Bioresearches
A Babbage Company

To:	**The Neil Group**	**Date:**	27 October 2022
Attn:	Trevor Canty	**Ref:**	63907
Subject:	**Kauri Road Development Fast Track; Ecological Impact Assessment**		

Introduction

The Neil Group ("the applicant') proposes to lodge an application for a referred project under the Covid-19 Recovery (Fast-track Consenting) Act 2020 (the "Act") to utilise the fast track consenting process. This application relates to the proposed sub-division encompassing multiple properties at Kauri Road, Whenuapai (main site) and the installation of a stormwater outfall at 11 Kauri Road (outfall site). This memorandum provides a high-level assessment of ecological effects for the aforementioned development.

Methodology

An initial site assessment was undertaken by a qualified ecologist during 2020. A follow up site assessment was undertaken on the 20th October, 2022, to confirm the ecological features observed within the site. Further assessment was undertaken from photos and recent aerial images.

Botanic and terrestrial fauna values within the site were qualitatively assessed. Fauna habitats assessed considered indigenous lizards, birds and bats.

Overland flow paths/watercourses were classified under the Auckland Unitary Plan – Operative in Part (AUP OP) to determine the ephemeral, intermittent or permanent nature of these watercourses.

Wetlands were identified within the site as per the definitions and criteria laid out in the National Policy Statement for Freshwater Management 2020 (NPS-FM). The aquatic habitat was qualitatively assessed.

The identified ecological features within the site are presented in Appendix 1 and photos of these features are provided in Appendix 3.

Existing Environment

Background and Ecosystem Classification

The site is located within the Tāmaki Ecological District of the Auckland Region and is approximately 14.5 hectare in size. Historically (pre-human), the area would have comprised of the forest ecosystem type 'Pūriri forest' (WF7) and would have supported a diverse range of invertebrates, amphibians, reptiles, birds and bats (Singers *et al*., 2017). WF7 ecosystems have a regional International Union for Conservation of Nature (IUCN) threat status of "Critically Endangered". The earliest historic aerials available indicate the site and surrounding landscape has been devoid of native vegetation and managed as agricultural land for at least 60 years.

The site is surrounded by a mixture of urban development, agricultural land and government infrastructure (New Zealand Royal Airforce base), with a narrow corridor of Significant Ecological Area

located 60 m eastwards outside of the site boundaries. Consented earthworks are proposed to occur over the 2022/2023 earthworks periods, and will encompass a majority of the main site, with a ≥ 10 m setback established around the previously identified freshwater features.

Terrestrial Ecology

Currently, the main site predominantly consists of earthworked land and unkept pasture with exotic shelter belts established around the site boundary. Several pest plant species were identified within the site, including blackberry (*Rubus fruiticosus*), and woolly nightshade (*Solanum mauritianum*). Within the riparian yard, sparse willow (*Salix* sp.), and pine (*Pinus* sp.) was present alongside the rank long grasses, providing the only shade to the freshwater features.

The outfall site contained the only indigenous vegetation associated with the proposed development, which consisted of low stature, common native plants such as ponga (*Cyathea dealbata*), karamū (*Coprosma robusta*), and juvenile red matipo (*Myrsine australis*). Exotic species observed included tradescantia (*Tradescantia fluminensis*), climbing asparagus (*Asparagus scandens*), Chinese privet (*Ligustrum sinense*) and pampas (*Cortaderia selloana*).

The botanical value of the vegetation within the sites was assessed to be of low ecological value, consisting predominantly of pasture and exotic trees, with common, low stature indigenous vegetation sparse. The vegetation provides low-quality fauna habitat, as the habitat is of low stature, lacks ecological complexity and is subject to high edge effects and limited terrestrial connectivity.

Freshwater Ecology

Within the main site, a constructed pond, natural wetland, intermittent stream and ephemeral overland flow path were identified. The freshwater features flowed in a general north to south direction and drained from the site through a culvert. Setbacks associated with the consented and completed earthworks have been established around the existing freshwater features, including the artificial pond and wetland.

Overland flow paths and streams

Auckland Council Geomaps indicates a number of overland flow paths to be present within the site, draining from small catchments. Consented works have been undertaken within a majority of these ephemeral overland flow paths located in the central and eastern sections of the site. Currently, an ephemeral overland flow path is present on the upstream extent of the artificial pond, in which consented works will be undertaken during the upcoming earthworks periods.

Downstream of the natural wetland, an overland flow path was present which had been previously classified as an intermittent stream, due to the present of surface water, defined channel banks and the lack of rooted terrestrial vegetation within the channel.

Wetlands

The artificial pond was located at the headwaters of the freshwater features on site. The pond was unnaturally large in relation to the contributing catchment, and historic aerial images show it was constructed prior to 1996. As such, this pond was not classified as a natural wetland under the NPS-FM.

Downstream of the artificial pond, the gully path widened forming an induced wetland. Reed-sweet grass (*Glyceria maxima*; OBL), dominated the area, forming a monoculture with a very low biodiversity. The wetland met the rapid assessment for wetland vegetation based on the dominance of obligate species. Primary hydrological indicators including standing water, approximately 0.1 m deep, and boggy ground around the outer margins of the wetland were evident. The wetland extent is not visible in aerials prior to 1996, however a shallow flow path is observable in historic aerials. Due to the presence of obligate wetland species, and permanent wetland hydrology present, the area was classified as a natural wetland under the NPS-FM.

Coastal wetlands are located within 100 m of the proposed development, east of the Outfall Site, which supports the recognised ecosystem type 'Mangrove Scrub'. The coastal wetland formed a monocultural of mangrove (*Avicennia marina* subsp. *australasica*), an obligate wetland plant, and would contain permanent, coastal hydrology. Therefore, the mangrove forest met the definition of a natural wetland under the NPS-FM, following the High Court decision.

Assessment of Effects

Direct effects of the proposed development will include the subdivision of the site, discharge of water within 100 m of coastal wetlands, vegetation clearance, and the reclamation of the artificial pond. Consented earthworks are to occur throughout the site during the 2022/2023 earthworks period and will include works over the ephemeral overland flow path present on the upstream extent of the artificial pond.

The botanical value of the site was considered to be of low ecological value and does not provide any significant value as habitat to indigenous fauna. The loss of vegetation within the site is expected to have a very-low level of effects on ecological values.

The freshwater value of the site was considered to be of low ecological value, providing little habitat to indigneous fauna and lacked complexity and biodiversity. The reclamation of the pond is proposed, which represents the potential for the harm or mortality of indigenous fish. To mitigate the potential loss of aquatic life, a Native Fish Rescue and Relocation Plan should be undertaken in the days prior to pond works occurring.

No works are proposed within the natural wetland. The proposed development will result in the loss of upstream catchment and an increase in impervious surfaces within the wetlands contributing catchment. The hydrology of the wetland has been considered when designing the development. Hydrological mitigation is proposed through the reticulation and discharge of stormwater into the wetland to achieve net hydrological neutrality, to ensure that there is no drainage or partial drainage of the natural wetland.

Additionally, the project proposes to discharge water within 100 m of a natural coastal wetland. The outfall does not extend into the mangrove forest, and the removal of wetland vegetation will not be required. As the wetland is coastal, and therefore primarily hydrologically supported by the tidal regime, the discharge of stormwater will have a negligible magnitude of effects on the hydrological regime of the coastal wetland. Stormwater flows will be attenuated through the implementation of erosion control through rip rap and a scruffy dome. Therefore, potential erosion and scour at the

outfall will be minimised, and reduce the level of fine sediments entering the coastal wetland. The discharge will not represent a change in the hydrological regime of the coastal wetland and will not adversely affect the extent and function of the coastal wetland or result in the partial or complete drainage of the natural wetland.

All other identified aquatic habitats and ecosystems within the site are proposed to be retained. No building infringements or removal of vegetation within the 10 m setback of the wetland, or 10 m riparian yard of the intermittent stream is proposed. Indirect adverse effects, for example, erosion, scouring, sedimentation and stormwater contaminants, are proposed to be mitigated through appropriate controls and following best practice guidelines to ensure adverse effects on aquatic life are no more than minor.

The proposed development has the opportunity to significantly increase the ecological value of the natural wetland through appropriate native riparian planting and restoration planting within the wetland body.

Summary

Within the main site, one natural wetland, one artificial pond with ephemeral headwaters, and one intermittent stream have been identified. One coastal wetland was identified within the outfall site. No other wetlands per the NPS-FM or streams per the AUP OP are present throughout the site. The proposed development has avoided the reclamation of natural aquatic features and drainage or partial drainage of natural wetlands, as the development has appropriately taken the objectives of the NPS-FM into account throughout the design stage. The direct impacts of the proposed development on freshwater ecological features will involve the diversion and discharge of stormwater within 100 m of the identified wetland which will be appropriately mitigated through the stormwater design to ensure there is no loss of wetland extent or value. The development has not proposed to infringe upon the riparian yard and provides the opportunity to enhance the freshwater ecological values through restoration planting.

The proposed development of the Main Site and Outfall Site is consistent with the outcomes expected of the NES-F and the NPS-FM, and will allow for the retention and protection of identified ecological features, including wetlands and natural stream systems. The proposed development is expected to have a low adverse effect on the ecological value of the site, and if restoration, enhancement and protection of the ecological features are carried out, the development will likely provide an overall net positive biodiversity gain.

Regards,

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Appendices

Appendix 1. Map of key ecological features.

NOTES
Aerial Images from Nearmaps (2022).
Legend * ephemeral overland flow path to undergo consented works in 2022/2023 earthworks period

DISCLAIMER:
This map/plan is not an engineering draft. This map/plan is illustrative only and all information should be independently verified on site before taking any action.

Legend

- Ephemeral overland flow path*
- Intermittent stream
- Freshwater wetland
- 100 m setback
- 10 m setback
- Artificial pond
- Coastal wetland
- Site boundary

Map Title

Kauri Road
Ground-truthed ecological features

Date	Drawn by
25/10/2022	Initial version by L.D

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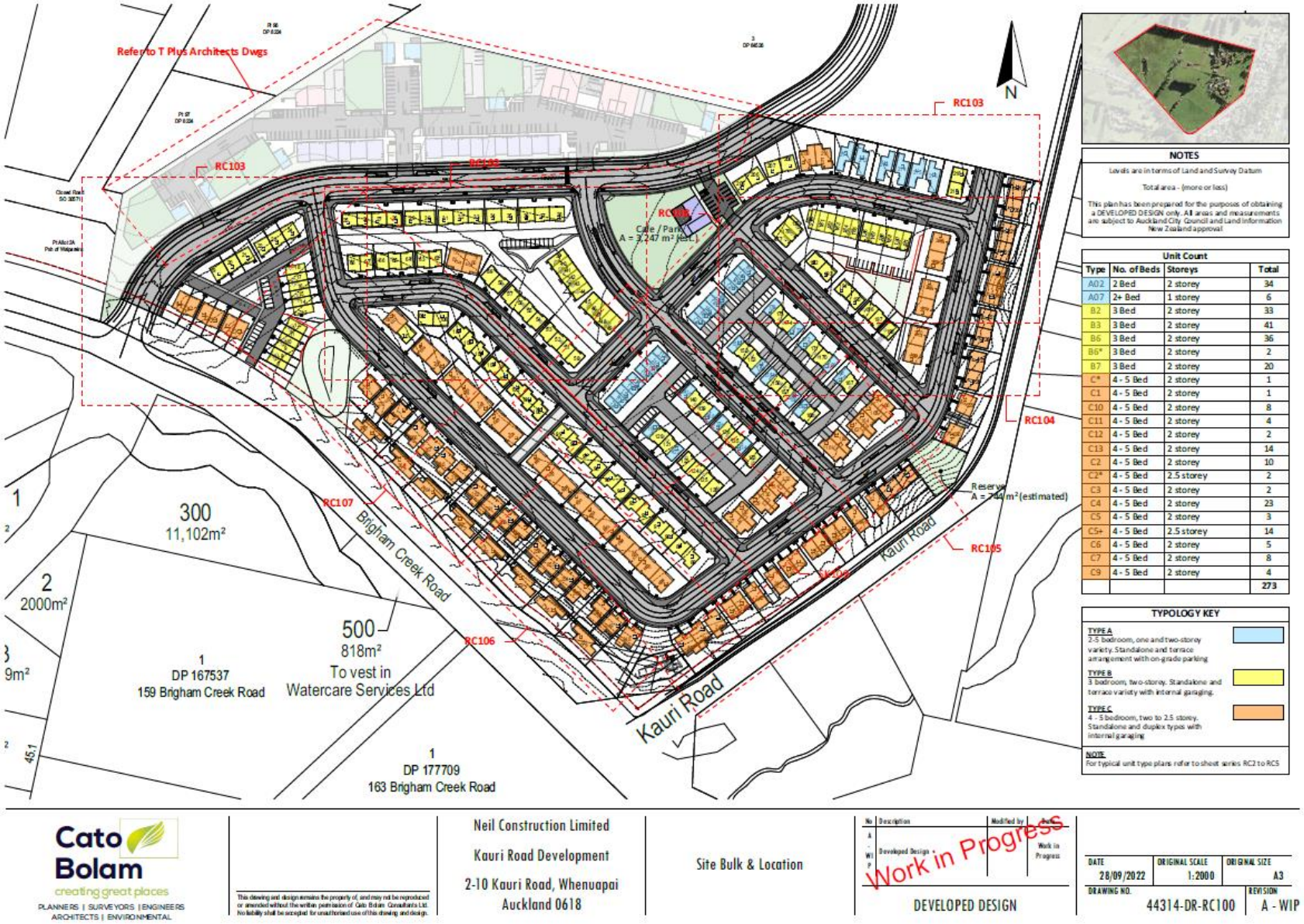
Appendix 2. Proposed Development Scheme Plan.



Appendix 3. Photos of identified ecological features.

Photo 1. Typical vegetation throughout the site.

Photo 2. Pest plants, including woolly nightshade and blackberry were present.

Photo 3. Juvenile pine trees establishing within the site.

Photo 4. Previously earthworked land within the site.

Photo 5. Artificial pond upstream of the natural wetland.

Photo 6. Downstream view of the reed-sweet grass wetland.

Photo 7. Standing water present within the wetland.

Photo 8. Intermittent channel downstream of the wetland.

Photo 9 & Photo 10. & Typical estuarine environment near the Outfall Site.

Photo 11. No freshwater wetlands were observed within the Outfall Site

Photo 12. Mangrove forest present near the proposed outfall, on the opposite bank.