Russell McVeagh

ATTACHMENT H

Te Puru Business Park, Beachlands

Ecological assessment for fast-track referral

Report prepared for

Knight Investments Limited

Prepared by

RMA Ecology Limited

Report number and date

Job 2230

March 2023

BETTER ECOLOGICAL OUTCOMES

PREPARED FOR:

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RMA ECOLOGY LTD

BETTER ECOLOGICAL OUTCOMES

Contents

1.0 Introduction

Knight Investments Limited is intending to apply to the Minister for the Environment to have their project referred for fast-track consenting under the Covid-19 Recovery (Fast-Track Consenting) Act 2020. The Application area comprises bulk earthworks and construction in order to develop industrial lots.

The project is located at the eastern fringe of Beachlands at 885-867 Whitford-Maraetai Road. The earthworks extent of this Fast Track Application is shown on **Figure 1** (hereafter referred to as 'the site').

RMA Ecology Limited has been engaged to undertake an ecological assessment of the site and proposed development to support the referral application[1]. The below is a high-level summary of our overall assessment to support a Fast track referral and includes:

- A summary description of the existing ecological values of the site;
- A summary description of the potential ecological effects associated with the Application;
- An overview of the proposed approach to managing adverse effects on ecology values that are not avoided; and
- Our assessment as to whether the project can avoid, mitigate or offset potential adverse ecological effects arising from the Application.

We have visited the site on two occasions (including, most recently, 19-20 January 2023) covering aspects including stream mapping and valuation, wetland delineation, vegetation mapping, and wildlife surveys. Desktop work has included GIS values mapping, and strategic planning inputs into protection, restoration and development areas across the site.

The site operates with existing resource consents for quarrying activities, but also holds a current consent for diversion of a watercourse (to be diverted multiple times over the quarry lifetime) (Permit 12275).

[1] As per our accepted offer of service to the client dated 3 December 2022.

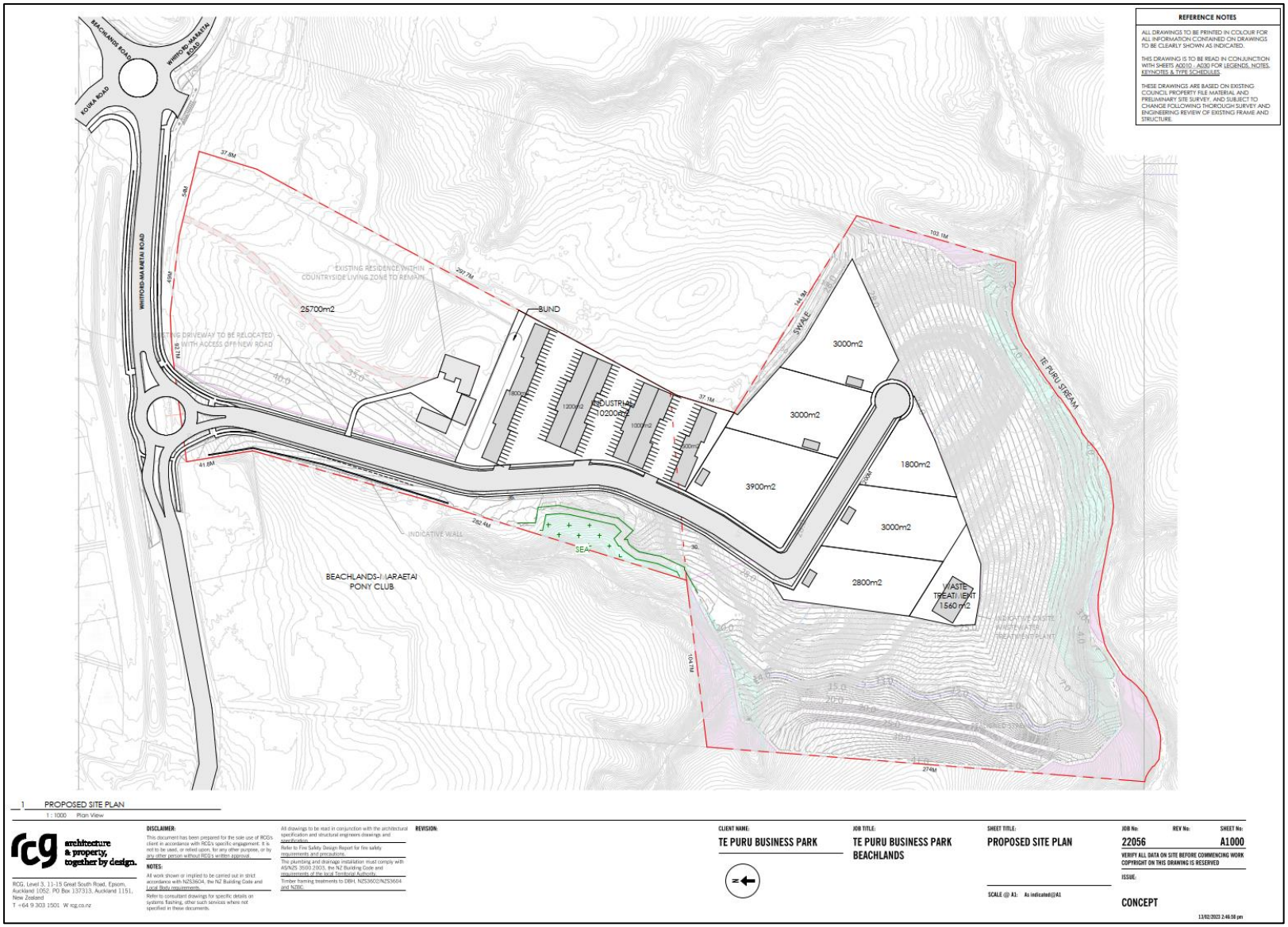


Figure 1. The Fast Track Application Area (red border).

2.0 Ecological values

The c. 12.2 ha site is within the Hunua Ecological District and is part of the incised rolling hill country that is typical of this coastal area. The site drains to Te Ruangaingai Stream (formally Te Puru Stream) which runs along the eastern boundary of the site and then flows north c. 1.3 km to the Tamaki Strait. The elevation of the site rises from below sea level in the quarry pit to 45 m asl.

Overall, the site has experienced considerable environmental change over the past 100 + years. Forest cover clearance and quarrying have both contributed to significant change to the site (**Plate 1**). The original topography has been altered significantly such that the original pattern of watercourses at the site has been greatly modified.

The current state as of the most recent site visit on 18-20 January 2023 is described below and is the baseline for the assessment of potential adverse ecological effects from the proposed development.

2.1 Terrestrial ecology

Most of the original terrestrial vegetation was cleared to facilitate pastoral agriculture in the 1800s. Since then, native vegetation has regenerated along the edges of the site and along watercourses. In the late 1950s, a quarrying operation commenced in the eastern portion of the site which continues to this day. Native vegetation has been progressively cleared as the quarry has developed.

Presently, there is 4,787 m^2 (c. 4 % of the total site area; **Plate 1**; **Figure 2**) of native vegetation remaining at the site, which is dominated by native kānuka (*Kunzea robusta*). The vegetation community is self-sustaining as a native community and displaying signs of succession, but is degraded by a range of competing pest plants. The rest of the site supports either scattered exotic trees amongst exotic pasture or exposed rock, gravel, cleanfill and herbaceous exotic plants associated with the quarry.

The loss of c. 96 % of native vegetation across the site over time has likely contributed to a similar loss of native terrestrial wildlife at the site. Only three native bird species – all of which are Not Threatened – were detected during a survey of the site: pūkeko (*Porphyrio melanotus*), kōtare/sacred kingfisher (*Todiramphus sanctus*), and kererū (*Hemiphaga novaeseelandiae*); exotic birds are common at the site.

A cursory investigation of lizard habitat (including decomposing woody debris, farm debris, and exposed faces of rock and gravel) detected only exotic rainbow skink (*Lampropholis delicata*), although native species could also be present at the site based on the habitat and local records of species, including copper skink (*Oligosoma aeneum*), Pacific gecko (*Dactylocnemis pacificus*) and forest gecko (*Mokopirirakau granulatus*).

There are no records for bats within 8 km of the site. Therefore, it is unlikely that bats use the site, even in a transitory manner, though there are large mature trees that could support their presence along Te Ruangaingai Stream.

A large (c. 23 ha) SEA (SEA_T_432) listed in the Auckland Unitary Plan (AUP) encompasses a network of native vegetation along the riparian area of the mid-reaches of Te Ruangaingai Stream and its tributaries and effectively surrounds the site (**Figure 2**). At one location, this SEA encroaches the southern boundary of the site by 960 m^2; however, this area holds very low ecological value.

2.2 Aquatic ecology

Te Ruangaingai Stream flows along the eastern boundary of the site. A permanent tributary – known informally as Pony Club Creek – originally flowed into the site from the south and into Te Ruangaingai Stream at the north of the site. Two smaller streams – one permanent and one intermittent – originally converged with Pony Club Creek soon after they entered the site across the southern boundary (**Figure 2**). Quarrying operations have significantly modified this hydrological system.

Te Ruangaingai Stream has moderate habitat heterogeneity in the form of undercut banks, large pools, and runs. Its riparian margins support secondary mature native forest and shrubland along most of its upper catchment length. Overall ecological quality of the stream scores highly across most ecological functions.

Upstream of the site the Pony Club Creek is a meandering cobble-bottomed permanent stream that has good habitat heterogeneity in the form of undercut banks, pools, riffles, and runs (**Plate 2**). Upstream of the site, the Creek has a c. 25 m (on average) forested riparian area on each side within a c. 25 ha catchment and supports extensive stream length as mainstem and side branch streams. Three culverts within the site upstream of the quarry pit present barriers to fish passage as the culverts are perched and/or lack low-flow structures within them to encourage fish passage. Within the site, sediment accumulation has degraded in-stream habitat.

A freshwater fish survey was undertaken in Pony Club Creek upstream from where it flows into the quarry pit. Koura/freshwater crayfish (*Paranephrops planifrons*) were detected as well as three native fish species: longfin eel (*Anguilla dieffenbachia*), shortfin eel (*Anguilla australis*), and banded kōkopu (*Galaxias fasciatus*). Longfin eel is classified as a nationally threatened species (At Risk-Declining) in the Department of Conservation's Threat Classification System.

There is one 25 m^2 wetland at the site that meets the definition of a natural inland wetland under the National Policy Statement – Freshwater Management (NPS-FM). The wetland appears to have been induced upstream of a culvert that was installed in order to create a driveway accessing the quarry in c. 1980. The wetland is dominated by exotic mercer grass (*Paspalum distichum*) and at the time of the survey was occupied by a nesting pūkeko.

2.3 Summary of ecological values

The most important ecological values at the site include:

1. The remaining native vegetation;
2. The network of streams at the site, including the function and values of the upstream and downstream catchments that can be affected by activities at the site; and
3. The stream reaches up-catchment of the site that are currently severed by the state of Pony Club Creek on the site.

Habitat for native copper skinks is sparse and limited to riparian margins of the existing Pony Club Creek alignment on the site. Potential roosting habitat for bats within the site is similarly limited to riparian margins – most of which are not proposed to be disturbed by the proposed development – and are of low quality and low likelihood that bats are present.

Plate 1. A photo of the quarry pit taken from the southern boundary of the site. The tall vegetation on the right is along the true right of Te Ruangaingai Stream.

Plate 2. Pony Club Creek where it flows through native vegetation upstream of where it enters the quarry pit.

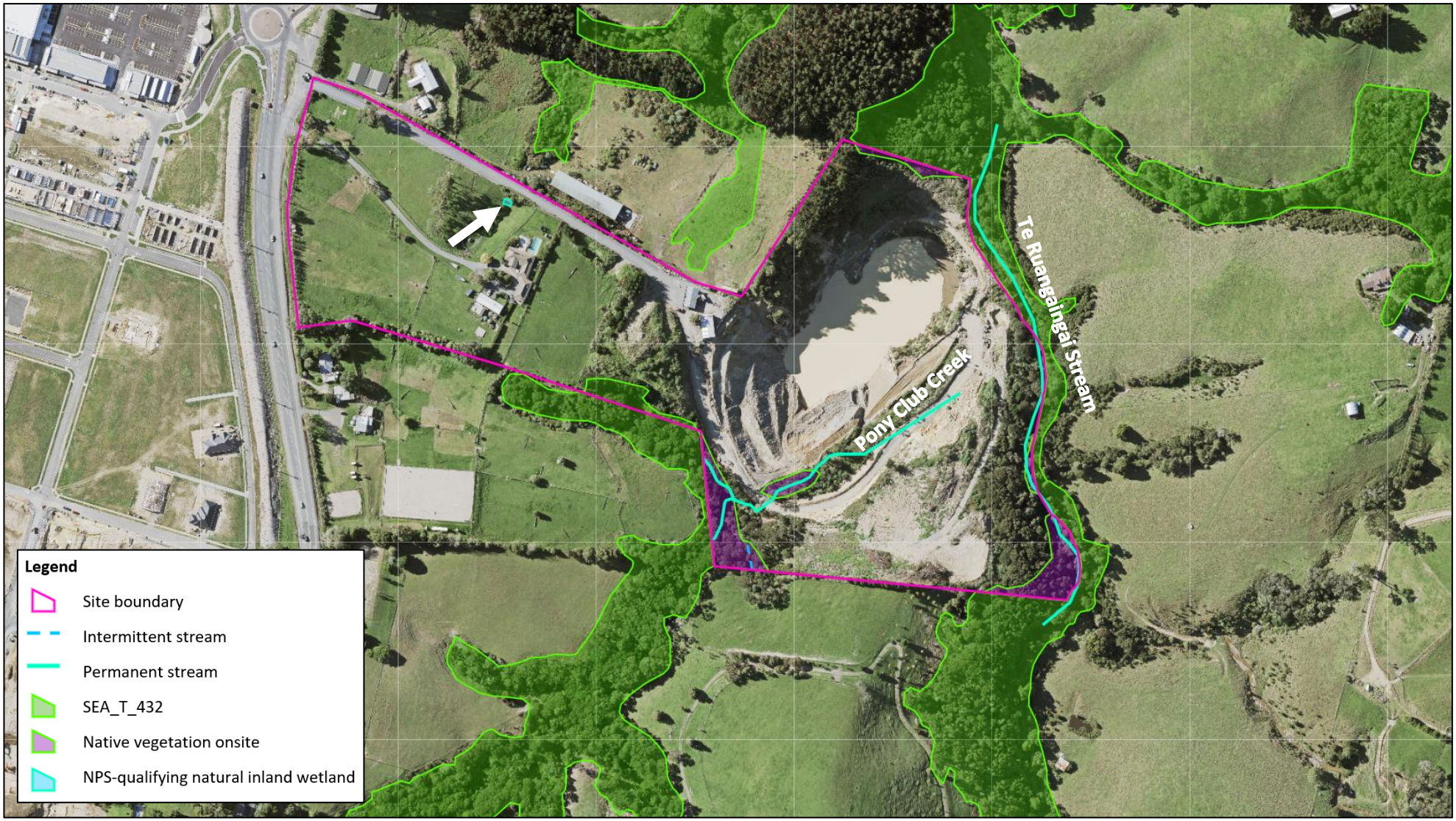


Figure 2. Ecological features at the site and the adjacent SEA. (Note: the singular small wetland is emphasised by a white arrow. Note: streams are not fully mapped outside of the site. Note: the aerial imagery shows a larger spatial extent of woody vegetation at the site than was actually present during the site visit.)

3.0 Proposed development

Knight Investments Limited is proposing to utilise the rehabilitated quarry for light industrial activities including constructed buildings and yards (**Figure 1**). Notably, the existing quarry activities have begun the rehabilitation works over part of the site, and these will continue to enable the platform areas for the development.

A significant feature of the proposed development would be to reinstate the Pony Club Creek as an open channel along a new alignment (different to that already provided under Permit 123275) however, in a manner that includes a natural meander and features such as pools, riffles and runs and which would provide for connectivity for streams and planted riparian margins through the site.

The main platforms would be supported by retaining or batter slopes down to Te Ruangaingai Stream and Pony Club Creek.

A wastewater treatment facility will be located at the eastern end of the site. Treated water from the facility will be either reused on the site, discharged to the restored Pony Club Creek, or trucked and disposed of offsite. Discharge into Pony Club Creek will require that environmental water quality standards are met (NES-F standards), and that discharge volumes and structures do not result in adverse effects on the in-stream biota or stream morphology or water quality of Pony Club Creek.

The proposed concept also includes substantial replanting of riparian margins and surrounding areas with eco-sourced native trees and shrubs to restore ecological connectivity, create ecological corridors between the upper catchment above the site and Te Ruangaingai Stream below the site, restore native vegetation to the small area of SEA, and buffer streams and SEAs on or adjoining the site.

The wetland area is not within the development footprint and no development or earthworks will take placed within 10 m of its mapped extents.

The development has been designed to avoid effects on existing ecological features where practicable and to provide for restoration opportunities. Where effects cannot be avoided due to design, planning, economic or engineering constraints, the full effects management hierarchy has been applied to ensure that opportunities for remediation and mitigation are considered.

The realignment and restoration of Pony Club Creek is an excellent example of how the principle of Te Mana o Te Wai that underpins the NPS-FM is expressed on such sites, as these proposed works will restore ecology and ecosystems, improve water quality, and better reconnect people with a re-naturalised environment.

3.1 Management of existing ecological values

With regard to existing ecological values, it is intended that:

- All remaining native vegetation at the site will be retained, restored (including a 5 m buffer) (**Figure 3**), and effects on the remaining native vegetation avoided (except the area alongside Pony Club Creek which has been previously consented for removal);
- The SEA within the site will be retained and restored, including a 5 m buffer (**Figure 3**);
- The sole wetland at the site will be retained and direct effects (e.g., infilling) avoided;

- Pony Club Creek will be reinstated as an open channel with features including a natural meander with pools, riffles and runs (in accordance with the existing resource consent);
- An intermittent stream will be reconnected to Pony Club Creek;
- Te Ruangaingai Stream will be retained along its current alignment;
- A 20 m wide riparian area will be planted with appropriate eco-sourced native vegetation along Te Ruangaingai Stream within the site wherever there is currently no native vegetation (**Figure 3**);
- A 10 m wide riparian area will be planted with appropriate eco-sourced native vegetation along all other streams at the site wherever there is currently no native vegetation (**Figure 3**); and
- Native forest planting will occur within an additional area surrounding the realigned Pony Club Creek, in order to more fully buffer the creek margins and to provide higher-quality ecological connectivity and corridor between the SEA and stream areas upstream of the site and Te Ruangaingai Stream below the site.

3.2 Potential adverse ecological effects

An iterative process was followed that progressively enabled the level of unavoidable adverse effects to be reduced, and created opportunities for restoration. The remaining potential adverse ecological effects reflect the engineering and geotechnical constraints.

The potential adverse ecological effects are:

- Works for and associated with the realignment of the stream;
- The discharge of treated waste water from the Wastewater Treatment Plant into Te Ruangaingai Stream (via Pony Club Creek);
- The discharge of stormwater into Te Ruangaingai Stream;
- The potential for discharge of sediment to streams during earthworks and construction activities; and
- Effects on wetland hydrology due to earthworks within 100 m of the sole wetland.

The management of these potential effects are addressed in the next section of this report.

3.3 Mitigation approach

Potential adverse effects on ecological values have been assessed against the mitigation hierarchy (avoid, remedy, mitigate, offset, compensate), as is required under the RMA 1991, and as is laid out in the AUP, and the recently revised NPS-FM.

The mitigation approach for the four potential adverse ecological effects are as follows. All are standard approaches that are applied by Auckland Council across greenfield development projects and which are typically supported by conditions of resource consent.

- The discharge of raw wastewater into Te Ruangaingai Stream will be *avoided* by treating the wastewater to current best practise standards within a MBR plant at the site. The treated wastewater will then be discharged in a controlled manner to Pony Club Creek;

- The discharge of stormwater into Te Ruangaingai Stream will be *minimised* and *mitigated* by undertaking works in accordance with an approved stormwater management plan;
- The discharge of sediment to streams during earthworks and construction activities will be *minimised* through the preparation and implementation of an approved Sediment and Erosion Management Plan (SEMP) that is consistent with Auckland Council Guideline GD05;
- Effects on the sole wetland will be *minimised*. The final earthworks will be carefully designed to minimise any change to the catchment size serving the wetland. Therefore, the effects on wetland hydrology will be negligible;
- Salvage of native lizards will be undertaken from within potential habitat prior to vegetation clearance, and relocation of any native lizards caught into nearby secure habitat;
- Clearance of shrubs and trees (including exotic species) should occur outside of the breeding season for native passerines (perching birds), or a requirement set that a survey is undertaken by a qualified ecologist to ensure that no active nests of native birds will be impacted. Where native bird nests are detected, clearance works around the nest will be delayed until nestlings have fledged or until the nest has failed;
- The loss of native fish from any diversion works will be managed as a native fish salvage and relocation plan will be prepared.

Outside of the proposed lots and associated infrastructure, and outside of existing ecological features and their proposed buffers, all remaining areas (c. 3.1 ha) will be planted in appropriate eco-sourced native vegetation (**Figure 3**). A planting plan would be prepared to direct all planting works on site.

Figure 3. Proposed restoration layout. Note the extensive restoration of streams, riparian margins and connecting forest areas that is proposed for the north-east, east and southern portions of the site.

4.0 Conclusions

From our involvement in the design process, and from our knowledge of the site and its ecological values, we are of the opinion that the proposed development will avoid the highest value ecological features and minimise potential adverse effects through careful on-site practice during site development and ecological mitigation. The application of the mitigation hierarchy will ensure that effects on the environment are minor and that offsetting or compensation is not required.

The development of the site offers the opportunity to protect, enhance, restore and buffer most of the ecological features at the site, and to significantly increase the forested area which will connect fragmented components of the adjoining SEA_T_432 and other natural features near to the site.

Avoidance of most of the ecological features (including the highest value features) in combination with the application of the effects management hierarchy in the manner described above will result in managing adverse effects to a low level overall, and, together with the ecological enhancements proposed, will result in a clear net-gain benefit for aquatic and terrestrial ecology on the site, and benefits to the local environment through ecological corridors, connectivity and habitat creation for native wildlife.

The net outcome of this development will be overwhelmingly positive for the ecological environment.

4.1 Further assessment required to inform fast track resource consent application

In order to prepare the fast-track resource consent application, we will provide more detailed accounts of the ecological values across the site, and a thorough application of the component stages of the mitigation hierarchy.

Management Plans will be provided that detail the programmes for enhancement, restoration, maintenance and monitoring to ensure that biodiversity benefits are delivered on the ground. Specific plans will include a Stream Re-alignment Plan and a Planting Plan.

Russell McVeagh

ATTACHMENT I

Project Reference: J00244

24/02/23

Knight Investments Limited

885 Whitford-Maraetai Road, Beachlands

Attention: Mr D Smith

FAST TRACK APPLICATION FOR PLAN CHANGE
885 WHITFORD-MARAETAI ROAD, BEACHLANDS

1 INTRODUCTION

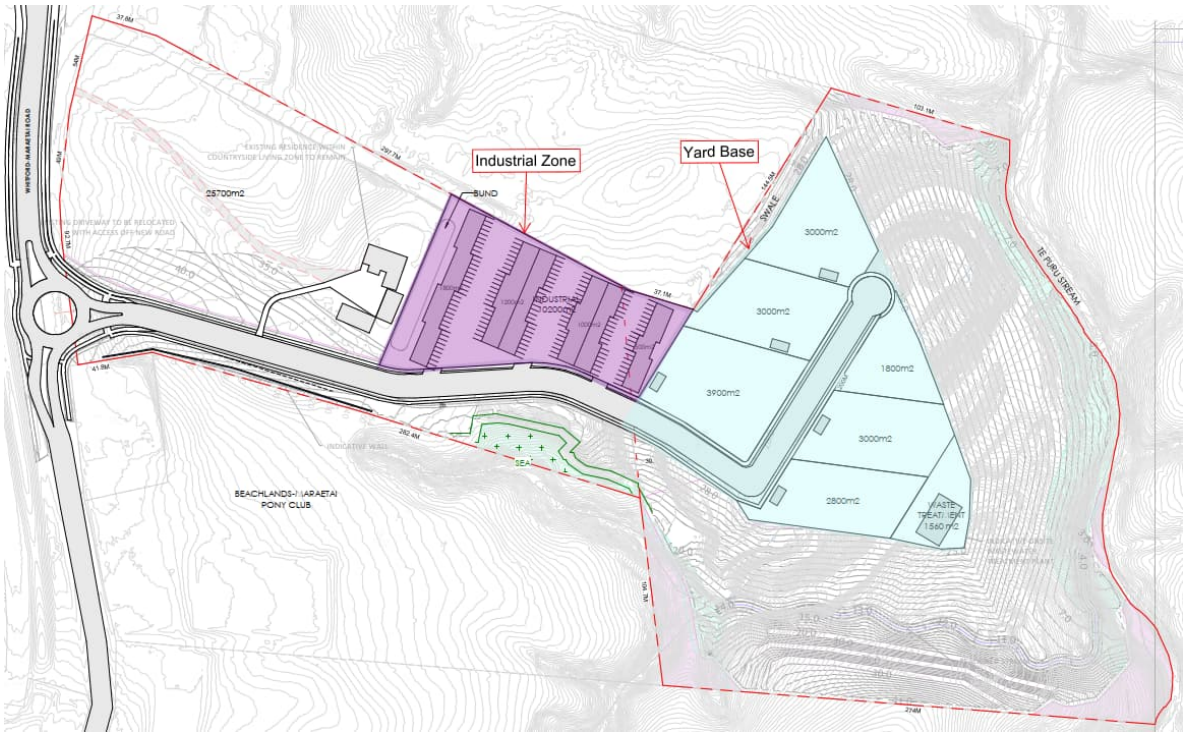
Knight Investments Limited are seeking that the proposed development of a landholding at 885 Whitford-Maraetai Road, Beachlands ("the site") be consented via the COVID-19 Recovery Fast-Track process. To support the application for fast-track referral, this memo provides a high-level review of the geotechnical aspects of the proposal, including:

- Summary of the proposal and site description;
- Summary of geotechnical work completed to date;
- High level geotechnical assessment of proposal; and
- Conclusions.

2 SITE DESCRIPTION AND PROPOSAL

The site is located at 885 Whitford-Maraetai Road, Beachlands, and is legally described as Lot 2 DP 54701 and Lot 2 DP 203289 having a total area of approximately 9.1142 HA. It is bound by the Te Puru stream to the east, rural land to the north and south, and Whitford-Maraetai Road to the west. The site presently contains an active quarry (involving rock extraction & pit remediation via a managed landfill; both activities are concurrent), rock processing yard, & associated office buildings (see inset left). Works to facilitate the construct of the new access will occur along the southern portion of 867 Whitford Maraetai Road legally described as SEC 2 SO 487740 held in certificate of title 709887.

The proposed development seeks to enable light industrial uses (referred to as the "Industrial Zone") and light industrial yard based activities (referred to as the "Yard Base') as depicted by the purple and blue shaded areas on the concept inset below (base plan source: RCG Ltd).



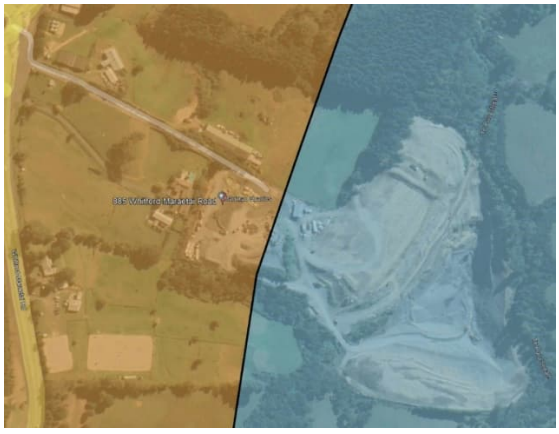
Development Concept

3 SUMMARY OF GEOTECHNICAL INVESTIGATION WORK TO DATE

Lander Geotechnical Consultants Limited (now trading as LDE) have undertaken three tranches of site investigation on the site, all comprising intrusive boreholes. A summary is given in section 3.2 below.

3.1 Geology Overview

The site is underlain by two geological units, these are orange shaded East Coast Bays Formation of the Waitemata Group (ECBF) and blue shaded Waipapa Group (WG). The latter occupies the central and eastern portions of the site, and this is where greywacke rock is currently being extracted for the construction industry. This geology underlies the entire area zoned as 'Yard Base' and the eastern portion of the 'Industrial Zone'. The western portion of the site is ECBF geology, which underlies the balance of the 'Industrial Zone'. Both geologies weather to clayey silts and silty clays, and have different engineering characteristics.



3.2 Previous Site Investigations - Summary

Geotechnical Investigations for a Proposed Office, Ref No J00244, dated 4 December 2015

This investigation was undertaken in support of a Building Consent application for the Quarry office and comprised the drilling a one hand auger borehole to a depth of 2m, as depicted (inset left). This test is located within the proposed 'Industrial Zone' (purple area).

Beneath a 1m thick well compacted hardfill layer (which prevented the test being located within the actual building footprint), very stiff silty clays with fine gravel sized inclusions are present (WG). No groundwater was identified at the time of the site investigation.

Vane shear strength typically increased with depth.

Geotechnical Investigations for a Proposed New Water, Ref No J00244, dated 15 November 2019

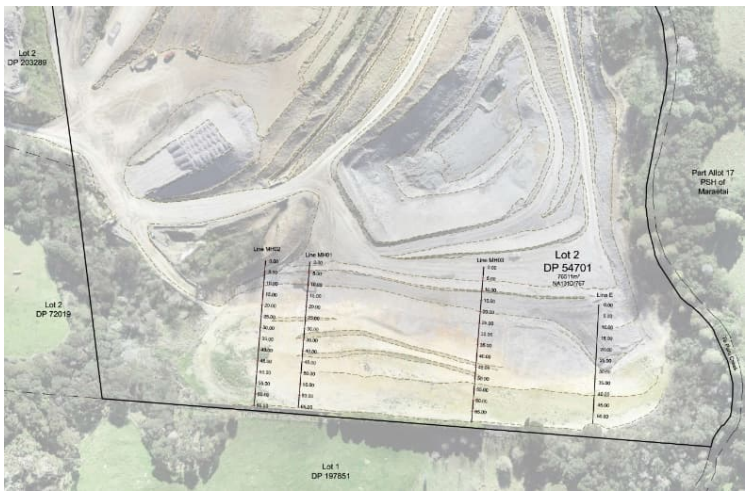
This investigation involved the drilling of two hand auger boreholes, as depicted (inset left). These tests are located within the proposed 'Industrial Zone' (purple area).

Beneath an initial hardfill layer associated with the current use as a rock processing yard, very stiff to hard, inorganic clayey silts and silty clays were identified to at least 5m depth, increasing in vane shear strength with depth (WG).

No standing groundwater table was identified in either borehole at the time of drilling.

Interim Advise for Proposed Quarry Overburden Slope, Ref No J00244, dated 9 November 2020

This investigation was for the design of a proposed soil batter above a future quarry high wall. It involved the drilling of three rotary cored machine boreholes to depth of up to 27.5m, in the alignments depicted on the inset (left). These tests are located east of the proposed 'Yard Base' (blue area).



The investigation found completely weathered overburden soils typically up to 8m in thickness, underlain by highly weathered to less weather deposits of approximately 10m thickness, in turn underlain by unweathered strong Greywacke rock (WG).

4 High Level Geotechnical Assessment

4.1 'Industrial Zone' (Purple Area on Inset page 2)

4.1.1 Settlement

The 'Industrial Zone' area is underlain in the western and eastern portions by ECBF and WG deposits respectively, together with superficial layers of gravelly fill associated with the rock processing yard / quarrying activities. The natural deposits are competent, inorganic, very stiff to hard cohesive deposits and therefore present low consolidation settlement potential and have very low liquefaction damage potential.

4.1.2 Slope Stability

Final land gradients in this area are anticipated to be gentle following a future development to create the 'Industrial Zone', and at this stage slope instability should be dismissed as a foreseeable hazard to future building development in these lots.

4.1.3 'Industrial Zone' End Use Suitability

The 'Industrial Zone' is considered suitable for conventional light industrial or commercial buildings (i.e. single storey structures with or without timber mezzanine floors, comprising reinforced concrete block or tilt panel boundary walls, lightweight roofing and cladding elements fixed to timber or steel portal or truss frames with reinforced concrete floor slabs on grade) incorporating shallow strip and/or pad foundations constructed to a typical minimum embedment depth of 600 to 900mm below cleared ground level, and having a geotechnical ultimate bearing pressure of 300 kPa, and design floor live loads typically up to 15 kPa).

4.2 'Yard Base' (Blue Area on Inset page 2)

Following rock extraction activities, the remediated quarry pit will comprise 40 to 50m depth of managed fill deposits, comprising highly variable soil mixtures, that have not been accepted or compacted in accordance with NZS4431:2022 Engineered Fill Construction for Light Weight Structures.

4.2.1 Settlement

It is foreseeable that this area will be prone to long term consolidation settlements due to the fill self-weight, unproven compaction, and slow decomposition of organic matter (if any) within the fill mass. These types of consolidation settlement will likely occur over many years, as the fill compresses upon itself and the moisture content of the soil mass changes and equilibrates, and a groundwater table establishes. Settlement is likely to occur differentially, the magnitude of which cannot be accurately estimated at this stage. The rate of settlement would continue for an indefinite amount of time, but at an ever-decreasing rate.

4.2.2 Slope Stability

Managed fills form batter slopes at the northern edge of the 'Yard Base' area. We understand that these batters have been constructed as a series of benches to heights and angles as determined appropriate by the Quarry Manager, based on his judgement, experience and observations of slope performance. They are not engineer design, in that the factor of safety against slope instability (in terms of minimum requirements normally accepted by Council for the proposed end use) are currently unknown. A safe set back distance from the edges of these slope for yard storage / associated facilities will need to be adopted to mitigate slope stability risks. This a matter to be addressed during the detailed design of the subdivision.

4.2.3 'Yard Base' End Use Suitability

Due to the foreseeable long-term consolidation settlement and batter slope stability concerns, end use upon the 'Yard Base' might comprise (as the name implies) unsealed hardstanding yards for low stacking storage, nurseries, vehicle parking, or other such use that does not involve the creation of large paved surfaces and/ or substantial buildings. However regarding the latter, it would be sensible to conclude that small 'porta-com' type buildings would be suitable to be located within the 'Yard Base', as they are small footprint portable structures, which can be relevelled easily should differential settlements occur beneath them.

Future design of the 'Yard Base' will need to address settlement and slope stability in greater detail, particularly with regard to any building development and infrastructure servicing located within this area (e.g. wastewater, stormwater, etc). This is a matter for specific investigation and design.

It would be advisable to install geotechnical instrumentation (e.g. surface settlement markers, extensometers, etc) upon the 'Yard Base' clean fill areas once they are constructed to grade, in order to capture the magnitude and settlement trends of the clean fill mass, thereby increasing confidence levels for future development upon this area.

This requirement particularly applies to the area(s) of the proposed Waste Water Treatment Plant depicted ion the RCG concept drawings.

5 CONCLUSIONS

The purpose of this report is to inform a proposed Fast Track Application for Plan Change in relation to geotechnical constraints within the 'Industrial Zone' and 'Yard Base'.

In summary:

- The Eastern and Central portions of the site contain deep / variable depth non-engineered fills placed to date and commercial end use here is limited on account of long term consolidation settlement and slope stability concerns. It is considered suitable for 'Yard Base' end use, in general as outlined in section 4.2.3 above. A Waste Water Treatment Plant and associated infrastructure located in the 'Yard Base' area will require specific foundation investigations and design to mitigate the geotechnical issues described above.
- The Western portion of the site is located upon competent natural deposits and is considered suitable for conventional 'Industrial Zone' end use, typically as outlined in section 4.1.3 above.

6 LIMITATIONS

This report should be read and reproduced in its entirety including the limitations to understand the context of the opinions and recommendations given.

This report has been prepared exclusively for Knight Investments Limited in accordance with the brief given to us or the agreed scope and they will be deemed the exclusive owner on full and final payment of the invoice. Information, opinions, and recommendations contained within this report can only be used for the purposes with which it was intended. LDE accepts no liability or responsibility whatsoever for any use or reliance on the report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities, and for purposes beyond those for which it was intended.

This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

Opinions given in this report are based on visual methods and subsurface investigations at discrete locations designed to the constraints of the project scope to provide the best assessment of the environment. It must be appreciated that the nature and continuity of the subsurface materials between these locations are inferred and that actual conditions could vary from that described herein. We should be contacted immediately if the conditions are found to differ from those described in this report.

For and on Behalf of Land Development and Engineering Ltd

Shane Lander

Principal Geotechnical Engineer

NZCE(civil), BE(Hons, 1st class 1st Div.), CPEng, CMEngNZ

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