complexity including canopy cover, shrub cover, ground cover, logs, fallen branches and litter. Feed primarily on profusely-flowering eucalypts and a variety of other species including melaleucas and mistletoes. On the western slopes and tablelands <i>Eucalyptus albens</i> and <i>E. melliodora</i> are particularly important food sources for pollen and nectar respectively. Mostly nests in small (opening approx. 3cm) hollows in living, smooth-barked eucalypts, especially <i>Eucalyptus viminalis</i> , <i>E. blakelyi</i> and <i>E. dealbata</i> . Most breeding records are from the western slopes.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
Little Lorikeet						
<i>Grantiella picta</i>	V,P	V	3	The species is nomadic, occurring in low densities across most of NSW. Highest concentrations and almost all breeding occur on inland slopes of the Great Dividing Range. Habitat for the species includes Boree, Brigalow and Box Gum woodlands and Box-Ironbark forests.	Nil	No suitable habitat within the Subject Site. No records within the locality. Not recorded during site assessment.
Painted Honeyeater						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Haematopus longirostris</i> Pied Oystercatcher	E1,P	-	2	Scattered along NSW coast. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide. Nests mostly on coastal or estuarine beaches; occasionally saltmarsh or grassy areas.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	V,P	-	337	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.	Low	No suitable foraging or nesting habitat within the Subject Site. Not recorded during site assessment.
<i>Hieraaetus morphnoides</i> Little Eagle	V,P	-	20	Occurs throughout NSW except most densely forested parts of the Dividing Range escarpment. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring.	Nil	No suitable nesting habitat within the Subject Site. Not recorded during site assessment.
<i>Irediparra gallinacea</i> Comb-crested Jacana	V,P	-	2	Occurs on freshwater wetlands in northern and eastern Australia, mainly in coastal and subcoastal regions, from the north-eastern Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW. Inhabit permanent freshwater wetlands, either still or slow-flowing, with a good surface cover of floating vegetation, especially water-lilies, or fringing and aquatic vegetation.	Nil	No suitable habitat within the Subject Site. Two records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Limosa limosa</i>	V,P	C,J,K	2	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the north and south coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. It is usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. It has also been found around muddy lakes and swamps, wet fields and sewerage treatment works.	Nil	No suitable habitat within the Subject Site. Records within the locality. Not recorded during site assessment.
Black-tailed Godwit						
<i>Lophoictinia isura</i>	V,P,3	-	33	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Breeding is from July to February.	Nil	No suitable habitat within the Subject Site. Not recorded during site assessment.
Square-tailed Kite						
<i>Ninox connivens</i>	V,P,3	-	3	Occurs from coast to inland slopes and plains, though is rare in dense, wet forests east of the Great Dividing Range and sparse in higher parts of the tablelands and in the arid zone. Inhabits eucalypt woodlands, open forest, swamp woodlands, and, especially in inland areas, timber along watercourses. Roosts along creek lines in dense, tall understorey foliage (e.g. in Acacia and Casuarina), or dense eucalypt canopy. Nests in hollows of large, old eucalypts including <i>Eucalyptus camaldulensis</i> , <i>Eucalyptus albens</i> , <i>Eucalyptus polyanthemus</i> and <i>Eucalyptus blakelyi</i> . Birds and mammals important prey during breeding. Territories range from 30 to 200 hectares.	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat. Few records within the locality. Not recorded during site assessment.
Barking Owl						
<i>Ninox strenua</i>	V,P,3	-	54	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Powerful Owl				hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i> , Black She-oak <i>Allocasuarina littoralis</i> , Blackwood <i>Acacia melanoxylon</i> , Rough-barked Apple <i>Angophora floribunda</i> , Cherry Ballart <i>Exocarpus cupressiformis</i> and a number of eucalypt species.		Not recorded during site assessment.
<i>Oxyura australis</i>	V,P		3	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	Nil	No suitable habitat within the Subject Site. Few records within the locality. Not recorded during site assessment.
Blue-billed Duck						
<i>Pandion cristatus</i>	V,P,3	-	16	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Low	No suitable nesting habitat within the Subject Site. Not recorded during site assessment.
Eastern Osprey						
<i>Ptilinopus regina</i>	V,P	-	1	Occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest. Some populations are migratory in response to food availability.	Nil	No suitable habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
Rose-crowned Fruit-Dove						

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Ptilinopus superbus</i>	V,P	-	1	Occurs mainly north from NE NSW, much less common further south and largely confined to pockets of habitat south to Moruya. Vagrants occur south to VIC and TAS. Inhabits rainforest and closed forests, may also forage in eucalypt or acacia woodland with fruit-bearing trees. Nests 5-30 m above ground in rainforest/rainforest edge tree and shrub species. Part of the population migratory/nomadic.	Nil	No suitable habitat within the Subject Site. Only one record within the locality.
Superb Fruit-Dove						Not recorded during site assessment.
<i>Rostratula australis</i>	E1,P	E	6	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. The species nests on the ground amongst tall reed-like vegetation near water. Habitat for the species includes the fringes of swamps, dams and nearby marshy areas with cover of grasses, lignum, low scrub or open timber.	Nil	No suitable habitat within the Subject Site.
Australian Painted Snipe						Not recorded during site assessment.
<i>Sternula albifrons</i>	E1,P	C,J,K	1	Migrating from eastern Asia, the Little Tern is found on the north, east and south-east Australian coasts, from Shark Bay in Western Australia to the Gulf of St Vincent in South Australia. In NSW, it arrives from September to November, occurring mainly north of Sydney, with smaller numbers found south to Victoria. It breeds in spring and summer along the entire east coast from Tasmania to northern Queensland, and is seen until May, with only occasional birds seen in winter months. Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records).	Nil	No suitable habitat within the Subject Site. No records within the locality.
Little Tern						Not recorded during site assessment.
<i>Stictonetta naevosa</i>	V,P		97	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling	Nil	No suitable habitat within the Subject Site. No records within the locality.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Freckled Duck				system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.		Not recorded during site assessment.
<i>Tyto novaehollandiae</i>	V,P,3	-	21	Occurs across NSW except NW corner. Most common on the coast. Inhabits dry eucalypt woodlands from sea level to 1100 m. Roosts and breeds in large (>40cm) hollows and sometime caves in moist eucalypt forested gullies. Hunts along the edges of forests and roadsides. Home range between 500 ha and 1000 ha. Prey mostly terrestrial mammals but arboreal species may also be taken.	Low	Broadly suitable foraging habitat within the Subject Site. No suitable nesting Habitat. Not recorded during site assessment.
Masked Owl						
<i>Chalinolobus dwyeri</i>	V,P	V	5	The species occurs from the coast to the western slopes of the divide. The largest numbers of records are from sandstone escarpment country in the Sydney Basin and Hunter Valley. The species roosts in caves and mines and most commonly recorded from dry sclerophyll forests and woodlands. In southern Sydney appears to be largely restricted to the interface between sandstone escarpments and fertile valleys.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Large-eared Pied Bat						
<i>Dasyurus maculatus</i>	V,P	E	4	Found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania the species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline	Low	Broadly suitable habitat within the Subject Site, albeit highly degraded. Few records within the locality. Not recorded during site assessment.
Spotted-tailed Quoll						
<i>Falsistrellus tasmaniensis</i>	V,P	-	24	The species occurs on southeast coast and ranges. Prefers tall (>20m) and wet forest with dense understorey. Absent from small remnants, preferring continuous forest	Moderate	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Eastern False Pipistrelle				but can move through cleared landscapes and may forage in open areas. Roosts include hollow trunks of Eucalypts, underneath bark or in buildings. Forages in gaps and spaces within forest, with large foraging range (12km foraging movements recorded).		Not recorded during site assessment.
<i>Micronomus norfolkensis</i>	V,P	-	46	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Eastern Coastal Free-tailed Bat						
<i>Miniopterus australis</i>	V,P	-	41	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Little Bent-winged Bat						
<i>Miniopterus orianae oceanensis</i>	V,P	-	63	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Large Bent-winged Bat						
<i>Myotis macropus</i>	V,P	-	20	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Moderate	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
Southern Myotis						
<i>Petaurus australis</i>	V,P	V	4	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature	Low	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Yellow-bellied Glider				eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.		Not recorded during site assessment.
<i>Petaurus norfolcensis</i>	V,P		81	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
<i>Phascolarctos cinereus</i>	E2,P	E	11	Fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests feeding on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	Low	Broadly suitable habitat within the Subject Site. Not recorded during site assessment.
<i>Pteropus poliocephalus</i>	V,P	V	69	Generally this species is found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. Inhabit subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Moderate	Broadly suitable foraging habitat within the Subject Site. No roosts present. Not recorded during site assessment.
<i>Saccolaimus flaviventris</i>	V,P	-	10	Migrates from tropics to SE Aus in summer. Forages across a range of habitats including those with and without trees, from wet and dry sclerophyll forest, open woodland,	Moderate	Foraging habitat only. No breeding habitat.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
Yellow-bellied Sheathtail-bat				Acacia shrubland, mallee, grasslands and desert. Seasonal movements are unknown.		Not recorded during site assessment.
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	V,P	-	47	The species is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. Inhabits a variety of habitats from woodland to wet and dry sclerophyll forests and rainforest, also remnant paddock trees and timber-lined creeks.	Low	Foraging habitat only. No breeding habitat. Not recorded during site assessment.
<i>Vespadelus troughtoni</i> Eastern Cave Bat	V,P	-	3	Very little is known about the biology of this uncommon species. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Occasionally found along cliff-lines in wet eucalypt forest and rainforest.	Low	Broadly suitable foraging habitat within the Subject Site. One record within the locality. Not recorded during site assessment.
<i>Crinia tinnula</i> Wallum Froglet	V,P	-	36	Found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgeland and wet heathlands under leaf litter, vegetation and other debris. In NSW the species extends from north of the Queensland border south to Kurnell. Breeding occurs in colder months.	Nil	Habitat degraded and generally unsuitable. Not recorded during site assessment.
<i>Litoria aurea</i> Green and Golden Bell Frog	E1,P	V	7	Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available.	Low	Marginally suitable habitat present. Few records within the locality. Not recorded during site assessment.

Species	Status		Bionet Records	Habitat	LoO	Summary
	BC	EPBC				
<i>Litoria brevipalmata</i>						Marginally suitable habitat present. One record within the locality.
Green-thighed Frog	V, P		1	Green-thighed Frogs occur in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. It prefers wetter forests in the south of its range, but extends into drier forests in northern NSW and southern Queensland. Breeding occurs following heavy rainfall from spring to autumn, with larger temporary pools and flooded areas preferred. Frogs may aggregate around breeding sites and eggs are laid in loose clumps among waterplants, including water weeds. The larvae are free swimming. The frogs are thought to forage in leaf-litter.	Low	Not recorded during site assessment.

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Study Area was obtained from the following databases:

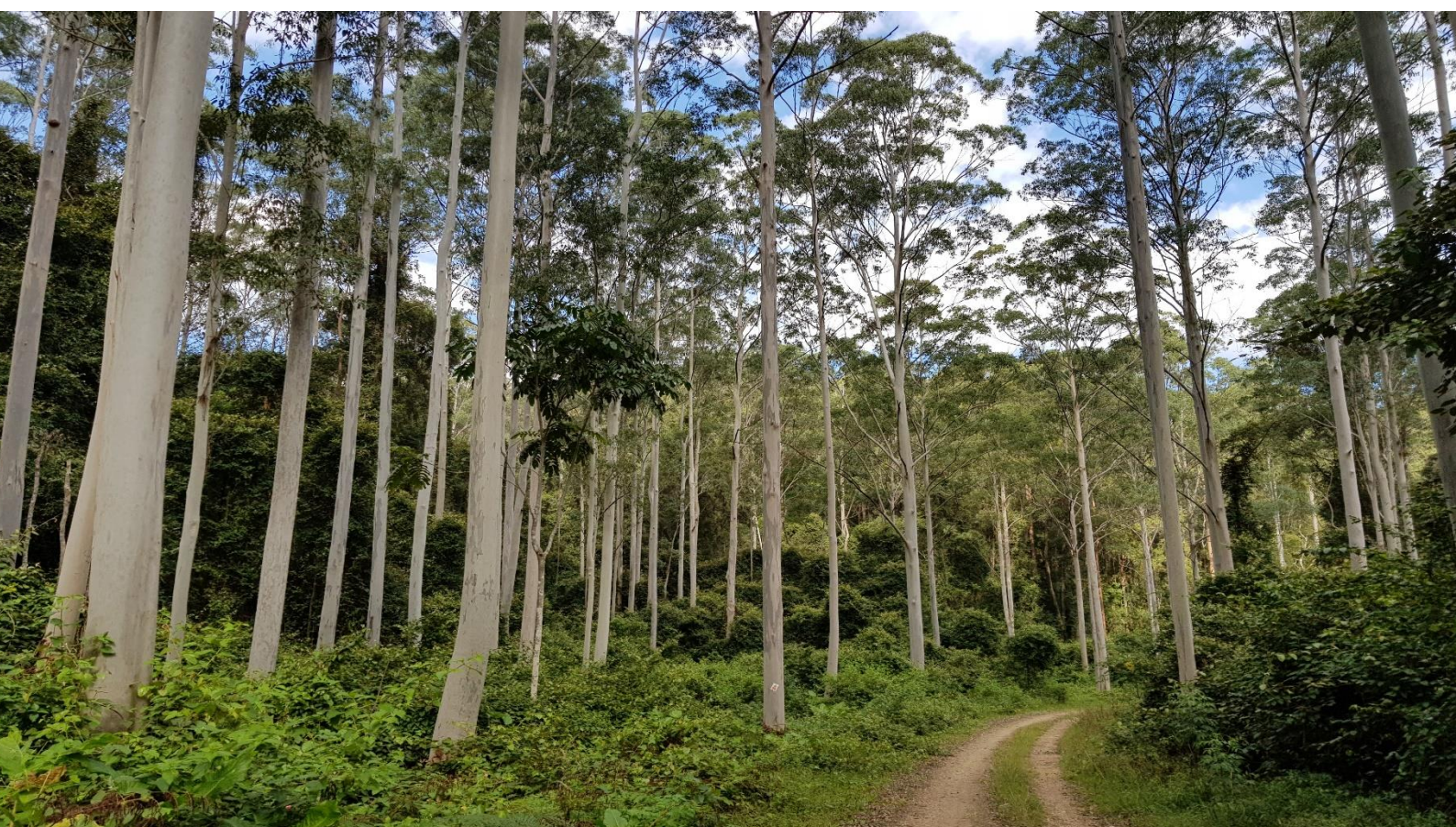
- NSW DPE BioNet Atlas: (<http://www.bionet.nsw.gov.au/>)
- Commonwealth DAWE Protected Matters search tool: (<https://www.environment.gov.au/epbc/protected-matters-search-tool>).

An assessment was then made of the likelihood of the threatened species, populations, and ecological communities reported or modelled to occur in the locality occurring within the Development Site or using the habitat within the Development Site as an essential part of a foraging range.

The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Development Site based on the habitat requirements of each species.

A brief definition of the likelihood of occurrence criteria is provided below:

- **Known** – species identified within the site during surveys
- **High** – species known from the area (DPIE BioNet Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site
- **Moderate** – species may be known from the area, potential habitat is present within the site
- **Low** – species not known from the area and/or marginal habitat is present within the site
- **Nil** – habitat requirements not met for this species within the site.



Appendix B – Flora Species List

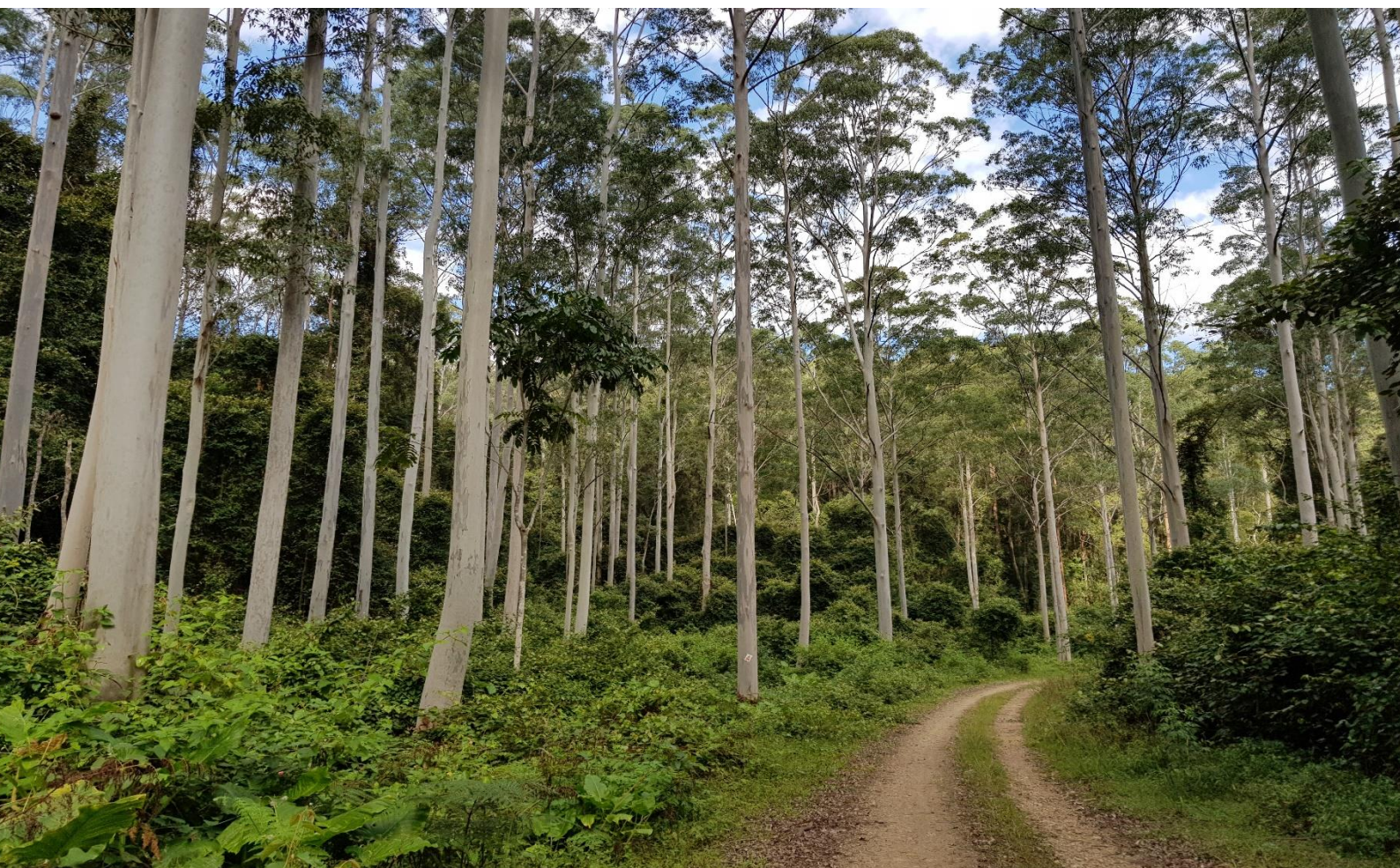


Form	Name	Q01	Q02	Q03	Q04
Exotic - Environmental Weed	<i>Ambrosia tenuifolia</i>	0.5			
Exotic - Environmental Weed	<i>Conyza sumatriensis</i>			0.2	
Exotic - Environmental Weed	<i>Cyperus brevifolius</i>			0.5	
Exotic - Environmental Weed	<i>Cyperus eragrostis</i>		0.2		0.1
Exotic - Environmental Weed	<i>Gamochaeta americana</i>		0.5		
Exotic - Environmental Weed	<i>Hydrocotyle bonariensis</i>	5	0.2	20	
Exotic - Environmental Weed	<i>Hypochoeris radicata</i>	2			
Exotic - Environmental Weed	<i>Juncus cognatus</i>			1	
Exotic - Environmental Weed	<i>Juncus effusus</i>				2
Exotic - Environmental Weed	<i>Lupinus sp.</i>		0.1		
Exotic - Environmental Weed	<i>Medicago sativa</i>			0.5	
Exotic - Environmental Weed	<i>Paspalum urvillei</i>	5	20	0.5	5
Exotic - Environmental Weed	<i>Phytolacca octandra</i>	0.1			
Exotic - Environmental Weed	<i>Pinus radiata</i>		0.2		
Exotic - Environmental Weed	<i>Plantago lanceolata</i>	2	0.5		
Exotic - Environmental Weed	<i>Rumex conglomeratus</i>			0.1	
Exotic - Environmental Weed	<i>Setaria parviflora</i>	0.5			
Exotic - Environmental Weed	<i>Sida rhombifolia</i>		1		
Exotic - Environmental Weed	<i>Sporobolus africanus</i>	0.1			
Exotic - Environmental Weed	<i>Trifolium repens</i>	0.5	0.5		
Exotic - Environmental Weed	<i>Verbena bonariensis</i>	0.5	5		
Exotic - Environmental Weed	<i>Watsonia meriana</i>	1			
Exotic - Environmental Weed	<i>Cirsium vulgare</i>				
Exotic - Environmental Weed	<i>Medicago polymorpha</i>				
Exotic - Environmental Weed	<i>Gladiolus angustus</i>				
Exotic - Environmental Weed	<i>Lactuca serriola</i>				
Exotic - Environmental Weed	<i>Vicia sativa</i>				
Exotic - Environmental Weed	<i>Lachnagrostis filiformis</i>				
Exotic - Environmental Weed	<i>Lolium perenne</i>				
Exotic - Environmental Weed	<i>Conyza bonariensis</i>				
Exotic - Environmental Weed	<i>Centaurium erythraea</i>				
Exotic - Environmental Weed	<i>Erythrina crista-galli</i>				
Exotic - Environmental Weed	<i>Tagetes minuta</i>				
Exotic - Environmental Weed	<i>Phoeniculum vulgare</i>				
Exotic - Environmental Weed	<i>Stachys arvensis</i>				
Exotic - Environmental Weed	<i>Cyclospermum leptophyllum</i>				
Exotic - Environmental Weed	<i>Briza minor</i>				
Exotic - Environmental Weed	<i>Briza maxima</i>				
Exotic - Environmental Weed	<i>Trifolium arvense</i>				
Exotic - Environmental Weed	<i>Hedychium gardnerianum</i>				

Form	Name	Q01	Q02	Q03	Q04
Exotic - Environmental Weed	<i>Oenothera mollissima</i>				
Exotic - Environmental Weed	<i>Ricinus communis</i>				
Exotic - Environmental Weed	<i>Gomphocarpus fruticosus</i>				
Exotic - Environmental Weed	<i>Stenotaphrum secundatum</i>				
Exotic - Environmental Weed	<i>Citrus x taitensis</i> Risso				
Exotic - Environmental Weed	<i>Avena barbata</i>				
Exotic - High Threat Weed (HTW)	<i>Ageratina adenophora</i>		0.5	2	
Exotic - High Threat Weed (HTW)	<i>Bidens pilosa</i>				0.1
Exotic - High Threat Weed (HTW)	<i>Bidens subalternans</i>				0.1
Exotic - High Threat Weed (HTW)	<i>Cenchrus clandestinus</i>	30		2	30
Exotic - High Threat Weed (HTW)	<i>Chloris gayana</i>	0.5			2
Exotic - High Threat Weed (HTW)	<i>Cortaderia selloana</i>		2	5	5
Exotic - High Threat Weed (HTW)	<i>Ipomoea cairica</i>	1	1	2	2
Exotic - High Threat Weed (HTW)	<i>Paspalum dilatatum</i>	2			
Exotic - High Threat Weed (HTW)	<i>Polygala myrtifolia</i>			0.1	
Exotic - High Threat Weed (HTW)	<i>Rubus anglocandicans</i>	5		1	1
Exotic - High Threat Weed (HTW)	<i>Senecio madagascariensis</i>	1			1
Exotic - High Threat Weed (HTW)	<i>Lantana camara</i>				
Exotic - High Threat Weed (HTW)	<i>Ligustrum lucidum</i>				
Exotic - High Threat Weed (HTW)	<i>Hyparrhenia hirta</i>				
Fern	<i>Hypolepis muelleri</i>				10
Forb	<i>Centella asiatica</i>		1		
Forb	<i>Dichondra repens</i>		0.2		
Forb	<i>Hydrocotyle tripartita</i>			0.2	
Forb	<i>Ranunculus plebeius</i>	1		5	5
Forb	<i>Persicaria lapathifolia</i>				
Forb	<i>Persicaria decipiens</i>				
█	█ █				
Forb	<i>Rumex brownii</i>				
Grass (Grass Like)	<i>Cynodon dactylon</i>	30	60	5	20
Grass (Grass Like)	<i>Machaerina juncea</i>				2
Grass (Grass Like)	<i>Schoenoplectus validus</i>			5	2
Grass (Grass Like)	<i>Typha orientalis</i>			5	5
Grass (Grass Like)	<i>Schoenus apogon</i>				
Grass (Grass Like)	<i>Phragmites australis</i>				
Grass (Grass Like)	<i>Imperata cylindrica</i>				
Other	<i>Cassityha pubescens</i>			1	
Shrub	<i>Acacia longifolia subsp. longifolia</i>		1		
Shrub	<i>Acacia prominens</i>		0.1		
Shrub	<i>Melaleuca sieberi</i>				2

Form	Name	Q01	Q02	Q03	Q04
Shrub	<i>Ozothamnus diosmifolius</i>		0.2		
Shrub	<i>Melaleuca nodosa</i>				
Shrub	<i>Melaleuca linariifolia</i>				
Shrub	<i>Acacia longifolia subsp. sophorae</i>				
Shrub	<i>Daviesia ulicifolia</i>				
Shrub	<i>Acacia irrorata</i>				
Tree	<i>Casuarina glauca</i>		0.5		
Tree	<i>Eucalyptus resinifera</i>				1
Tree	<i>Eucalyptus robusta</i>		0.2		20
Tree	<i>Glochidion ferdinandi</i>				5
Tree	<i>Angophora costata</i>				

Appendix C – Fauna Species List



Scientific Name	Common Name	Status	
		BC	EPBC
Birds			
Australian Magpie	<i>Gymnorhina tibicen</i>	P	
Australian Raven	<i>Corvus coronoides</i>	P	
Australian Wood Duck	<i>Chenonetta jubata</i>	P	
Eastern Rosella	<i>Platycercus eximius</i>	P	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	P	
Noisy Miner	<i>Manorina melanocephala</i>	P	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	P	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	P	
Superb Fairy-wren	<i>Malurus cyaneus</i>	P	
Amphibians			
Common Eastern Froglet	<i>Crinia signifera</i>	P	
Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>	P	
Peron's Tree Frog	<i>Litoria peronii</i>	P	
Eastern Dwarf Tree Frog	<i>Litoria fallax</i>	P	
Tyler's Tree Frog	<i>Litoria tyleri</i>	P	
Broad-palmed Frog	<i>Litoria latopalmata</i>	P	

Appendix D – Biodiversity Credit Reports



Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Report Created	BAM Data version *
Gilbert Whyte	12/09/2023	61
Assessor Number	Assessment Type	BAM Case Status
BAAS18041	Part 4 Developments (Small Area)	Finalised
Assessment Revision	Date Finalised	BOS entry trigger
4	12/09/2023	Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
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BAM Vegetation Zones Report

1	1718_Cleared	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Cleared	4.2	2	
2	1737_Wetland	1737-Typha rushland	Wetland	0.17	1	
3	1718_Regenerating	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Regenerating	0.33	1	

Proposal Details

Assessment Id 00036952/BAAS18041/22/00036953	Proposal Name 460 Pacific Highway Wyong	BAM data last updated * 22/06/2023
Assessor Name Gilbert Whyte	Report Created 12/09/2023	BAM Data version * 61
Assessor Number BAAS18041	Assessment Type Part 4 Developments (Small Area)	BAM Case Status Finalised
Assessment Revision 4	BOS entry trigger Test of significance	Date Finalised 12/09/2023

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	1737-Typha rushland
Australian Painted Snipe	Rostratula australis	1737-Typha rushland
Barking Owl	Ninox connivens	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Black Bittern	Ixobrychus flavicollis	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Black Falcon	Falco subniger	1737-Typha rushland
Black-necked Stork	Ephippiorhynchus asiaticus	1737-Typha rushland
Black-tailed Godwit	Limosa limosa	1737-Typha rushland
Blue-billed Duck	Oxyura australis	1737-Typha rushland
Broad-billed Sandpiper	Limicola falcinellus	1737-Typha rushland
Comb-crested Jacana	Irediparra gallinacea	1737-Typha rushland
Curlew Sandpiper	Calidris ferruginea	1737-Typha rushland

BAM Predicted Species Report

Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Eastern Osprey	<i>Pandion cristatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Freckled Duck	<i>Stictonetta naevosa</i>	1737-Typha rushland
Golden-tipped Bat	<i>Phoniscus papuensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Great Knot	<i>Calidris tenuirostris</i>	1737-Typha rushland
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Little Bent-winged Bat	<i>Miniopterus australis</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Little Eagle	<i>Hieraetus morphnoides</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast 1737-Typha rushland
Little Lorikeet	<i>Glossopsitta pusilla</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Magpie Goose	<i>Anseranas semipalmata</i>	1737-Typha rushland
Regent Honeyeater	<i>Anthochaera phrygia</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Spotted Harrier	<i>Circus assimilis</i>	1737-Typha rushland
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Swift Parrot	<i>Lathamus discolor</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
Terek Sandpiper	<i>Xenus cinereus</i>	1737-Typha rushland
Varied Sittella	<i>Daphoenositta chrysoptera</i>	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

BAM Predicted Species Report

White-bellied Sea-Eagle	Haliaeetus leucogaster	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
		1737-Typha rushland
White-fronted Chat	Epthianura albifrons	1737-Typha rushland
White-throated Needletail	Hirundapus caudacutus	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast
		1737-Typha rushland
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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Proposal Details

Assessment Id 00036952/BAAS18041/22/00036953	Proposal Name 460 Pacific Highway Wyong	BAM data last updated * 22/06/2023
Assessor Name Gilbert Whyte	Report Created 12/09/2023	BAM Data version * 61
Assessor Number BAAS18041	Assessment Type Part 4 Developments (Small Area)	BAM Case Status Finalised
Assessment Revision 4	Date Finalised 12/09/2023	BOS entry trigger Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Lathamus discolor</i> Swift Parrot	Yes (surveyed)	<input type="checkbox"/> Jan <input type="checkbox"/> Feb <input type="checkbox"/> Mar <input type="checkbox"/> Apr <input type="checkbox"/> May <input type="checkbox"/> Jun <input type="checkbox"/> Jul <input type="checkbox"/> Aug <input type="checkbox"/> Sep <input type="checkbox"/> Oct <input type="checkbox"/> Nov <input type="checkbox"/> Dec <input type="checkbox"/> Survey month outside the specified months?
[REDACTED]	[REDACTED]	<input type="checkbox"/> Survey month outside the specified months? [REDACTED] [REDACTED] <input type="checkbox"/> Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

BAM Candidate Species Report

Common name	Scientific name	Justification in the BAM-C
Corunastylis sp. Charmhaven (NSW896673)	Corunastylis sp. Charmhaven (NSW896673)	Habitat degraded
Curlew Sandpiper	Calidris ferruginea	Habitat constraints
Giant Dragonfly	Petalura gigantea	Habitat degraded
Great Knot	Calidris tenuirostris	Habitat constraints Geographic limitations
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Little Bent-winged Bat	Miniopterus australis	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Variable Midge Orchid	Genoplesium insigne	Habitat degraded



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Assessor Number	BAM Data version *
Gilbert Whyte	BAAS18041	61
Proponent Names	Report Created	BAM Case Status
Yannis Comino	12/09/2023	Finalised
Assessment Revision	Assessment Type	Date Finalised
4	Part 4 Developments (Small Area)	12/09/2023
BOS entry trigger	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
Test of significance		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Lathamus discolor / Swift Parrot		
██████	██████	██████

Additional Information for Approval

Assessment Id	Proposal Name	Page 1 of 6
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	

BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	4.5	0	6	6
1737-Typha rushland	Not a TEC	0.2	0	0	0

BAM Biodiversity Credit Report (Like for like)

1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-	1718_Cleared	No	0	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



BAM Biodiversity Credit Report (Like for like)

	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-		1718_Regenera ting	No		6 Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1737-Typha rushland	Like-for-like credit retirement options						
	Class	Trading group	Zone	HBT	Credits	IBRA region	

BAM Biodiversity Credit Report (Like for like)

	Coastal Freshwater Lagoons This includes PCT's: 781, 783, 1071, 1735, 1736, 1737, 1740, 1741, 1742, 3962, 3963, 3964, 3965, 3966, 3967, 3971, 3972, 3975, 3976	Coastal Freshwater Lagoons >=70% and <90%	1737_Wetland	No	0 Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
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Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lathamus discolor / Swift Parrot	1718_Cleared, 1718_Regenerating	0.2	4.00
██████████ / ██████████	1718_Cleared, 1737_Wetland, 1718_Regenerating	4.7	18.00

Credit Retirement Options

Like-for-like credit retirement options

Species	Spp	IBRA subregion
Lathamus discolor / Swift Parrot	Lathamus discolor / Swift Parrot	Any in NSW



BAM Biodiversity Credit Report (Like for like)

[REDACTED] / [REDACTED]	Spp	IBRA subregion
	[REDACTED] / [REDACTED]	Any in NSW

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036952/BAAS18041/22/00036953	460 Pacific Highway Wyong	22/06/2023
Assessor Name	Report Created	BAM Data version *
Gilbert Whyte	12/09/2023	61
Assessor Number	BAM Case Status	Date Finalised
BAAS18041	Finalised	12/09/2023
Assessment Revision	Assessment Type	BOS entry trigger
4	Part 4 Developments (Small Area)	Test of significance

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits

Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast

1	1718_Cleared	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	2.4	2.4	4.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		0
3	1718_Regenerating	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	34	34.0	0.33	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		6
											Subtotal	6

Typha rushland										
2	1737_Wetland	Not a TEC	15.7	15.7	0.17	PCT Cleared - 70%	High Sensitivity to Gain		2.00	0
									Subtotal	0
									Total	6

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits	
<i>Lathamus discolor / Swift Parrot (Fauna)</i>										
1718_Cleared	2.4	2.4	0.03	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1	
1718_Regenerating	34.0	34.0	0.12	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3	
									Subtotal	4

(Flora)										
1718_Cleared		2.4	2.4	4.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	8
1737_Wetland		15.7	15.7	0.17	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	2
1718_Regenerating		34.0	34.0	0.33	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	8
									Subtotal	18

Proposal Details

Assessment Id

00036952/BAAS18041/22/00036953

Assessor Name

Gilbert Whyte

Proponent Name(s)

Yannis Comino

Assessment Revision

4

BOS entry trigger

Test of significance

Proposal Name

460 Pacific Highway Wyong

Assessor Number

BAAS18041

Report Created

12/09/2023

Assessment Type

Part 4 Developments (Small Area)

BAM data last updated *

22/06/2023

BAM Data version *

61

BAM Case Status

Finalised

Date Finalised

12/09/2023

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Lathamus discolor / Swift Parrot		
██████ / ██████		

Additional Information for Approval

PCT Outside Ibra Added

None added

BAM Biodiversity Credit Report (Variations)

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	4.5	0	6	6.00
1737-Typha rushland	Not a TEC	0.2	0	0	0.00

1718-Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Variations)

	<p>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057</p>	-	1718_Cleared	No	0	<p>Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.</p>
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BAM Biodiversity Credit Report (Variations)

	<p>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 837, 839, 926, 971, 1064, 1092, 1227, 1230, 1231, 1232, 1235, 1649, 1715, 1716, 1717, 1718, 1719, 1721, 1722, 1723, 1724, 1725, 1730, 1795, 1798, 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057</p>	-	1718_Regenerating	No	6	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Variation options						
Formation	Trading group	Zone	HBT	Credits	IBRA region	
Forested Wetlands	Tier 3 or higher threat status	1718_Cleared	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	

BAM Biodiversity Credit Report (Variations)

	Forested Wetlands	Tier 3 or higher threat status	1718_Regenerating	No	6	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
1737-Typha rushland	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Freshwater Lagoons This includes PCT's: 781, 783, 1071, 1735, 1736, 1737, 1740, 1741, 1742, 3962, 3963, 3964, 3965, 3966, 3967, 3971, 3972, 3975, 3976	Coastal Freshwater Lagoons >=70% and <90%	1737_Wetland	No	0	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
Formation	Trading group	Zone	HBT	Credits	IBRA region	
Freshwater Wetlands	Tier 2 or higher threat status	1737_Wetland	No	0	IBRA Region: Sydney Basin, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.	

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lathamus discolor / Swift Parrot	1718_Cleared, 1718_Regenerating	0.2	4.00

BAM Biodiversity Credit Report (Variations)

██████ / ██████	1718_Cleared, 1737_Wetland, 1718_Regenerating	4.7	18.00
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Credit Retirement Options Like-for-like options

Lathamus discolor/ Swift Parrot	Spp		IBRA region	
	Lathamus discolor/ Swift Parrot		Any in NSW	
	Variation options			
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region	
Fauna	Endangered	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.		
██████ / ██████	Spp		IBRA region	
	██████ / ██████		Any in NSW	
<i>Note: Variation rules do not apply for Critically Endangered species and impacts on Commonwealth listed entities that are a controlled action.</i>				

Appendix E – BAM Plot Data Sheets



Project: PACIFIC HWY WYONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q01
Bearing: 232	Datum: GDA94
East: 356028	North: 6317993

HABITAT
ENVIRONMENTAL SERVICES



Aspect: FLAT	Weeds: HIGH (EXOTIC GRASSES)
Soil/Geology: CLAY	Condition: LOW
Veg Structure: GRASSLAND (EXOTIC)	

PCT: EXOTIC (PCT 171B)	EEC: NO.
GRASSLAND	Veg Zone: N/A (V201)

Litter Cover	
P1	5
P2	2
P3	2
P4	2
P5	5
Average:	3.2

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0	0	0
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)	
2	
Total:	2

GF Code	Species	Cover	Abundance
EX	1. PASPALUM URVILLEI	5	500
HTW	2. SENECIO MADAGASCARIENSIS	1	50
HTW	3. RUBUS ANGLOCARDICANS	5	100
EX	4. HYDROCOTYLE BONARIENSIS	5	200
G	5. CYNODON DACTYLON	30	10,000
F	6. RANUNCULUS PLEBEIUS	1	50
HTW	7. CENCRUS CLANDESTINUS	30	10,000
EX	8. AMBROSIA TENUIFOLIA	0.5	50
EX	9. TRIFOLIUM REPENS	0.5	50
HTW	10. IPOMEA CARICA	1	20
EX	11. WATSONIA MERIANA	1	50
EX	12. PHYLLOCLADIA OCTANDRA	0.1	2
EX	13. VERBENA BONARIENSIS	0.5	20
HTW	14. PASPALUM DILATATUM	2	500
EX	15. HYPOCHAERIS RADICATA	2	500
EX	16. PLANTAGO LANCEOLATA	2	500
HTW	17. CHLORIS GAYANA	0.5	100
EX	18. SETARIA PARVIFLORA	0.5	100
EX	19. SPOROBOLUS AFRICANUS	0.1	20
	20.		
	21.		
	22.		
	23.		

Project: PACIFIC HWY - WYONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q02
Bearing: 117	Datum: GDA94
East: 355960	North: 6717942

HABITAT

ENVIRONMENTAL SERVICES



Aspect: FLAT	Weeds: HULL - EXOTIC GRASSES
Soil/Geology: CLAY	Condition: LOW
Veg Structure: GRASSLAND	


PCT: N/A (PCT 171B)	EEC: No.
EXOTIC GRASSLAND	Veg Zone: V201

Litter Cover	
P1	1
P2	1
P3	1
P4	1
P5	1
Average:	1

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0		
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)	
0	
Total:	0

GF Code	Species	Cover	Abundance
T	1. CASUARINA GLAUCA	0.5	1
Ex	2. CHORTOMERIA SELKOANNA	2	50
Ex	3. PASPALUM URVILLEI	20	10,000
Ex	4. VERBENA BONARIENSIS	5	1000
HTU	5. IPOMOEA CAIRICA	1	50
S	6. CYNODON DACTYLON	60	100,000
F	7. CENTELLA ASIATICA	1	500
Ex	8. SIDA RHOMBOIFOLIA	1	500
Ex	9. CUPRESSUS FRAGMENTIS	0.2	50
Ex	10. LUPINUS SP.	0.1	10
S	11. ACACIA LONGIFOLIA	1	1
HTW	12. AGERATINA ADENOPHYLLA	0.5	1
Ex	13. PINUS RADIATA	0.2	1 (JUV)
F	14. DICTYONIA REPENS	0.2	1000
Ex	15. GAMBOSIA AMERICANA	0.5	20,000
Ex	16. PLANTAGO LANCEOLATA	0.5	500
Ex	17. TRIFOLIUM REPENS	0.5	500
Ex	18. HYDROCOTYLE BONARIENSIS	2	500
S	19. GYOTHANUS DIOSMIFOLUS	0.2	1
T	20. EUC ROBUSCA	0.2	1 (JUV)
S	21. ACACIA PROPINENS	0.1	1
	22.		
	23.		

Project: WYONG PACIFIC HWY		
Assessor: Gilbert Whyte (BAAS18041)		
Date: 10/05/22	Plot ID: Q03	
Bearing: 091	Datum: GDA94	
East: 355850	North: 6317999	

Aspect: CHANNEL	Weeds: HIGH. (PAMPAS GRASS)
Soil/Geology: CLAY	Condition: LOW
Veg Structure: WETLAND (REGENERATING)	

PCT: PCT 1737	EEC: N0
TYPHA RUSHLAND	Veg Zone: V202

Litter Cover	
P1	1
P2	1
P3	1
P4	1
P5	1
Average:	1

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm	0	0	0
50-79cm	0		
30-49cm	0		
20-29cm	0		
10-19cm	0		
5-9cm	0		
<5cm	0		

Length Logs (m)
0
Total: 0

GF Code	Species	Cover	Abundance
G	1. SCITOPHLECTUS VULIDUS	5	100,000
G	2. TYPHA LATIFLOLA	5	10,000
Ex	3. HYDROCOYLE RONARIENSIS	20	100,000
F	4. RANUNCULUS PECTINATUS	5	10000
O	5. CASSYTHA PUBESCENS	1	50
HTW	6. CHORTADARIA SELLOANA	5	1000
HTW	7. RUBUS ANGLO-CANDICANS	1	20
I2x	8. JUNCUS COGNATUS	1	100
HTW	9. POLYGALA MYRITIDIA	0.1	1
HTW	10. CIENCHRUS CLANDESTINUS	2	500
HTW	11. IPOMOEA CAIRICA	2	100
Ex	12. PASPALUM URVILLEI	0.5	100
I2x	13. CONYZA SUMATRANENSIS	0.2	50
G	14. CYNODON DACTYLON	5	1000
I2x	15. RUMEX CONGLOMERATUS	0.1	5
I2x	16. CYPREPUS BREVIFOLIUS	0.5	100
I2x	17. MEDICAGO SATIVATA	0.5	100
F	18. HYDROCOYLE TRIPARTITA	0.2	50
	19.		
	20.		
	21.		
	22.		
	23.		

Project: PACIFIC HIGHWAY WYONG	
Assessor: Gilbert Whyte (BAAS18041)	
Date: 10/05/22	Plot ID: Q04
Bearing: 358	Datum: GDA94
East: 355776	North: 6317994

HABITAT
ENVIRONMENTAL SERVICES



Aspect: DRAINAGE CHANNEL	Weeds: HIGH
Soil/Geology: ALLUVIAL (HUMIC)	Condition: MODERATE - REGEN FOREST
Veg Structure: OPEN FOREST	

PCT: SWAMP SCLEROPHYLL FOREST	EEC: YES
	Veg Zone: PCT 178-02

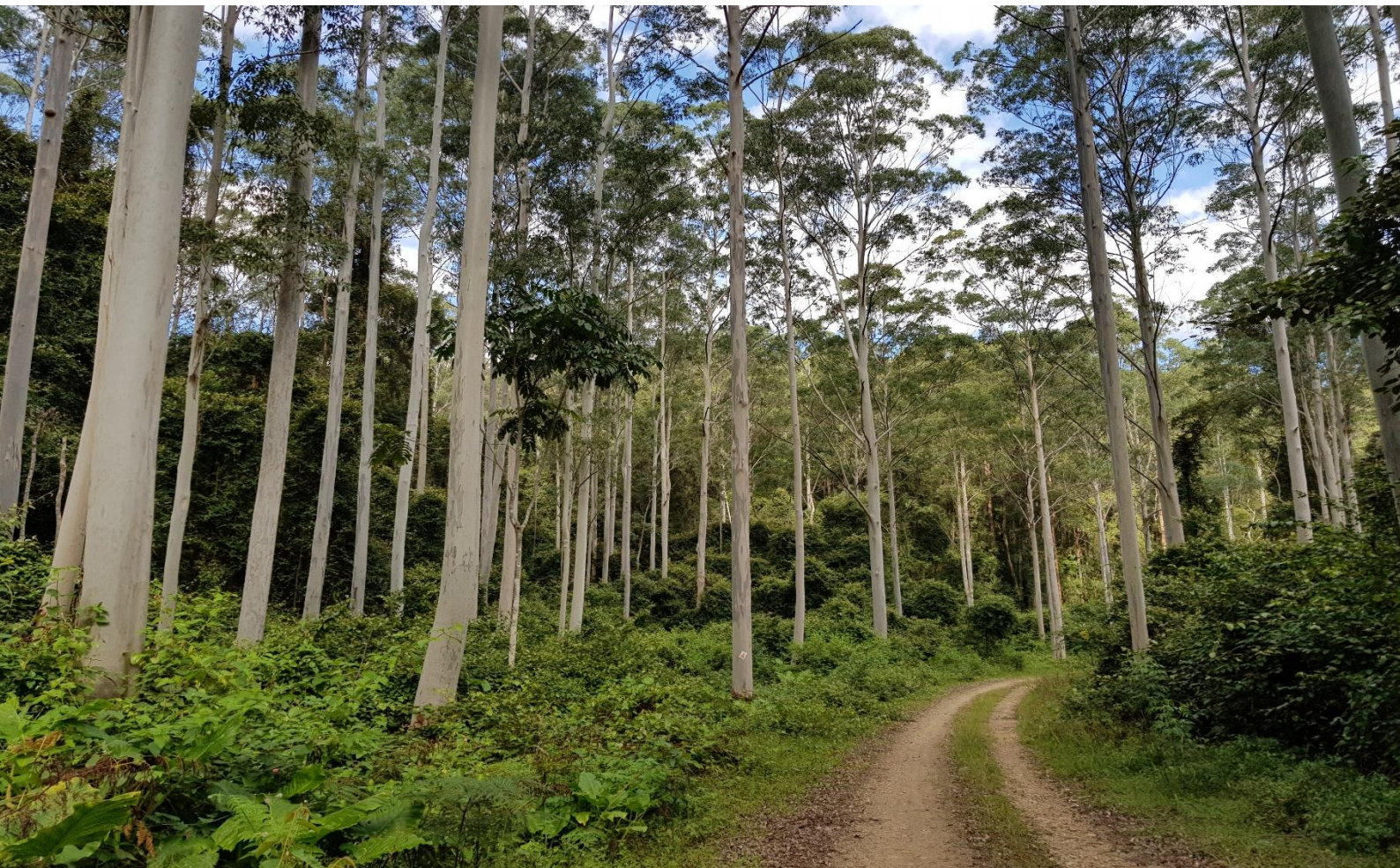
Litter Cover	
P1	5
P2	5
P3	5
P4	5
P5	5
Average:	5

Tree Stems (DBH)	P	Stem Count	Hollows
>80cm		0	0
50-79cm		0	0
30-49cm			
20-29cm			
10-19cm	✓		
5-9cm	✓		
<5cm	✓		

Length Logs (m)	
0	Total:

GF Code	Species	Cover	Abundance
T	1. EUCALYPTUS ROBUSTA	20	20
S	2. MELALEUCA SUBERA ERICIFOLIA	2	5
T	3. GLOCHIDION FERDINANDI	5	50
G	4. TYPHA ORIENTALIS	5	200
HTW	5. CORTADERIA SELLOANA	5	200
HTW	6. ALBERTINA ADENOPHORA	2	100
T	7. EUCALYPTUS RESINIFERA	1	1
HTW	8. IPOMOEA CAIRRA	2	50
F	9. RANUNCULUS PLEBEIA	5	1000
G	10. CYNODON DACTYLON	20	10,000
HTW	11. CENCIUS CLAUDEANUS	30	100,000
EX	12. PASPALUM URVILLEI	5	1000
HTW	13. CUDRUS GAYANA	2	50
HTW	14. RUBUS ANGLOCANADICUS	1	20
FE	15. HYPOLEPIS MURFRESI	10	1000
EX	16. JUNCUS EFFUSUS	2	50
HTW	17. BIDIENS SUBALTERNANS	0.1	10
EX	18. CYPERUS FUSCOSTIS	0.1	50
HTW	19. BIDIENS SUBALTERNANS PILOSA	0.1	20
G	20. SCHOENOPLECTUS VALIDUS	2	50
G	21. MACHAERINA JUNCEA	2	1000
HTW	22. SENECIO MADAGASCARIENSIS	1	
	23.		

Appendix F – Assessments of Significance (EPBC Act)



Species Assessed under the EPBC Act Significant Impact Guidelines

The following pertains to Assessments of Significance for direct or indirect impacts to EPBC Act listed threatened species, populations and communities.

The following species have been assessed under the EPBC Act *Matters of National Environmental Significance Significant impact guidelines 1.1* (Department of the Environment [DotE], 2013) (Significant Impact Guidelines):

- Critically Endangered Species
 - [REDACTED] ([REDACTED])
 - Swift Parrot (*Lathamus discolor*)
- Endangered Species
 - N/A
- Vulnerable Species
 - N/A
- Critically endangered and endangered ecological communities
 - *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community.*
- Migratory Species
 - N/A

Critically Endangered and Endangered Species – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DOE 2013) state:

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population.
- Reduce the area of occupancy of the species.
- Fragment an existing population into two or more populations.
- Adversely affect habitat critical to the survival of a species.
- Disrupt the breeding cycle of a population.
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.
- Introduce disease that may cause the species to decline, or interfere with the recovery of the species.

[REDACTED] ([REDACTED] [REDACTED])

[REDACTED]
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[Redacted]

[Redacted]

[Redacted]

[Redacted]

Swift Parrot (*Lathamus discolor*)

The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes.

An area in the western portion of the Study Area is mapped as Important habitat for the Swift Parrot.

Assessment of Significance

1. Will the action lead to a long-term decrease in the size of a population?

No.

The vegetation within the Study Area is highly degraded, contains a low number of individual trees that would provide foraging habitat for the Swift Parrot. It is unlikely that removal of the habitat would lead to a long-term decrease in the size of the population.

2. Will the action reduce the area of occupancy of the species?

No.

The Swift Parrot is a migratory species; therefore, the habitat present within the Study Area represents foraging habitat only. The proposed development will not reduce the area of occupancy of the species.

3. Will the action fragment an existing population into two or more populations?

No.

The Swift Parrot population in Australia is considered to represent one population. Due to the low level of proposed impact, fragmentation of an existing population into two or more populations is highly unlikely.

4. Will the action adversely affect habitat critical to the survival of a species?

No.

The habitat within the Study Area is highly degraded and does not represent habitat that is critical to the survival of the species in the locality.

5. Will the action disrupt the breeding cycle of a population?

No.

The Swift Parrot is a migratory species; therefore, the habitat present within the Study Area represents foraging habitat only. The proposed development will not disrupt the breeding cycle of a population.

6. Will the action modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

No.

The habitat within the Study Area is highly degraded and is not considered to represent habitat that is critical to the survival of the species in the locality. The removal of the habitat is unlikely to contribute greatly to a reduction in the extent of habitat for the species.

7. Will the action result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat?

No.

The Study Area contains large infestations of exotic plant species; however, the action is unlikely to result in an introduction of invasive species that are harmful to the Swift Parrot or its habitat,

8. Will the action introduce disease that may cause the species to decline, or interfere with the recovery of the species?

No.

The action is unlikely to result in the introduction of diseases that are harmful to the Swift Parrot or its habitat.

Conclusion

Given the low potential for impact to the Swift Parrot or its habitat, an EPBC referral to the Commonwealth Minister for the Environment is not recommended.

Critically Endangered and Endangered Ecological Communities – EPBC Act Assessment of Significance

The EPBC Act Significant Impact Guidelines (DOE 2013) state:

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- Reduce the extent of an ecological community.
- Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.
- Adversely affect habitat critical to the survival of an ecological community.
- Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.
- Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:
 - Assisting invasive species, that are harmful to the listed ecological community, to become established, or
 - Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.
- Interfere with the recovery of an ecological community.

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community

The *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* was listed in the Endangered category of the threatened ecological communities list under the EPBC Act on 08 December 2021.

A 0.33 ha area of vegetation within the Study Area is comprised of regenerating Swamp Sclerophyll Forest. The canopy and shrub layers are in the early stages of regeneration and the groundcover contains a mix of native and exotic species. The Conservation Advice for the EEC (DAWE 2021c) was reviewed to determine the conservation status of the vegetation and to determine the condition classification as follows:

- The landscape position and floristic composition of the vegetation is consistent with the conservation advice for the EEC.
- The vegetation within the Study Area is connected to an area of native vegetation to the southwest with gaps less than 30 m. The patch is defined as a small continuous patch being at least 0.25 ha, less than 2 ha, and is part of a larger area of native vegetation of at least 5 ha.
- Based on the BAM Plot data (Q04), exotic groundcover species have a total coverage of 48.3%. According to the condition thresholds for the EEC, the vegetation is in good condition (non-native species comprise 20% to 50% of total ground layer vegetation cover).

Based on the criteria listed above, the vegetation is commensurate with *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community*. The condition class as Class C2, which is defined as “a small patch that meets key diagnostics and has a mostly native ground layer and is contiguous with another large area of native vegetation.”

Assessment of Significance

1. Will the action reduce the extent of an ecological community?

Yes.

The patch of vegetation within the site dominated by *Eucalyptus robusta* (Swamp Mahogany) and contains a native groundcover that meets the key diagnostic criteria and condition class for Category C2. The proposed development will result in the clearing of 0.33 ha of the ecological community within the site. No areas of this ecological community will be retained as part of the proposed development.

In a local and regional context, larger areas of this community remain and will not be impacted by the project. The removal is not likely to significantly reduce the extent of this community within the locality.

2. Will the action reduce fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines?

Yes.

The proposed development will remove the ecological community within the development site, which will likely cause a minor increase in fragmentation of this community within the locality.

3. Will the action adversely affect habitat critical to the survival of an ecological community?

No.

The vegetation occurs in a low condition state in a landscape where it has little potential to increase in extent due to surrounding development pressure. The habitat is not considered to be critical to the survival of the ecological community.

4. Will the action modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns?

Yes.

The proposed development will alter surface water drainage patterns, i.e., removal or vegetation and replacement with hard structures and the alteration of local topography within the site.

5. Will the action cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting?

The proposed development will remove the extent of the EEC within the site, therefore removing its functionality for locally occurring species which may utilise the vegetation. However, given the ecological communities' location within a surrounding landscape predominantly cleared of vegetation, only a small number of flora and fauna species will be affected.

6. Will the action cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **Assisting invasive species, that are harmful to the listed ecological community, to become established, or**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

The proposed development will remove the extent of the ecological community within the site. Provided adequate control measures are in place during the construction phase, the risk of invasive species, pollutants and fertilisers damaging surrounding threatened ecological communities within the site is low.

7. Will the action interfere with the recovery of an ecological community?

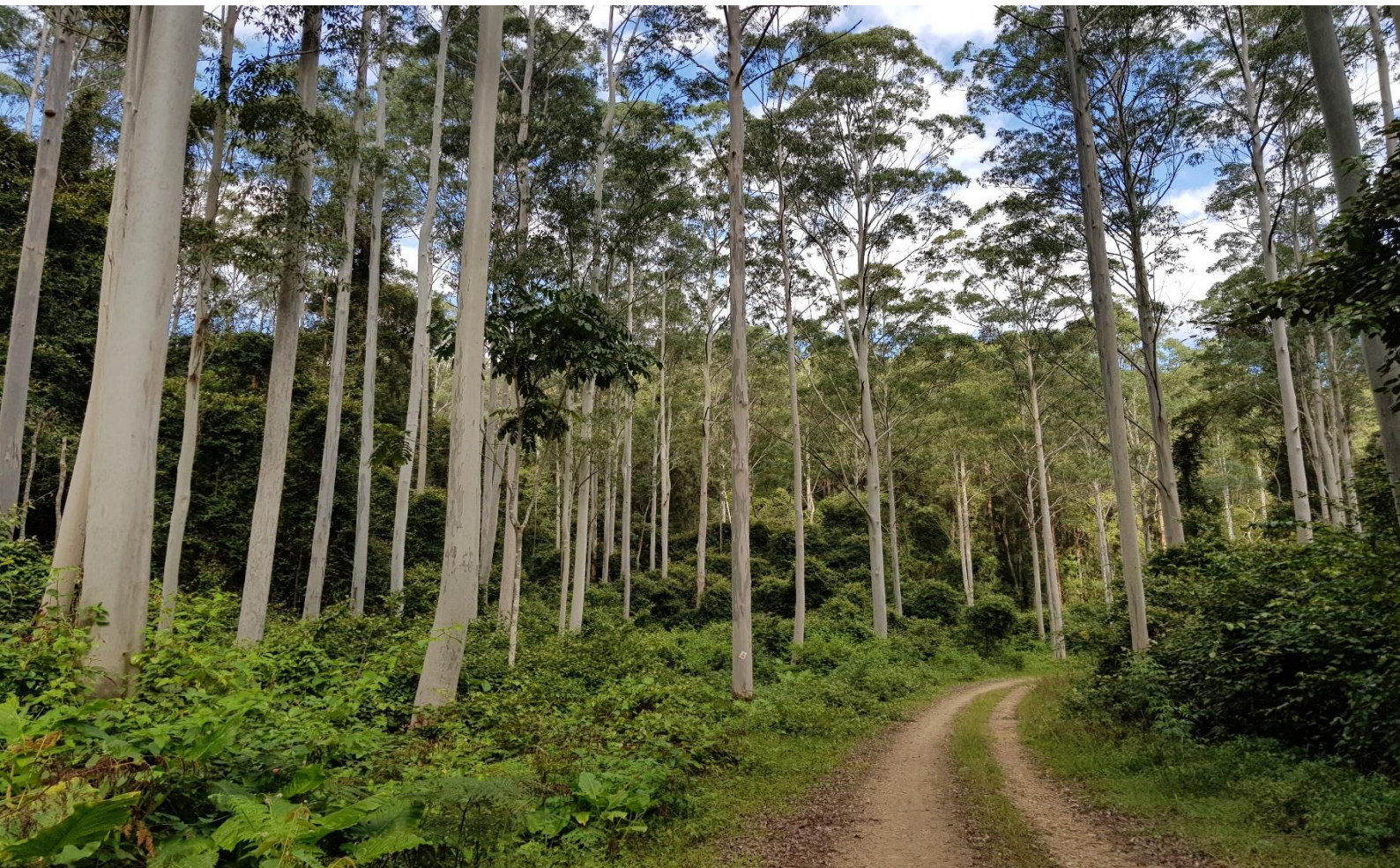
The proposed development will remove habitat (0.33 ha) which is unsuitable for the recovery of this threatened ecological community. The extent of this habitat removal is unlikely to have a significant effect on the recovery of this community within the locality or its extent within NSW.

Conclusion

Although the extent of the *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community* within the site will be removed as part of the proposed development, this vegetation has little potential for regeneration due to its current condition state and isolated location. Removal of this vegetation is unlikely to have a significant impact on the occurrence of the ecological community within the locality.

Referral of the project to the Commonwealth Minister for the Environment is not recommended.

Appendix G – Translocation Protocol





Habitat Environmental Services Pty Ltd
www.habitatenvironmentalservices.com.au
ABN: 75 654 044 765

Environmental Management Plan



red eye
constructions & interiors

Red Eye Constructions Pty Ltd as Trustee for the Red Eye Constructions Trust
ABN 25 217 473 025
Builder Licence No – 190282C

www.redeyeconstructions.com.au

THIS DOCUMENT MUST BE AVAILABLE ON THE WORKSITE

[PROJECT / FACILITY NAME]

ENVIRONMENTAL MANAGEMENT PLAN

PROJECT NO. [XXX]


Environmental Management Plan				
Document Number: 01-HSE-07-0265				
4	03/05/2023	Updates due to implementation of Procure and general improvement	Liam Beeton	L.Beeton
3	02.05.22	Updated to align to principles of ISO 14001 & requirements of current legislation	Liam Beeton	L.Beeton
2	19.04.17	Updated for Waste sorting and tracking	Alan fuller	
1	7/03/16	Updated for Online HSE Reporting		
0	22/12/15	Issued for Approval		
REVISION	DATE	DESCRIPTION	PREPARED	APPROVED

TABLE OF CONTENTS

1.	INTRODUCTION.....	4
1.1	Overview.....	4
1.2	Scope.....	4
1.3	Purpose.....	5
1.4	Definitions and Interpretations.....	5
2.	REFERENCE DOCUMENTS.....	7
2.1	Legislation.....	7
2.2	Specifications.....	8
2.3	Company Documents.....	8
2.4	Plans.....	8
3.	CONSTRUCTION SCOPE OF WORK.....	8
4.	CLIENT OR CONTRACTUAL SPECIFIC REQUIREMENTS.....	9
5.	POLICY.....	9
6.	ENVIRONMENTAL MANAGEMENT PLAN.....	9
6.1	Context.....	9
6.2	Leadership and Commitment.....	10
6.3	Performance Objectives.....	11
7.	ISSUE, REVISION AND REVIEW – DOCUMENT AND DATA CONTROL.....	12
8.	STRUCTURE AND RESPONSIBILITY.....	13
8.1	Project Organisation Structure.....	13
8.2	Director(s).....	13
8.3	Site Supervisor and Project Manager.....	14
8.4	Health, Safety & Environment (HSE) Manager (Or person(s) fulfilling this role).....	14
8.5	Workers.....	15
8.6	Visitors.....	15
9.	NEEDS AND EXPECTATIONS.....	15
10.	ENVIRONMENTAL ASPECTS & IMPACTS.....	16
10.1	Environmental Aspects.....	16
11.	LEGAL REQUIREMENTS – PERMITS, APPROVALS & COMPLIANCE OBLIGATIONS.....	17
12.	SUPPORT.....	18
12.1	Competence, Awareness and Training.....	18
12.2	Communication.....	19

12.3	Internal Communication.....	19
12.4	External Communication	19
12.5	Training Competencies & Licenses	20
13.	ENVIRONMENTAL RISK MANAGEMENT	21
13.1	Hazard Identification	21
13.2	Hierarchy of Control	21
13.3	Environmentally Safe Systems of Work.....	22
13.4	Operational Planning and Control.....	22
13.5	Outsourced Processes	22
13.6	Monitor & Review	23
14.	WORK AND WORK ENVIRONMENT	26
14.1	Emergency Preparedness and Response.....	26
14.2	Stormwater & Erosion Control.....	27
14.3	Air Quality	29
14.4	Noise Control	29
14.5	Waste Management.....	30
14.6	Hazardous Substances	31
15.	COMMUNICATION & CONSULTATION.....	32
16.	INCIDENT MANAGEMENT, REPORTING & INVESTIGATION	33
17.	NON-CONFORMANCE, CORRECTIVE ACTIONS & CONTINUAL IMPROVEMENT	33
18.	ENVIRONMENTAL REPORTING	34
18.1	Performance Measurement – Lead Indicators.....	34
18.2	Performance Measurement – Lag Indicators.....	34
18.3	System Audits & Management Review.....	34

1. INTRODUCTION

1.1 Overview

This document describes how the Environment relating to the construction of **[Enter Project / Facility Name]** intends to be managed. Details of the management along with each specific management activities are described with consideration to achieving the objectives for Work Health & Safety, Quality, and Environment.

Red Eye Constructions is committed to a workplace free from Environmental incidents and has a proactive approach to the environment utilising a robust Environmental Management System.

The Company's Environmental Management System (EMS) has been developed to meet obligations set down in Environmental legislation and has also been developed in accordance with principles of: **ISO 14001/2015 "Environmental Management Systems"**.

Implementation and ongoing application of the EMS ensures environmental risks are identified and controlled by applying environmentally safe systems of work across all **Red Eye Constructions** activities.

This enables **Red Eye Constructions** to deliver on the principals requirements as evidenced by the implementation and participation in management reviews and the long-term relationship with principals providing return work.

1.2 Scope

This plan applies to all **Red Eye Constructions** workers, and any other persons working for, or on behalf of **Red Eye Constructions** and its associated operations. Consistent with **Red Eye Constructions** Environmental Policy, the intended outcomes of this EMP include:

- Enhancement of environmental performance in the Workplace.
- Fulfilment of the Workplace compliance obligations.
- Achievement of the Workplace's environmental objectives.

This EMP enables **Red Eye Constructions** to manage its environmental responsibilities in a systematic manner and contribute to the environmental pillar of sustainability. This EMP is applicable to all **Red Eye Constructions** and applies to the environmental aspects of the company's activities, products, and services that **Red Eye Constructions** determines it can either control or influence considering a life cycle perspective. Review of **Red Eye Constructions** EMP, policies and management plans shall occur on a yearly basis, however a review may be completed earlier if required due to change in legislation or after a near miss or incident has occurred, as part of the company continuous improvement commitments. Where revision is necessary, the HSE Manager (or person(s) fulfilling the role), shall revise this **Environmental Management Plan** and approve all changes prior to issue.

This plan applies to all activities relating to **Red Eye Constructions** which involves – General Construction, Fit-Outs, & Renovations. This Plan has been developed for the construction of **[Enter Project / Facility Name]**, namely:

- Construction Scope of Works
- Construction Schedule
- Quality Management
- **Work Health and Safety** Management

- Environmental Management
- Human Resources & Industrial Relations
- Site Establishment
- Communication & Reporting

This document sets out the Environmental Management strategy to be adopted by **Red Eye Constructions**. This document is not designed to replace the obligations placed upon **Red Eye Constructions** by environmental legislation but will be used to provide verification of the actions of **Red Eye Constructions** in relation to these requirements. This document and subsequent additions/revisions will be made available to the workforce and relevant stakeholders.

1.3 Purpose

Red Eye Constructions applies and improves its Environment Management Plan (EMP) to consistently satisfy customer needs, meet regulatory requirements, as well as to improve the management and environmental performance of the company. This plan provides an overview of the documented processes, procedures, supporting documentation and resources required to fully implement an Environment Management System to meet the requirements of the client, regulatory bodies, ISO 14001 and maintain a proactive, planned, and driven approach to Workplace Health and Safety, Quality, and the Environment. The purpose of this plan is to define in broad perspective, the EMP for this workplace, define the responsibilities of personnel, and establish procedures for activities comprising the Environment Management System. The focus being continual improvement and consistently meeting or exceeding our clients' requirements and legislative compliance.

This plan defines the "Approach" to the works to ensure:

- Compliance with applicable environmental legislative standards and the project specific documentation;
- Alignment with core elements of ISO 14001/2015;
- The requirements of **Principal** are fully understood and satisfied;
- That construction practices are implemented to ensure the environmental safety of both construction and operation personnel;
- Continual improvement of construction practices are achieved through objective assessments of performance and effectiveness;
- Ensure an environmentally workplace by systematically identifying and documenting hazards, assessing, and controlling these risks in order to minimise construction related incidents.

1.4 Definitions and Interpretations

The following definitions and interpretations are applicable to this Plan:

Term	Meaning
ITP	Inspection & Test Plan
Red Eye Constructions	Red Eye Constructions Pty Ltd as Trustee for the Red Eye Constructions Trust
SWMS	Safe Work Method Statement

Term	Meaning
EMS	Environment Management System
Personnel	<i>Red Eye Constructions</i> Workers, contractors, visitors, or customer.
Worker	A permanent or fixed term worker is a person who is employed by Red Eye Constructions in a permanent or fixed term basis and conducts work on a Red Eye Constructions site or premises.
Contractor	<p>A contractor is a person who is employed by an organisation that contracts their services to Red Eye Constructions.</p> <p>They are on site to conduct activities of a medium to high risk nature, where loss or damage to personnel is known to have occurred (e.g. maintenance contractors, minor renovations) or commonly occurs (e.g. welding, electrical). There may be specific risks associated with this type of contractor requiring specific controls.</p> <p>Personnel that would be classified as contractors are those who are involved in:</p> <ul style="list-style-type: none"> ▪ Major contracts for long period on site ▪ Medium contracts for a short period of time ▪ Minor contracts for short periods of time ▪ Labour hire contracts which involves labour hire with management organising and managing the work task ▪ Restricted site work where access to site is brief and restricted.

Term	Meaning
Visitor	<p>A visitor is a short stay person that is allowed access to identified areas only and must be under Direct Supervision at all times by a fully inducted person (either worker or contractor). They do not perform work or give directions as identified by the site Training, Competency guidelines.</p> <p>They are on site to conduct activities of a sedentary and low risk nature and where loss or damage to personnel is highly unlikely to occur.</p> <p>Managers are responsible for the activity being undertaken and shall determine if the person/s is to be classified as a visitor. Personnel that would be classified as visitors include those entering an Red Eye Constructions premise or site:</p> <ul style="list-style-type: none"> ▪ for meetings ▪ to inspect a task for the purpose of tendering. ▪ from enforcement agencies for the purpose of inspection of work or site area. ▪ for a tour of the operations for educational purposes. ▪ for the purposes of supplying technical advice / conducting audits. ▪ For office related work (E.g. office contractor, photocopy repairer) ▪ For the purposes of deliveries & pickup

2. REFERENCE DOCUMENTS

This *Environment Management Plan* is based on the following documents:

2.1 Legislation

Relevant Legislation	Tick if applicable
Environment Protection and Biodiversity Conservation Act 1999	<input checked="" type="checkbox"/>
Protection of the Environment Operations Act 1997	<input checked="" type="checkbox"/>
Protection of the Environment Operations (Waste) Regulation 2014	<input checked="" type="checkbox"/>
Biosecurity Regulation 2017	<input checked="" type="checkbox"/>
Soil Conservation Act 1938	<input checked="" type="checkbox"/>
Water Management Act 2000	<input checked="" type="checkbox"/>
Biodiversity Conservation Act 2016	<input checked="" type="checkbox"/>
National Parks and Wildlife Act 1974	<input checked="" type="checkbox"/>
Heritage Act 1977	<input checked="" type="checkbox"/>
Contaminated Land Management Act 1997	<input checked="" type="checkbox"/>
Protection of the Environment Operations (General) Regulation 2021	<input checked="" type="checkbox"/>

Environmentally Hazardous Chemicals Act 1985	<input checked="" type="checkbox"/>
Dangerous Goods (Road and Rail Transport) Act 2008	<input checked="" type="checkbox"/>
Local Government Act 1993	<input checked="" type="checkbox"/>
Local Government (General) Regulation 2021	<input checked="" type="checkbox"/>
Pesticides Act 1999	<input checked="" type="checkbox"/>
Protection of the Environment Operations (Noise Control) Regulation 2017	<input checked="" type="checkbox"/>
Environmental Planning and Assessment Act 1979	<input type="checkbox"/>
Environmental Planning and Assessment Regulation 2021	<input type="checkbox"/>
Ozone Protection Act 1989	<input type="checkbox"/>

2.2 Specifications

- [Enter Contract Details, e.g. AS2124-1992 Contract No. 13-37]

2.3 Company Documents

- Policies.
- Induction Procedure.
- Safe Work Method Statement (SWMS) Procedure.
- Incident Management Procedure.

2.4 Plans

- WHS Management Plan.
- Environmental Management Plan.
- Waste Management Plan.
- Emergency Response Management Plan.
- Traffic Management Control Plan (Where required).
- Asbestos Management Plan (Where required).

3. CONSTRUCTION SCOPE OF WORK

The site is located at [Enter Site Address]

The Scope of Work involves the design & construction of [Enter Details].

The works consist of the following sub trades and will employ a peak workforce of approximately [X] workers.

Subcontracted works: **Red Eye Constructions** has been engaged as the Principal Contractor, **Red Eye Constructions** will subcontract the following trades to undertake the works:

- Structural Steel.
- Concrete & Formwork.
- Masonry – brickwork.
- External wall cladding.

- Metal roofing.
- Internal Wall and Ceiling Lining.
- Joinery Services.
- Electrical Services.
- Windows and Doors, including Sunscreens / Balustrades.
- Hydraulic Services, including sewer encasement.
- Communications.
- Floor Finishes.
- Tiling - Floor & Wall.
- Painting.
- INSERT MORE AS APPLICABLE

Red Eye Constructions as the principal contractor intends to subcontract all or part of the works identified in the above sub trade list. Specific details on the proposed construction methodology for each of the activities are provided in **Safe Work procedures (SWP's)** and **Safe Work Method Statements (SWMS)**.

4. CLIENT OR CONTRACTUAL SPECIFIC REQUIREMENTS

Client specific requirements are included in the contractual documents. Where client specific requirements vary from this plan, the plan is to be updated to reflect the specific requirements. This plan will refer to **Red Eye Constructions** documents and where generally required to using client documents, 'or equivalent' is stated to cover the use of client versions where they are indeed equivalent or of a higher standard.

5. POLICY

Red Eye Constructions senior management have endorsed and approve the **Red Eye Constructions** Environment Policy. The company will operate in accordance with the **Red Eye Constructions** Environment Policy. It provides a framework for setting objectives and an overview of the company's system which is aligned to current legislation and developed in accordance with the ISO 14001 standard. The Environmental Policy outlines **Red Eye Constructions** commitment to the protection of the environment, maximising recycling, preventing pollution and identification of potential environmental risks and their adverse environmental impacts because of the works conducted by the company, and other specific commitments relevant to the context of **Red Eye Constructions**. The Environment Policy is maintained as documented information, communicated within the company, and is available to all interested parties. A current copy of the Environment Policy is always available in hard copy at the main office and site office.

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1 Context

The environmental management is to be governed by this **Environment Management Plan** which shall comply to the **Red Eye Constructions** company **Policy** outlined in **Section 5. Red Eye Constructions** have determined external and internal issues that are relevant to the company's purpose and that affect

its ability to achieve the intended outcomes of the EMP, including protection of the environment compliance to all applicable legislation and alignment to the ISO 14001 principles. An overview of the specific external and internal issues that are relevant is provided below.

- environmental aspects related to climate, air quality (dust, release of hazardous fibres/particles and emissions from plant), noise and vibration, water quality and usage (includes both surface and groundwater), land use and the potential associated impacts such as soil erosion, and pollution, existing contamination on site, natural resource availability, waste management, use of energy, cultural heritage, flora/fauna, and biodiversity.
- external cultural, social, political, legal, regulatory, financial, technological, economic, natural, and competitive circumstances.

Red Eye Constructions provide services to a wide range of industries, working either as a Subcontractor or Principal Contractor directly in NSW.

Internal Stakeholders

- **Red Eye Constructions** Management.
- Workers and Subcontractors.

External Stakeholders

- Regulators and Governmental agencies (NSW RMS, SafeWork NSW, NSW EPA etc.).
- Customers.
- Community adjacent to, and effected by, **Red Eye Constructions** activities.
- End users.
- Suppliers and subcontractors

Environmental legislation and regulation are changing constantly. It is essential that **Red Eye Constructions** keep abreast of relevant federal, state, and local government requirements to ensure that its control strategies can achieve the necessary level of legal compliance. This includes receiving information in regard to these changes, which **Red Eye Constructions** shall receive notification of via email from Red Insight who shall receive the newsletter updates.

Legal and other requirements peculiar to the project shall be consistent with, and aligned against, those that are identified within **Red Eye Constructions** corporate EMS.

6.2 Leadership and Commitment

Red Eye Constructions management demonstrate leadership and commitment with respect to the EMS by:

- taking accountability for the effectiveness of the EMS at **Red Eye Constructions** worksites.
- ensuring that the Environment Policy and environmental objectives are established and are compatible with the strategic direction and the context of the workplace.
- ensuring the integration of EMS requirements into the **Red Eye Constructions** business processes.
- ensuring that the resources needed for the EMS are available.

- communicating the importance of effective environmental management to all project stakeholders including conforming to the EMS requirements.
- ensuring that the EMP achieves its intended outcomes through continuous improvement practices such as review of policy and procedures, monitoring of processes and analysis of objectives or targets.
- directing, educating, training, and supporting personnel to contribute to the effectiveness of the EMS.
- promoting continual improvement toward company processes and environmental awareness.
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

6.3 Performance Objectives

The objective for *Red Eye Constructions* is to:

- Provide a System of management which shall provide and maintain an environmentally safe workplace and systems of work.
- Identify and manage the risks to our worker's and encourage behaviour that reduces environmental incidents in the workplace.
- To conform to the requirements of the Plan and achieve the performance targets (Lead and Lag indicators).

Red Eye Constructions recognises that legislative compliance is the minimum performance standard we will operate under.

Category	Objective	Target
Contract Requirements	Full compliance with all environmental requirements	All necessary approval and licences obtained
		No contractual non-conformance notices
		No DECC infringement notices
		No notices from other regulatory authorities
Environmental Management	Integration of EMP with Project Management	In accordance with ISO 14001
	Continual improvement	Elimination of audit non-conformances
Prevention of Pollution	Stormwater discharges to comply with the requirements of DECC	Total suspended solids <50 mg/L, Oil and Grease <10 mg/L, pH 6.5 – 9.0, Schedule 2 Clean Water Regulations.
	Minimal impact of air quality	Vehicle and plant exhaust emissions to comply with Regulations e.g. No. visible exhaust emissions for longer than 10 seconds.
		No burning of rubbish or other material on site.

		No visible dust leaving the site and /or dust fallout levels in site dust gauges when deployed not to exceed: 5 grams/m ² /month at non-residential areas 0.26 grams/m ² /day at all areas.
	Noise & Vibration Management	All internal combustion engines have approved mufflers.
Waste Management	Implementation of a waste recycling scheme	Establish a contract with a waste collection company which includes separation of waste for recycling

Lag Indicator	
Objective	Reduce environmental impacts of <i>Red Eye Constructions</i> operations.
Target	No incidents recorded
Indicator	Number of incidents per year (includes - Class 1, 2 & 3)
Lead Indicator	
Objective	Maintain regulatory compliance and improve environmental performance within <i>Red Eye Constructions</i> .
Target	Ensure all workers and relevant stakeholders are inducted and implement <i>Red Eye Constructions</i> Environmental Management System whilst on site.
Indicator	Number of workers and other relevant stakeholders who receive HSE inductions, participate in toolbox talks and attend meetings.

7. ISSUE, REVISION AND REVIEW – DOCUMENT AND DATA CONTROL

Red Eye Constructions is responsible for the following:

- Developing the Environment Management Plan;
- Maintaining an up-to-date version of this plan. A record of revisions that occur will be kept in the Record of Revision table;
- Maintaining a register of people to whom this plan is issued using the Distribution List table;

The EMP is a 'live' and 'working' document. The manager or a delegate is to conduct regular reviews of the EMP at intervals of not less than six-monthly and ensure that the EMP is formally reviewed and updated at least annually, or earlier as change requirements dictate.

Thus, this plan is to be reviewed annually or;

- When there is a significant change in works, or
- Following incident investigation requiring change, or
- Following audit findings requiring change.

Details of the review are to be recorded in the Revisions Table, including any amendments made.

Records may be created and stored in paper or electronic form. Electronic creation and storage will be practiced wherever practical.

Red Eye Constructions EMS includes:

- documented information required by the standard.
- documented information determined by **Red Eye Constructions** as being necessary for the effectiveness of the EMS.

Documented information required by the EMS and by the Standards shall be controlled to ensure:

- it is available and suitable for use, where and when it is needed.
- it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity)

For the control of documented information, **Red Eye Constructions** shall address the following activities as applicable:

- distribution, access, retrieval, and use
- storage and preservation, including preservation of legibility.
- control of changes (e.g., version control)
- retention and disposition

Documented information of extended origin determined by **Red Eye Constructions** to be necessary for the planning and operation of the EMS shall be identified, as appropriate, and controlled.

8. STRUCTURE AND RESPONSIBILITY

8.1 Project Organisation Structure

The Project Organisation Structure shall be posted on the Site Office / Lunchroom wall.

8.2 Director(s)

The Directors responsibilities are to ensure that the environmental objectives of the company are achieved. This includes:

- Ensuring workers are trained in environmental awareness, responsibilities, instructions, and procedures.
- Ensuring incidents are investigated and corrective/preventative action is undertaken.
- Ensuring operations comply with relevant legislation.
- Reviewing operations and implementing strategies to reduce impacts from the works.
- Reviewing complaints received to determine if trends are being identified.
- Ensuring site environment performance objectives and targets are achieved.
- Communicating the importance of the EMP to workers.

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.3 Site Supervisor and Project Manager

The responsibilities are detailed in the relevant role Purpose Statements and these responsibilities are to ensure:

- All risk management processes are implemented and applied to demonstrate risk reduction;
- All work is carried out by competent and authorised persons;
- Compliance with procedures and processes;
- Effective application of the fair and just culture processes;
- Any breaches to procedures are reported.
- Identifying, controlling, and monitoring environmental hazards to reduce the risk of them occurring.
- Monitoring operations and maintenance work to ensure control methods are not damaged during the project.
- Initiating action to prevent incidents.
- Identifying, reporting, and recording incidents and/or near misses.
- Initiating corrective actions and participating in reporting to overcome incidents.

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.4 Health, Safety & Environment (HSE) Manager (Or person(s) fulfilling this role)

The HSE Manager is responsible for:

- Maintaining a leadership and governance role to ensure the principles of the EMS are implemented and adhered to;
- Maintaining, on-going development, implementing and enhancing the EMS including processes and supporting systems;
- Ensuring EMS documents are developed and maintained.
- Identifying key health and safety risks and potential liabilities and ensuring they are assessed and controlled to acceptable standards.
- Interpretation of, and providing advice on relevant Acts, Regulations and Standards;
- Providing expert risk and advice to the site management teams and other personnel at each site;
- Ensuring timely and quality monthly reporting information is provided to the Manager,

Name	Signature	Date

By signing above, you confirm your commitment and understanding of your responsibilities.

8.5 Workers

Workers are responsible for:

- Ensuring the requirements of the EMS (i.e. Policy, Manual, Plans and Procedures) are applied and relevant assessment and/or monitoring activities are identified, carried out and recorded;
- Operating plant for which you are trained, competent and authorised in the manner it was designed;
- Applying risk management processes and following safe systems of work to perform tasks;
- Reporting incidents, injuries, near misses, dangerous events, and issues of non-compliance with procedures to their supervisor;
- Comply with all directions given by the Supervisor; and
- Attending internal and/or external training as directed.
- Understanding any standards and procedures that apply to their work or operations.
- Taking action to minimise or prevent incidents from occurring by reporting damaged control methods and/or hazards as soon as possible to the site supervisor.
- Identify environmental aspects and understand their potential impacts.
- Minimise the impacts on the environment as a result of their work during the project by implementation control measures to mitigate the impacts of environmental aspects relative to **Red Eye Constructions** operations.

Note: this list of workers' responsibilities are communicated to workers during the induction process. Evidence of worker's awareness of their responsibilities are obtained via completed inductions.

8.6 Visitors

The HSEQ related Responsibilities of any person visiting the site include:

- looking after their own safety and health and the safety and health of others;
- demonstrate an acceptable level of safety performance;
- ensure that they carry out their work in compliance with relevant legislation and safe work procedures;
- ensure the work undertaken, is within your competence, qualification, and authorisation;
- report any hazard immediately using a hazard reporting procedure;
- Submit SDS for any hazardous materials used in the work prior to commencing the work;
- Report any accident or injury as soon as possible; and ensure that the work area is kept clean and tidy.

Note: this list of responsibilities are communicated during the induction process. Evidence of awareness of responsibilities are obtained via completed inductions.

9. NEEDS AND EXPECTATIONS

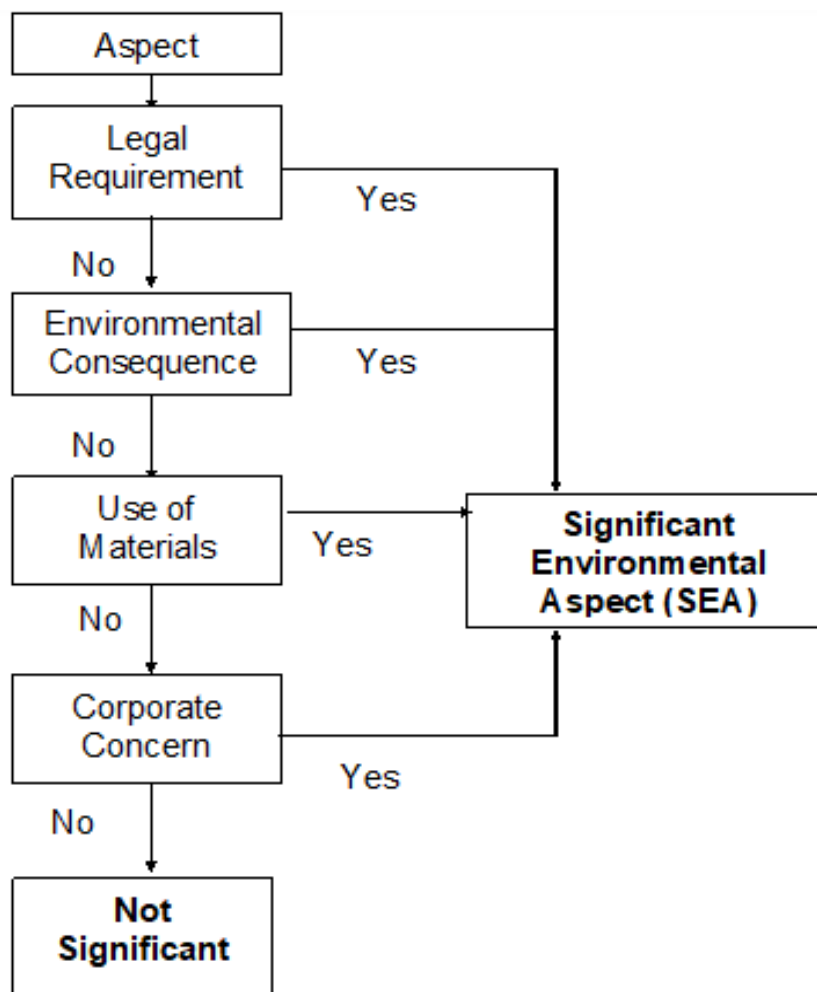
Some needs and expectations are mandatory because they have been incorporated into laws and regulations. **Red Eye Constructions** may also subscribe to voluntary initiatives or adopt the requirements of interested parties. **Red Eye Constructions** shall ensure that the needs and

expectations identified are addressed and communication to the relevant personnel when planning, establishing, and undertaking review of the Environmental Management System. The needs and expectations of relevant parties may include the need for air sampling and testing to be undertaken to report compliance to the EPA in relation to any Asbestos Removal activities undertaken on **Red Eye Constructions** worksites. There may also be compliance obligations established by local councils and expectations from residents adjacent to or near works conducted by **Red Eye Constructions** in relation to noise parameters which must be adhered to, at all times.

10. ENVIRONMENTAL ASPECTS & IMPACTS

10.1 Environmental Aspects

Red Eye Constructions has determined the environmental aspects of its activities, products, and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective. The workplace has determined those aspects that have or can have a significant environmental impact, i.e. significant environmental aspects, by using established criteria.



The identification of the potentially significant environmental impacts, which could eventuate during the construction, works as follows:

Activity	Aspect	Potential Impact
Stormwater & Sediment Controls – Erecting, Dismantling	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air 	<ul style="list-style-type: none"> Noise & Vibration Sediment laden water entering the Stormwater pits. Site material on public roads
Construction	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Energy Use of Space Generation of Waste Energy emitted 	<ul style="list-style-type: none"> Elevated levels of Dust Noise complaints/exceedances Vibration limits exceeded. Pollution to waterways/land Damage historical nature of development. Site material on public roads
Fit out	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Energy Use of Space Generation of Waste Energy emitted 	<ul style="list-style-type: none"> Complaints/ dust & noise pollution, generation of waste - Landfall disposal. Water/Land Pollution Site material on public roads/space
Waste Disposal	<ul style="list-style-type: none"> Generation of Waste Use of Energy Releases to water Releases to land 	<ul style="list-style-type: none"> Conservation of natural resources Damage to surrounding Environment. Pollution to land and waterways Site material on public roads
Landscaping & Excavations	<ul style="list-style-type: none"> Releases to water Releases to land Emissions to air Use of Space 	<ul style="list-style-type: none"> Sediment run off. Disease/biosecurity transfer from soils/plants Site material on public roads Groundwater/Surface water contamination

11. LEGAL REQUIREMENTS – PERMITS, APPROVALS & COMPLIANCE OBLIGATIONS

Red Eye Constructions has determined the compliance obligations related to its environmental aspects, determined how these obligations apply, and taken these compliance obligations into account when establishing the EMS.

Legal Instrument	Responsibility	Subject
Contract Clauses	Client / subcontract	-
Protection of the Environment Operations Act 1997	NSW Department of Environment and Climate Change	Pollution Control and Environment Protection Licences for scheduled works
Soil Conservation Act, 1938 Water Management Act 2000 Local Government Act, 1993	Department of Natural Resources	Works affecting protected waters

12. SUPPORT

It is the responsibility the Site Supervisor to ensure that all workers, contractors, and site visitors on the site have undertaken the following training, prior to commencing work or on upon entering the site, this may include documents such as:

- Site Specific Induction
- Competencies & Licenses
- Task specific related SWMS.

12.1 Competence, Awareness and Training

The workplace shall ensure that persons doing work under the *Red Eye Constructions* control are aware of:

- The environmental policy & associated management plans/documentation.
- The significant environmental aspects and related actual or potential environmental impacts associated with their work.
- Their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance.
- The implications of not conforming with the environmental management system requirements, including not fulfilling the organisation's compliance obligations.

The workplace may also;

- Determine the necessary competence of persons doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations.
- Site specific induction – site specific HSE elements such as location of chemical storage, first aid kits, site rules, muster point, spill kits, no go zones etc shall covered in a site-specific induction - Site Induction for each worker at each location where they work, prior to commencing work at that location.
- Work Activity Induction - read & signed off on Management Plans, Company Policies, Procedures etc;
- Company Induction –where workers are to be engaged for more than a week, a company induction will be conducted to ensure company policies and procedures are understood and adhered to. A Company Induction Questionnaire is to be completed for each inductee to demonstrate understanding of key information and record completion of the induction.
- Ensure that these persons are competent of the basis of appropriate education, training, or experience.
- Determine training needs associated with its environmental aspects and its environmental management system.
- Where applicable, taken actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken.

12.2 Communication

Red Eye Constructions has established the processes needed for internal and external communications relevant to the EMS, including:

- on what it will communicate
- when to communicate
- with whom to communicate
- how to communicate

When establishing its communication processes, **Red Eye Constructions** has:

- considered its compliance obligations.
- ensured that environmental information communicated is consistent with information generated within the environmental management system and is reliable.

Red Eye Constructions shall respond to relevant communications of its EMS. **Red Eye Constructions** shall retain documented information as evidence of its communications (i.e. within Procore, or equivalent), as appropriate.

12.3 Internal Communication

Red Eye Constructions shall:

- internally communicate information relevant to the EMS among the various levels and functions of **Red Eye Constructions**, including suggested changes to the EMS, as appropriate.
- ensure its communication processes enable persons doing work under the **Red Eye Constructions** control to contribute to continual improvement.

Internal communication will include meetings. Meetings may include Pre-start Meetings, Toolbox Talks, Project Team Meetings, Work Health Safety and Environment Team Meetings, Subcontractor Meetings, and Work Health Safety, Environment, and Quality System Review Meetings. Meetings shall include appropriate environmental information and shall be minuted and recorded.

Internal communication will also include written instruction. This may include drawings, specifications, method statements, risk assessments, contracts, and sub-contracts.

Internal communication of the Workplace performance will also be undertaken via the monthly reporting.

12.4 External Communication

Red Eye Constructions shall externally communicate information relevant to the EMS, as required by its compliance obligations, to other relevant parties such as certification bodies, HSEQ consultants; Red Insight as well as to regulatory bodies, such as the EPA. This communication shall take part via phone call, in writing (such as email), or in person (face-to-face meetings).

External notification of events will be via the manager as required.

12.4.1 Site Specific Induction

The Induction Programs, including to whom they apply are detailed in the matrix below.

Induction Program	Worker	Contractor	Visitor	Customer
Company General	Yes	No	No	No
Site Specific - General	Yes*	Yes*	No	No
Site Specific - Visitor	No	No	Yes**	Yes**

NOTE:

- * Where entering a specific Site as a Worker, Contractor, or Customer (As defined in **Section 1.4 – Definitions & Interpretations**)
- ** Where entering a specific Site as a Visitor (As defined in **Section 1.4 – Definitions & Interpretations**)

For more details refer to **Procedure – HR Inductions (01-HSE-04-0029)**.

12.5 Training Competencies & Licenses

Task specific competencies / licenses necessary to conform with Environmental regulations shall be required, and persons performing such tasks shall provide proof of such qualifications.

A copy of a worker's competencies / licenses must be provided before performing high risk work on site. For example, this includes:

- Asbestos removal
- Demolition work

12.5.1 Training Matrix

A **Health and Safety Training Matrix** has been developed to record the competencies and licences attained by all personnel working on site. A copy of the safety training records shall be taken at the induction for all personnel.

This information is recorded in the **Redeye Record Library (RRL)**.

It is the responsibility of **Red Eye Constructions** to monitor and maintain the **Health and Safety Training Matrix**.

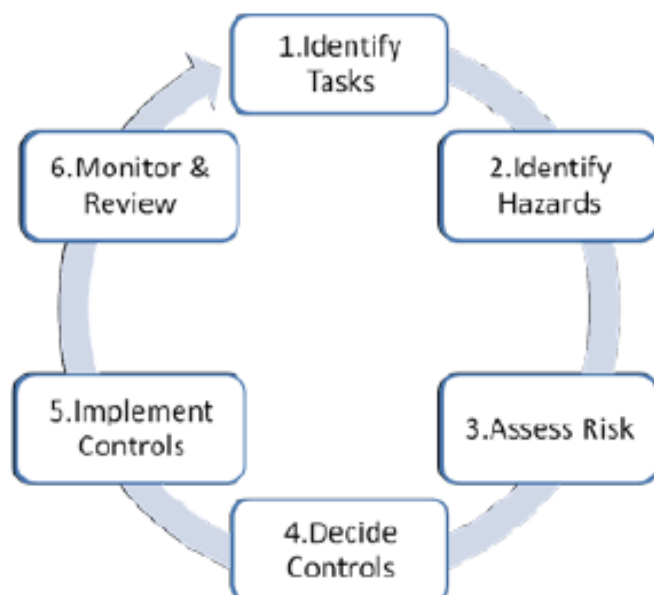
12.5.2 Competency Certificates

The health and safety training matrix is supported by documentary evidence of each person's certificate of competency which is also maintained in **Redeye Record Library (RRL)**.

Specific competencies that require refresher training or periodic renewal of licences or certification will be identified and reflected in the **Health and Safety Training Matrix/Workbench**.

13. ENVIRONMENTAL RISK MANAGEMENT

The *Red Eye Constructions* risk management process is illustrated in the figure below.



13.1 Hazard Identification

Hazards associated with all the activities required to complete the works shall be identified and managed through *Red Eye Constructions* Environmentally Safe System of Work.

13.2 Hierarchy of Control

The “Hierarchy of Controls” shall be used when implementing controls to eliminate the hazard or reduce the risk of a hazard causing loss / damage / injuries or environmental impacts.

The hierarchy of hazard controls emphasises controlling a hazard at the source which can be less subject to human failure. Back-up controls (such as PPE and administrative controls) should only be used as a last resort or as a support to other control measures. In many cases, it will be necessary to use more than one control method.

Whichever methods used, regular monitoring is important to ensure that the control is working effectively and that exposure to the hazard is reduced or eliminated.

The hierarchy of controls is:

- **Elimination:** The most effective method will be to remove the hazard completely if it is possible.
- **Substitution:** Replace the hazard with a lesser hazard. Be careful to assess what new risks the substitute may pose – i.e. substituting a chemical classified as ‘hazardous’, for a chemical not classified as ‘hazardous’.
- **Isolate:** the hazard. E.g. keep the chemical in locked storage when not in use as per SDS requirements.
- **Engineering:** Make changes to the process, equipment, or plant to reduce the hazard.

- **Administrative:** Establishing policies and procedures to minimise the risks, job scheduling to limit exposure, posting hazard signs, restricting access, and training.
- **PPE:** Personal Protective Equipment provides a barrier between the wearer and the hazard. PPE items include respirators, safety goggles, blast shields, hard hats, hearing protectors, gloves, face shields, and footwear.

13.3 Environmentally Safe Systems of Work

Red Eye Constructions has developed tools and processes to provide an environmentally safe system of work when performing work activities. The tools and processes to minimise the risk to **SFAIRP (So Far as Is Reasonably Practical)** vary depending on the level of control measures for the risk categories.

The *Red Eye Constructions* Environmentally Safe System of Work includes;

- Formal Project / Facility Risk Assessment
- Safe Work Procedures (SWP)
- Safe Work Method Statements (SWMS)
- Site **HSE** Audits
- Workplace Inspections
- Activity Observations

13.4 Operational Planning and Control

Operational planning and controls processes are implemented by the workplace to incorporate the actions identified in relation to risks and opportunities, and the achievement of environmental objectives, by establishing operating criteria and controls.

13.5 Outsourced Processes

Red Eye Constructions ensures that outsourced processes are controlled or influenced. Consistent with a life cycle perspective, *Red Eye Constructions* has:

- established controls, as appropriate, to ensure that its environmental requirement/s is/are addressed in the design and development process for the product or service, considering each life cycle stage.
- determined its environmental requirement/s for the procurement of products and services, as appropriate.
- communicated its relevant environmental requirement/s to external providers, including contractors.
- considered the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.

13.5.1 Risk Assessment - Environmental

A formal Risk Assessment shall be conducted prior to commencing work on site to identify hazards relating to each of the key activities.

The risks associated with each of the hazards identified, shall be assessed by evaluating the likelihood of the hazard leading to an accident or incident and assessing the severity of the consequence or impact that could result from exposure to the hazard.

The management methods utilised to control the risks shall also be detailed. The risks shall be controlled by the hierarchy of control or equivalent.

The Risk Assessment and risk control measures shall be reviewed during construction in the following circumstances:

- The assessment is no longer valid;
- Injury or illness results from exposure to a hazard to which the risk assessment relates to;
- There is significant change in the premises or place of work to which the risk assessment relates to;
- A potential hazard has been raised by a worker or the principal;

Refer **Form:** **Risk Assessment (01-HSE-05-0252)**

13.5.2 Safe Work Procedures (SWP)

Certain risks within *Red Eye Constructions* shall be controlled by Safe Work Procedures (SWP) (or equivalent). These documents provide a prescribed manner of performing a construction work activity or undertaking an activity.

All procedures are located on the *Redeye Management Library (RML)*.

13.5.3 Safe Work Method Statements (SWMS)

The Work Health and Safety Act 2011 require a safe work method statement for all high risk construction work. When completing the SWMS, environmental factors will be considered, including the appropriate controls to be implemented to reduce environmental impacts as a result of *Red Eye Constructions* operations.

Refer **Procedure:** **Safe Work Method Statement (SWMS) (01-HSE-04-0246)**

Safe Work Method Statement (SWMS) for routine high-risk construction work activities are to be found on the *Redeye Management Library (RML)*.

13.6 Monitor & Review

Red Eye Constructions shall monitor the effectiveness of plans, procedures, and other supporting processes to ensure the control measures remain effective. The workplace shall monitor, measure, analyse and evaluate its environmental performance through the review of documents. For sites this is undertaken in through:

- Toolbox Talks
- Workplace Inspections & HSE Audits
- Activity Observations

The workplace shall determine:

- what needs to be monitored and measured.
- the methods for monitoring, measurement, analysis, and evaluation, as applicable, to ensure valid results.
- the criteria against which the organisation will evaluate its environmental performance, and appropriate indicators.
- when the monitoring and measuring shall be performed.

- when the results from monitoring and measurement shall be analysed and evaluated.

The workplace shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained, as appropriate. The workplace shall evaluate its environmental performance and the effectiveness of the EMS. The workplace shall communicate relevant environmental performance information both internally and externally, as identified in its communication processes and as required by its compliance obligations.

The workplace shall retain appropriate documented information as evidence of the monitoring, measurement, analysis, and evaluation results. The workplace shall establish, implement, and maintain the processes needed to evaluate fulfillment of its compliance obligations.

The workplace shall:

- determine the frequency that compliance will be evaluated.
- evaluate compliance and act if needed.
- maintain knowledge and understanding of its compliance status.

Red Eye Constructions shall retain documented information as evidence of the compliance evaluation results.

13.6.1 Toolbox Talks

Toolbox Talks are formal meetings held to communicate health, safety, environmental and operational matters and to reinforce the importance of being safe.

The Manager or supervisor in charge shall lead the meeting and encourage open discussion between all attendees to ensure information is disseminated to personnel across their site.

▪ **Toolbox Talk**

Position:	Frequency:
Site Supervisor	Bi-Weekly
Trade Manager (Joinery)	Monthly

Refer **Form – Toolbox Talk (01-HSE-05-0144) or Procore.**

Each attendee shall sign on to an attendance register for record of attendance. The records shall be held within the relevant Site folder on the **Redeye Record Library (RRL).**

13.6.2 Workplace Inspections & Audits

A workplace inspection is an assessment of the workplace or area of plant to identify unsafe conditions, hazards and compliance to procedures/permit conditions/work processes or plant safety related matters.

Managers and Supervisors shall conduct Inspections based on their targets (generally monthly) depending on the role of the person. Findings shall be recorded within the relevant site folder on the **Redeye Record Library (RRL).**

Refer Forms:

- **Daily Pre-Start (Procore)**

Position:	Frequency:
Site Supervisor	Daily

A photo of the completed Daily Pre-Start **may also** be taken and kept as a record in **Procore**. A hardcopy of the Daily Sign in Register shall be maintained on site as a record of all persons acknowledging the daily hazards and associated risks.

- **Work Site Inspection (Procore)**

Position:	Frequency:
Project Manager	Bi-Weekly
HSE Manager (Or Person(s) Fulfilling This Role)	Bi-Weekly
Trade Manager (Joinery)	Monthly

- **Weekly HSE Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Weekly

- **Work Site Electrical Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Monthly

- **Scaffold Inspection (Procore)**

Position:	Frequency:
Site Supervisor	Weekly
HSE Manager (Or Person(s) Fulfilling This Role)	Monthly

- **Site Audit**

Position:	Frequency:
HSE Manager (Or Person(s) Fulfilling This Role)	Monthly

Any follow up actions shall be managed through site improvement processes and **be tracked to completion via Procore**.

13.6.3 Activity Observations

A behavioural Activity Observation is a formal assessment of a particular work activity done in consultation with the worker or workgroup with the goal of reducing risk by educating and **monitoring safe behaviour in accordance with the controls documented in the applicable Safe Work Method Statement (SWMS) in use for that particular work activity.**

Red Eye Constructions shall conduct Activity Observations based on their targets being weekly, fortnightly, or monthly depending on the site and role of the person. Findings shall be recorded within **Procore**.

Position:	Frequency:
Senior Manager	Bi-Weekly
Project Manager	Monthly
HSE Manager (Or Person(s) Fulfilling This Role)	Bi-Weekly
Trade Manager (Joinery)	Monthly
Site Supervisor	Bi-Weekly

14. WORK AND WORK ENVIRONMENT

14.1 Emergency Preparedness and Response

14.1.1 First Aid Personnel and Facilities

First Aid Facilities and trained personnel shall be available on worksites for the prompt and immediate first aid treatment of injuries or illness occurring on site. The number of workers on site will determine the number of trained first aid personnel, contents of the first aid kit and type of first aid facilities required.

14.1.2 Emergency Response Plans

Red Eye Constructions have established processes needed to prepare for and respond to potential emergency situations.

A summary of the activities to be conducted:

- prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations,
- respond to actual emergency situations.
- take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact.
- periodically test the planned response actions, where practicable.
- periodically review and revise the process and planned response actions, after the occurrence of emergency situations or tests,
- provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.

The workplace shall maintain documented information to the extent necessary to have confidence that the process is carried out as planned.

Prior to commencement of work onsite, **Red Eye Constructions** will communicate with the principal to design or obtain a copy of the Site Emergency Plan identifying emergency exits, first aid kits, location of fire equipment and the Emergency Assembly Point.

Emergency Evacuation provides general instructions on the safe and rapid evacuation of persons from a worksite, shut down procedures, notification of emergency services and assigns responsibilities of workers during an emergency.

The details of on emergency response shall be detailed in the **Emergency Response Management Plan** and will be displayed at the worksite along with the Emergency Contact Information and Emergency Response Procedures.

Refer **Plan:** **Emergency Response Management Plan**

14.1.3 Signage and Display

To ensure that all workers and visitors have access to this information in the event of an emergency, signage shall be displayed in an appropriate location such as a central noticeboard, as well as in locations where workers are likely to gather such as the lunchroom, toilets and around areas of potential emergency situations (storage area of hazardous substances).

This information includes but is not limited to:

- Emergency Response procedures;
- Emergency contact details of site personnel, emergency services and regulatory authorities.
- Site plans indicating the location of:
 - access ways;
 - fire extinguishers;
 - first aid facilities;
 - muster points;
 - Storage areas for hazardous substances.
- Names & photos of Registered First Aiders and individuals responsible for control of emergency situations;
- SDS

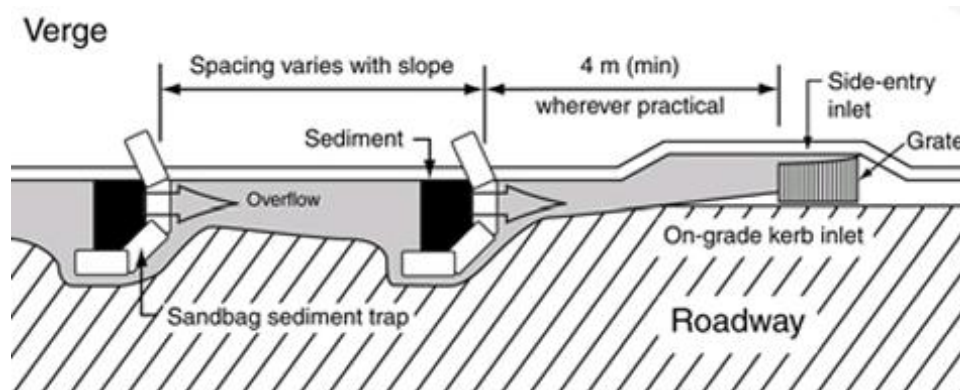
14.2 Stormwater & Erosion Control

The management of the stormwater and sediment during the construction of the works is critical to ensure there is no contamination of the project.

The following measures may be adopted during the works:

- All silt fences, silt traps and sedimentation basins will be cleared out regularly.
- A temporary sediment/absorption basin will be constructed until the final stormwater basin is installed, where existing stormwater drainage points are not available.
- Construction site water shall be directed to the temporary sedimentation basin for retention and, if required, flocculation until the required DECC water standards are adhered or discharged to drainage points via filtration measures.

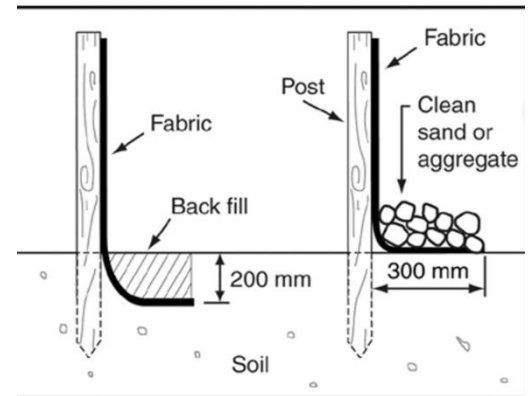
- All construction traffic will use designated roads at all times and the on-site access traffic routes.
- A wash out area will be designated for the cleaning of concrete pumps and equipment. Concrete trucks will be cleaned off site.
- Re-fuelling of vehicles and plant must not be carried out in areas, which may discharge to the stormwater drainage system or the project.
- Any oil-contaminated stormwater is to be removed by a licensed waste oil recycler.
- Minimising the area of soil disturbed on site therefore reducing the area that will be exposed to erosion – Ensure plant is limited to work areas only.
- Conserving topsoil for later site rehabilitation.
- Control the rate of water flow from the top of, and through the site (if practical to do so) using bunds, gravel, and sandbags.
- Rehabilitate disturbed lands quickly.
- Ensure sandbags are placed at all nearby drains on and around the site, to capture any excess runoff from site before it reaches drains and waterways.



- Maintain soil and water management measures appropriately during the project's phases this includes boundary silt screen fencing, coir logs, and sandbags.
- Ensuring access areas to site are maintained to prevent land degradation of these areas.
- Stockpile sediment controls - such as impervious covers shall be used to cover the stockpile (weighed down with bricks or secured to the ground with metal pegs) to reduce the creation of turbid runoff from stockpiles, where applicable.
- Exposed areas will be stabilised as required where erosion is likely to occur i.e. erosion matting, mulching etc.
- To keep public roads clean and to prevent site material being deposited on public roads from being carried by stormwater runoff into street stormwater drainage material deposited from construction traffic along existing sealed roads will be cleaned up either manually under guidance of traffic control or with a road sweeper.

Silt Screens must be erected within the following guidelines:

1. Construct sediment fences as close as possible to follow the contours of the site.
2. Drive 1.5-metre-long posts into ground, a maximum 3 metres apart.
3. Staple to 40 mm square hardwood posts or wire tied to steel posts – cap the top of these posts.
4. Dig a 150 mm deep trench along the up-slope line of the fence for the bottom of the fabric to be entrenched.
5. Backfill trench over base of fabric and compact on both sides.
6. Ensure silk screen height is no greater than 600mm.
7. The ends must be turned 'up' the slope to prevent water passing around the sides, which could result in ineffective control of sediment and water flow.

**Recommended installation options****14.3 Air Quality**

The following measures will be adopted according to site conditions:

- All petrol and diesel engine vehicles and equipment should be properly maintained to ensure that exhaust emissions comply with the Clean Air Regulations of the Protection of the Environment Operations Acts 1997.
- Use of a suitable water cart on sites (where this is available) with spray facilities for use as frequently as necessary to prevent the emission of dust. During windy conditions and in prolonged dry weather water spraying will be required repeatedly during the day.
- Limit speed of all vehicles and plant to 20km/hr on unsealed haul roads/access tracks on site, if safe to do so.
- Undertake gravelling in high traffic areas.
- Cover stockpiles with tarp to reduce the level of windblown particles from stockpiles.
- Washdown vehicles/plant in a designated wash bay prior to leaving site.
- Prior planning of how to cope with adverse weather conditions during operations. i.e., check wind speed and direction forecasted to prepare for the potential environmental impacts that may occur due to the specific weather conditions for that day of operations.
- Limit plant operation to the immediate work area to avoid excessive dust being created on the site.
- Use hoses to spray down areas that are beginning to generate excessive dusts.
- To prevent dust from being created by traffic passing over site material deposited on public roads, deposited material will be cleaned up either manually under guidance of traffic control or with a road sweeper as per occasion.

14.4 Noise Control

The following noise management measures will be undertaken during construction to measure the impact of the construction on the nominated properties.

- Limitation of construction activities to permitted working times unless written permission is obtained from Local Government authorities.

- Preparation of Work Method Statements for works performing noise related activities, the mitigation and control measures proposed, and monitoring of these actions to ensure contractual obligations are met.
- Operation of plant/equipment in a quiet and efficient manner where practical.
- Turn off plant that is not being used.
- Ensure plant/ equipment is regularly maintained, and repair or replace equipment that becomes noisy.
- Implement where feasible and reasonable, the use of silenced equipment and noise shielding around stationary plant/equipment (such as generators).
- Avoid dropping materials from a height.
- Consult workers in the pre-start meeting about noise impacts because of the planned works and how it can be reduced.
- Deliver machinery/plant/materials to site in during normal working hours.
- Rotate loud tasks to reduce exposure times – for the workers undertaking the tasks & other stakeholders in the immediate areas.
- Where there are complaints about noise from an identified work activity, review and implement, where feasible and reasonable, actions additional to those described above to minimise noise output.

14.5 Waste Management

Rising landfill tipping fees together with higher transport costs have helped increase the economic viability of recycling construction wastes.

Analysis of construction waste disposal costs indicates that these costs can be reduced by waste minimisation and recycling.

To encouraging waste minimisation and recycling and to ensure that those wastes which cannot be recycled are disposed of at an appropriate licensed waste disposal facility, the following actions should be taken:

- Where possible, the following wastes will be disposed of via recycling;
 - timber
 - plaster products
 - steel
 - cement based masonry.
 - clay based products, and
 - Asphalt.
- Waste disposal and recycling will only be undertaken by licensed waste disposal contractors.
- Where possible, recycled wastes such as crushed concrete will be reused on site.
- All wastes including concrete wastes and bituminous plant residues must be removed from the site. No wastes will be buried or incinerated on site.

The percentage estimations listed below are for waste that has been sorted on site. All site waste shall be sorted off site by Licensed Waste Disposal Contractors, Red Eye Constructions Pty Ltd will request sorting/ disposal slips from the Waste Contractor for the various waste items listed below. Bin locations will be shown on the site layout plan in appendix B.

Waste Description	Percentage Recycled
Steel	95%
Plasterboard	75%
Concrete	95%
Brick	95%
Timber Pallets	100%
Processed Timber (e.g. MDF)	10%
Timber	10%
Aluminium	95%

The percentage that is recycled from a mixed bin of waste is approximately 60%; the remaining 40% is to be disposed of accordingly.

14.6 Hazardous Substances

Where a hazardous substance (chemicals, compressed gasses, fuels, cleaning agents, glues, etc.) is required to be brought onto site a current Safety Data Sheet (SDS) must be supplied upon delivery (alternatively be readily available online through the Internet) for each product.

Each product shall be entered onto the site SDS Register under the SDS folder.

Refer **Form:** **SDS Register (01-HSE-05-0253)**

It is the responsibility of the person ordering the material or substance to request a Safety Data Sheet (SDS) for all chemical substance.

Where Handling of Materials and Hazardous Substance *Red Eye Constructions* shall:

- Obtain the Safety Data Sheets (SDS);
- Keep copies of all Safety Data Sheets (SDS) on site;
- Keep a register of all dangerous or potentially dangerous substances on site;
- Ensure that all containers are labelled;
- Ensure that the product is stored and utilised in accordance with the SDS;
- Store dangerous or potentially dangerous goods in a bunded or secure area as appropriate;
- Ensure adequate and appropriate signage is displayed around the dangerous or potentially dangerous storage bunded or secure area;
- Inspect all dangerous or potentially dangerous goods regularly to ensure the integrity of the containers, bunded area and labels;
- Where possible keep quantities of dangerous or potentially dangerous substances stored on site to a minimum;
- Ensure the appropriate PPE and first aid is available for use by workers and if necessary, conduct a toolbox meeting on the correct storage, use and treatment of affected personnel regarding the substance;

- Spillages of hazardous liquids will be contained by means of a dry absorbent such as sand, saw-dust, or oil absorber, which can be transferred to a suitable container for disposal by a licensed waste disposal contractor.
- When required, all contaminated material including any material contaminated by the spillage of hazardous substances should be disposed of in accordance with the following requirements:
 - The waste disposal contractor must hold the appropriate DECC license.
 - The proposed disposal location must be a DECC registered waste disposal facility and have approval to accept the particular waste.

15. COMMUNICATION & CONSULTATION

Workplace consultation and cooperation provides a means by which employers, workers work together to improve the work environment and make it environmentally safer for all.

This **Environmental Management Plan** shall be made available to all workers.

Communication & Consultation methods shall include:

- The Company's Environmental policy displayed and communicated throughout the workplace.
- Demonstrating hazard rectification as soon as possible in accordance with the established time frames displaying commitment to continuous improvement.
- Where delays in resolution of health and safety hazards are expected, the workplace hazard will be made safe via such measures as are necessary until the final control measure/s can be implemented. Where this occurs, the progress on full correction will be communicated to the workforce at regular intervals.
- Management will visibly and by demonstration support all environmental policies, plans and procedures and lead by example.
- A copy of this plan shall be made widely available.
- Workplace Inductions, Toolbox Talks, Activity Observations & Inspections.
- Distribution of bulletins, alerts, and other communication aids.
- Incident investigation reports completed in a timely manner.

RESOLUTION OF ISSUES - If a worker identifies a hazard that poses an immediate and imminent risk to the safety and health of themselves, or others, they must contact their Supervisor / Manager immediately to report the hazard and complete the **Hazard Observation Report** via **Procore**.

ENVIRONMENTAL INFORMATION - Relevant Acts, Regulations, Australian Standards, Codes of Practice, Guidance Notes, and other safety-related information will be made readily available to all workers upon request.

ENVIRONMENTAL PROMOTION - Management will promote environmental awareness throughout the Company, in order to influence positively the behaviour and attitude towards the environment.

PRINT MEDIA - Newsletters and electronic media will be used (as required) to promote environmental initiatives implemented and planned. Posters and brochures will be utilised in prominent positions to highlight specific environmental issues.

16. INCIDENT MANAGEMENT, REPORTING & INVESTIGATION

All Incident management, reporting and investigation shall be as detailed in the *Red Eye Constructions Incident Management Procedure*. At the Site Induction personnel shall be communicated:

- All incidents or near misses are reportable however minor.
- The procedures for contacting the Responsible Persons in the event of an Incident.
- Emergency Evacuation procedures, location of spill control kits

Refer **Procedure:** **Incident Management Procedure (01-HSE-04-0245)**

17. NON-CONFORMANCE, CORRECTIVE ACTIONS & CONTINUAL IMPROVEMENT

Red Eye Constructions management conduct annual reviews of the *Red Eye Constructions* EMS, to ensure its continuing suitability, adequacy, and effectiveness. When the EMS review is complete an update of system improvements is communicated to all workers.

The management review shall include consideration of:

- the status of actions from previous management reviews
- changes in:
 - external and internal issues that are relevant to the environmental management system.
 - the needs and expectations of interested parties, including compliance obligations.
 - its significant environmental aspects.
 - risks and opportunities.
- the extent to which environmental objectives have been achieved.
- information on the organisation's environmental performance, including trends in:
 - nonconformities and corrective actions.
 - monitoring and measurement results.
 - fulfilment of its compliance obligations.
 - audit results.
- adequacy of resources.
- relevant communication/s from interested parties, including complaints.
- opportunities for continual improvement.

The outputs of the management review shall include:

- conclusions on the continuing suitability, adequacy, and effectiveness of the EMS.
- decisions related to continual improvement opportunities.
- decisions related to any need for changes to the environmental management system, including resources.
- actions, if needed, when environmental objectives have not been achieved.
- opportunities to improve integration of the EMS with other business processes, if needed.
- any implications for the strategic direction of the organisation.

18. ENVIRONMENTAL REPORTING

The monthly reporting shall be based upon the elements of the *Red Eye Constructions* EMS using a set of lead and lag indicators.

Audits shall also be conducted to determine compliance with this **Environmental Management Plan** and facilitate performance improvements. **Each month Procore will generate a Monthly Safety Report to report the environmental performance of each site using the set of lead and lag indicators.**

18.1 Performance Measurement – Lead Indicators

Lead indicators used to measure Safety Performance will include:

- Toolbox Talk occurrences.
- Activity Observation occurrences.
- Workplace Inspection occurrences.
- **HSE** Audits
- Corrective actions overdue (from incident management system).
- Training compliance.

18.2 Performance Measurement – Lag Indicators

Lag indicators used to measure Environmental Performance include Incident and Frequency Rates.

18.3 System Audits & Management Review

To ensure continual improvement and effectiveness of the Management Systems, this plan shall be audited by an independent auditor as required by the principal.

The following areas shall be covered in the review:

- Results of audits conducted;
- Overall performance;
- Effectiveness of existing Management Plans in controlling the project performance;
- Any input from the principal regarding future improved project performance;
- Changes to legislation, codes of practice or Standards that may affect compliance requirements and consequently existing control measures.