

ENGINEERING ASSESSMENT

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| Project Name: | Pohutukawa Business Park, 867 & 885 Whitford Maraetai Road, Beachlands |
| Client: | Knight Investments Limited |
| CP Project No: | 2038-06 |
| CP Document No: | 2038-06-ER09-ConceptualDesignReport-aja -20250609 |
| Date of Issue: | 09 June 2025 |
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| Reviewer: | Ryan Pitkethley |

1. Introduction

This technical report has been prepared to support fast track referral application for the proposed PohutukawaBusiness Park. The PohutukawaBusiness Park is proposed to include light industrial, retail and fast food development on the site of the existing quarry site at 885 Whitford Maraetai Road and the site at 867 Whitford Maraetai Road.

The overall purpose of this report is to outline the engineering aspects of the development and how effects related to earthworks and three waters will be avoided and/or mitigated.

Adherence to the Auckland Council Technical Publications and Guidance Documents as relevant to sediment and erosion control, stormwater management and wastewater management has been undertaken in the preliminary engineering design.

2. Site Description

The subject site is located at 867 and 885 Whitford Maraetai Road, Beachlands. 867 Whitford Maraetai Road is legally described as SEC 2 SO 487740 held in certificate of title 709887. 885 Whitford Maraetai Road is legally described as Lot 2 DP 54701 and LOT 2 DP 203289 held in certificate of title NA131D/767. The subject site has a total area of 12 hectares.

In general, the site is bordered by rural countryside living to the north and south and rural land to the east. Land to the west is zoned for open space purposes as it utilised by the Beachlands Maraetai Pony Club. The immediate eastern side of the site is bordered by the Te Ruangaingai Stream which flows from the south to the north.

Current access to the existing Quarry is via a slip lane off the Whitford Maraetai and Beachlands Road's roundabout.

The sites are not connected to any public reticulated stormwater, wastewater or water networks.

3. Project Description

The overall project seeks to create a finished surface (following completion of rehabilitation works from the quarrying activities) to enable light industrial, retail, fast food retail and other service activities to occur within the site.

Works to facilitate the above, include earthworks and the construction of a new roading connection, internal roading network and associated three waters servicing infrastructure.

Specifically, a proposed new access to the site will be via a new roundabout and private road suitably designed for light industrial activities.

The existing house located on 867 Whitford-Maraetai Road will be demolished to allow for the new development.

3.1 Earthworks

Bulk earthworks are proposed across the subject site to form the access road from Whitford Maraetai Road and the building platforms over an area of approximately 12 hectares. Engineering fill material with a volume of up to 300,000m³ (approximate) will be imported from off site to meet the required finished surface levels and to create the roading network within the site. The earthworks are proposed to be undertaken during the earthworks season(s), with an anticipated maximum time frame of 2 years.

3.1.1 Geotechnical

Proposed earthworks slopes are no steeper than approximately 1 in 3. All slopes / retaining walls / geotechnical parameters will be assessed by a geotechnical engineer and designed accordingly as the design progresses.

3.1.2 Sediment and Erosion Controls

A number of erosion and sediment control measures will be employed for the duration of the site works to generally accord with the Auckland Council Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region Guideline Document 2016/005 (GD05). The proposed measures include:

- A stabilised construction entrance to be installed off Whitford Maraetai Road and will remain in place for the duration of the works.
- Clean water diversion bunds will intercept and direct clean water away from the proposed works area (sized in accordance with GD05).
- Silt fences or super silt fences where close to waterways, runoff diversion channels and topsoil diversion bunds will control sediment runoff.

- A minimum of one silt pond with rainfall driven chemical treatment to reduce the suspended sediments, to treat the majority of the earth-worked area. The treated water will discharge to the east to the Te Puru Stream.
- If required, chemically treated decanting earth bunds will be used to treat any earth-worked areas that cannot be directed to the main silt pond. The decanting earth bunds will be sized in accordance with GD05, being 3% volume with 10% forebays and a cloth lined forebay spreader bar, with floc treatment.
- The stream diversion works will be carried out offline with the stream diverted to the new alignment during dry weather. Erosion and sediment measures will be developed through the detailed design process and shall exceed the requirements of GD05.
- All measures will continue to treat water and remain in place for the duration of the works until the catchment is fully stabilised.
- Clean water diversions and silt fences will be constructed around the earthworks stockpiles.

All erosion and sediment controls will be constructed prior to any bulk earthworks commencing. Sediment and Erosion Control monitoring will be undertaken by the contractor's project supervisor, the site Engineer and an Auckland Council representative. Sediment and Erosion Control monitoring will be undertaken on a weekly basis with increased monitoring during times of heavy rainfall. Visual checks will be conducted to ensure the quality of water in the receiving environment(s) is not compromised.

3.1.3 Wind Erosion and Dust Monitoring

If earthworks are undertaken during dry periods there may be the potential for dust generation and erosion by wind from un-stabilised site areas. Accordingly, it is proposed to implement measures to control wind erosion and to minimise the spread of airborne dust, and any nuisance created by it through construction management plans to be prepared as conditions of consent.

3.2 Roding

3.2.1 New Roundabout

A new roundabout with Whitford Maraetai Road is proposed to access the site and shall be located approximately 180m to the south of the existing roundabout, as detailed in the Transportation Memo. This intersection with Whitford Maraetai Road will replace the existing accessway.

3.2.2 New Private Road

The roading layout will comprise an access road from Whitford Maraetai Road falling at a maximum (approximate) 5% grade towards the eastern end of the site where a cul-de-sac will provide turning for a 20m semitrailer. The hierarchy of the road within the development will be Local (Industrial). While it is envisaged that the new road remains private, it has been designed to align with public standards. The geometric layout of the road will allow for manoeuvring of design vehicles as outlined in Chapter 4.2 of the ATTDm.

3.2.3 Private Access

Driveways for individual industrial areas and the main retail area are proposed to be constructed as part of the roading works, in order to ensure sight distances are maintained and to avoid potential for future conflicts with inroad stormwater management devices, and will generally align with TDM Commercial Vehicle Crossing Standard VX0203 Rev A.

The industrial units will be accessed via private lanes which will provide vehicle access into the buildings and incorporate parking zones and pedestrian access. These lanes will comply with Auckland Unitary Plan Chapter E27.

3.3 Stormwater

The subject site is located within a rural portion of Beachlands. A stormwater management plan was developed for the Te Puru Business Park and the proposed stormwater mitigation will be designed in accordance with the hydrological principles of this stormwater catchment plan. The receiving environment for the subject site is the Hauraki Gulf via the Te Ruangaingai Stream located on the eastern border of the subject site. There is no existing public stormwater network which services the site.

The subject site is located within the lower part of the Te Ruangaingai Stream catchment. Within the site, the stormwater catchment is divided into two distinct stormwater sub-catchments. The majority of the site drains to the east to the Te Ruangaingai Stream. While the area at the north-western end of the subject site drains to the north via the adjacent properties, 887 Whitford Maraetai Road and 37 Keanes Road before entering a tributary of the Te Ruangaigai Stream. Please refer to the attached pre and post development stormwater catchment plans.

Stormwater Management techniques for onsite management include:

- Treatment of all impervious areas by a water quality device designed in accordance with GD01 for the relevant contaminants (except where roof water is captured for re-use, the roof water will not be required to be treated).
- SMAF 1 retention (volume reduction) of a minimum of 5mm runoff depth for all impervious areas.
- SMAF 1 detention (temporary storage) with a drain down period of 24 hours for the difference between the pre-development (grassed state) and post development runoff volumes from the 95th percentile, 24 hour rainfall event minus the retention volume for all impervious areas.
- Piped network to cater for stormwater runoff associated with the development in a 10% AEP+cc event.
- Management/mitigation of 1% AEP+cc peak flow to match pre development flow rates.
- Overland flow paths to be via roads or well defined channels covered by easements where in private land.

- Design so that the predevelopment flow within each existing catchment is at least maintained and will not water short the catchment.

The proposed stormwater management approach will adhere to the following documents;

- Auckland Council Code of Practice for Land Development and Subdivision. Chapter 4 – Stormwater (SWCoP).
- Auckland Council GD01 - Stormwater Management Devices in the Auckland Region.
- Auckland Regional Council TP108 – Guidelines for Storm Water Runoff Modelling in the Auckland Region.
- Auckland Council TR2013/018 – Hydraulic Energy Management: Inlet and Outlet Design for Treatment Devices.

3.3.1 Primary Stormwater Network

A primary stormwater pipe network shall be constructed with all reticulated networks to outfall following treatment onsite to either the Te Ruangaingai stream via a new outfall and rip rap which can be constructed without encroaching on the stream bed or to the existing overland flow path to the north via an existing 600mm diam culvert.

Stormwater pipes are proposed to be located within the Whitford Maraetai Road reserve, private road reserves and carpark areas. Each development area will be provided with one connection to the stormwater network at the time of their creation.

3.3.2 Secondary Stormwater Network (Overland Flow)

The secondary stormwater network will be designed to manage overland flows from the site and upstream catchment for the 1% AEP rain event including for the potential effects of climate change.

In general, overland flow paths will be within the road reserve areas and be designed for safe conveyance of overland flows with minimal risk to road users and the local community. Final details will be provided as part of the design and consenting process with the substantive application.

3.3.3 Stormwater Management Devices

Hydrology mitigation (retention and detention) and treatment is to be provided for roads and future development “at source”.

Generally retention is anticipated to be provided for the first 5 mm runoff depth from impervious areas via underground and/or above ground tanks to reuse water within the buildings, and detention storage has been calculated considering a runoff depth of the difference between the pre-development and post development runoff volumes of the 95th percentile, 24hours rainfall event minus the retention volume, to be discharged into the primary stormwater network over a period of 24 hours via tanks and orifice flow.

Stormwater treatment for the Te Ruangaingai stream catchment will likely be provided by SW360 cartridge filters (or similar type underground devices) and underground vaults. The outlet from this system will either be piped to a bubble-up outlet manhole which will dissipate energy prior to discharging to the Te Puru Stream.

The treatment for the other catchment located to the north-west of the subject site will also be likely be provided by a Stormfilter cartridges and an underground vault. This vault will then discharge via a manhole inlet into the existing culvert which outlets within 887 Whitford Maraetai Road. The vaults will be located offline, with a diversion upstream so that peak flows will bypass the treatment system.

It is envisioned that the treatment vaults will be able to manage the collective runoff from all sites. However, if - due to development staging - it would be more efficient to manage stormwater on a per lot basis, additional smaller devices and/or containment bunds for each site could be installed to achieve this.

Due to the presence of non-engineered fill within parts of the subject site, differential settlement will need to be allowed for. Pipe materials such as PVC and PE will need to be allowed for and connections between the manholes, tanks, and filters will need specific design to allow for differential settlement. These can be managed as part of the overall design process.

3.4 Wastewater

As part of earlier discussions with Watercare regarding the Pohutukawa Business Park Fast Track application, Watercare confirmed that the existing wastewater network has capacity of 80m³/day or 29,200m³ per year for this development. This allowed 40m³/day for the previous development consented under the COVID-19 Fast Track process and a further 40m³/day for this development.

The concept plan for the development results in expected flows (as calculated using the Watercare guidelines) to be a total flow of 144m³/day. Further discussions are underway with Watercare to determine the best options for connecting this additional load (beyond the agreed 80m³). Watercare have advised that the Beachlands Wastewater Treatment Plan is expected to have a new discharge consent and associated upgrade completed by 2030. To manage the difference between the currently available 80m³ and the needed 144m³ solutions are available. These include the use of sustainable wastewater management options including minimisation and potential for reuse. These options will be assessed as part of detailed design to reduce the overall flow. Installation of water saving devices can reduce water consumption and wastewater production by up to 30%. The option also exists to retain flows onsite and release flows “off peak” to minimise the load on the public system if possible. We also note that not all of the uses would be operational 7 days a week thus internal “averaging” capacity could also be applied.

Each proposed development area will be provided with a connection to the reticulated wastewater network at the time of creation. The final design of this network and the connections will form part of the design and consenting process.

3.5 Water

Existing Consent

The site contains an existing bore and water treatment plant. At present this facility provides for the commercial supply of water.

The existing water take consent WAT60325752 permits daily abstraction of 248m³ per day from the bore. The total abstraction from the bore shall not exceed 61,285m³ which computes to an average of 168m³/day. However, the current quarry has consent to take water also and the WAT60325752 links the total abstraction for the bore and quarry site combined to not exceed 400m³ per day or a maximum of 146,000m³ per year (400m³/day.)

Proposed Development Water Demand

The proposed development of 885 Whitford Maraetai Road is expected to generate a water demand of 128m³ per day with a peak daily demand of 256m³ per day.

This is slightly greater than the current commercial water supply and less than cumulative volume allowed by the existing water take consent. The proposal has the option to “update” the total abstraction across the two consents (and combine the daily totals as per the consented baseline (as quarry activities will cease and thus that portion of abstraction is not needed), or the proposal may implement water saving techniques and onsite re-use to reduce the demand to align with the existing WAT60325752.

Water storage for firefighting purposes can also be obtained from the water storage tanks associated onsite with the water supply activities.

3.6 Utilities

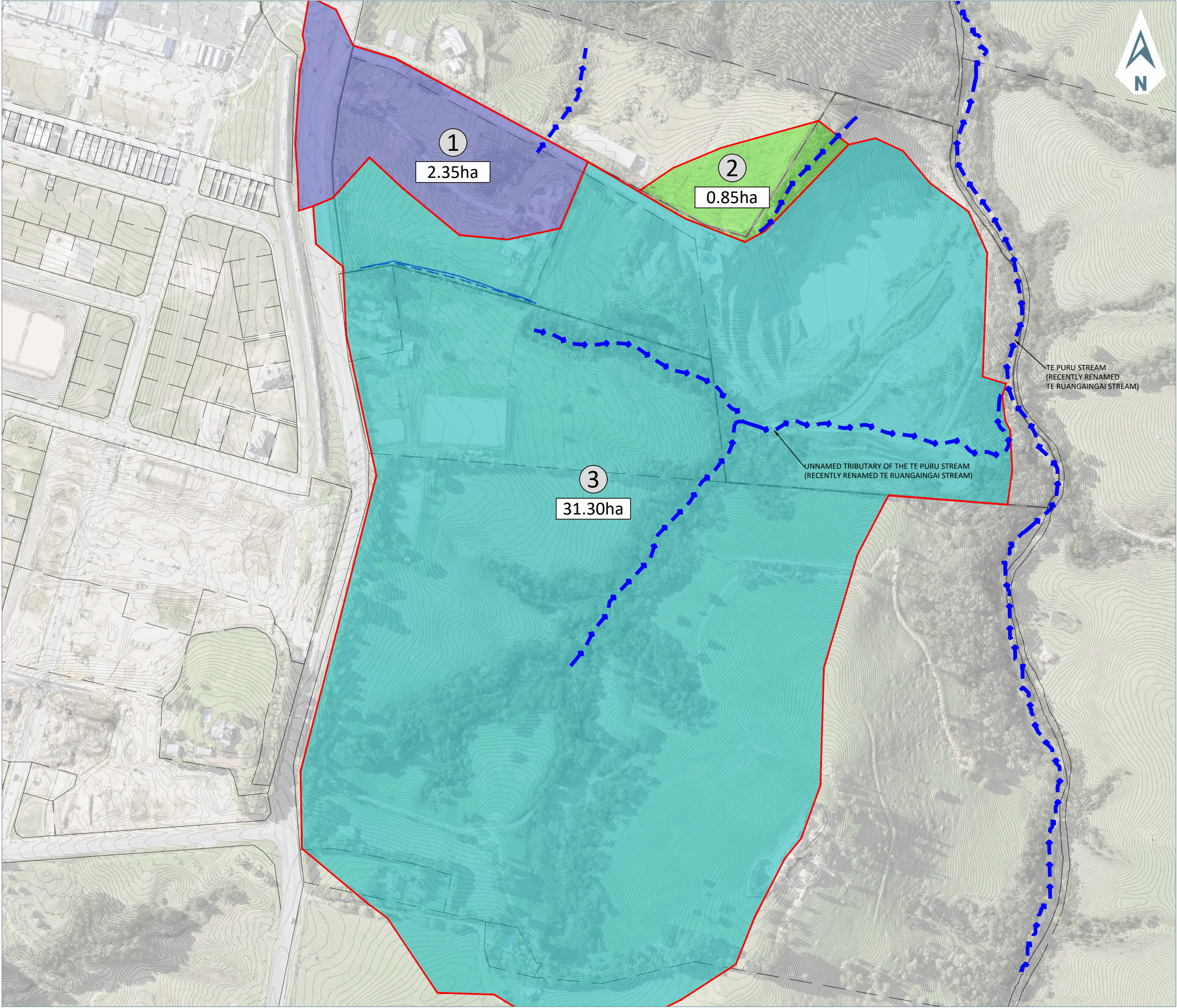
Electricity and telecommunication services will be extended underground along all roads at the time of construction. Each of the proposed development areas can then be provided with an underground connection to the reticulated electricity and telecommunication networks.

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APPENDIX 1

Concept Drawings





LEGEND

- EXISTING CONTOURS
- CATCHMENT BOUNDARY
- CATCHMENT NUMBER
- CATCHMENT AREA
- WATERCOURSES

NOTES:

- LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
ORIGIN OF LEVELS
CODE: ADMF
NAME: CF 10
798866.761 mN
422204.973 mE
RL 46.995
- EXISTING CONTOURS ARE SHOWN AT 0.5m INTERVALS.

CIVILPLAN
CONSULTANTS

Level 9, Laidlaw House, 20 Amersham Way, Manukau, Auckland. Phone: 09 222 2445

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PROJECT TITLE:
KNIGHT INVESTMENTS LIMITED
885 WHITFORD MARAETAI ROAD
BEACHLANDS

SHEET TITLE:
STORMWATER CATCHMENT PLAN
PRE DEVELOPMENT

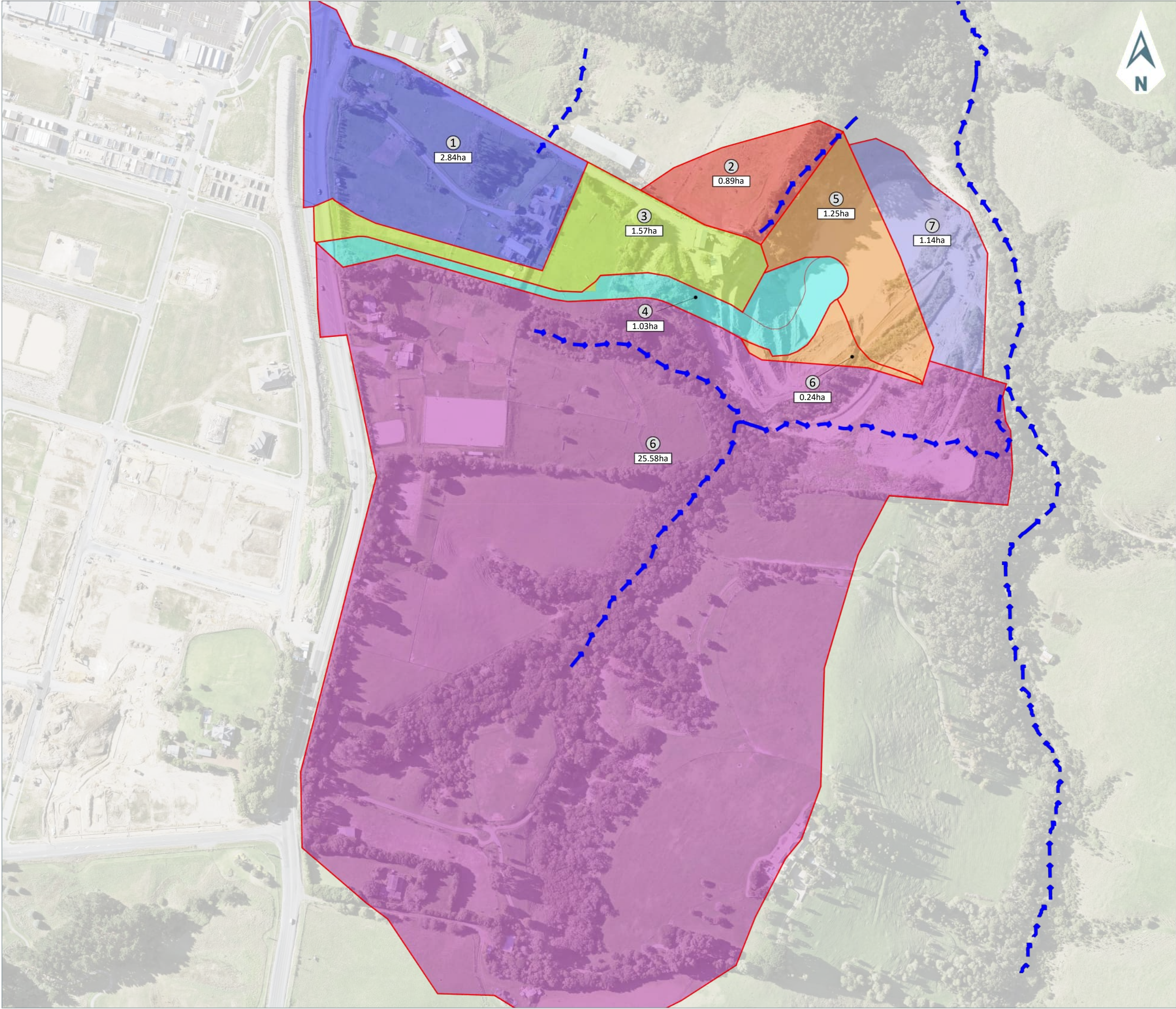
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SCALE BAR 1:3000@A3 0 30 60 90 120 150m

ISSUE STATUS: DRAFT@21.12.2023

PROJECT NUMBER: 2038-03 DRAWING NUMBER: SK01-4 REV: -

REVISION DATE: dd.mm.yyyy

DRAWN: - CHECKED: - APPROVED: -



LEGEND

- PROPOSED CONTOURS
- CATCHMENT BOUNDARY
- CATCHMENT NUMBER
- CATCHMENT AREA

NOTES:

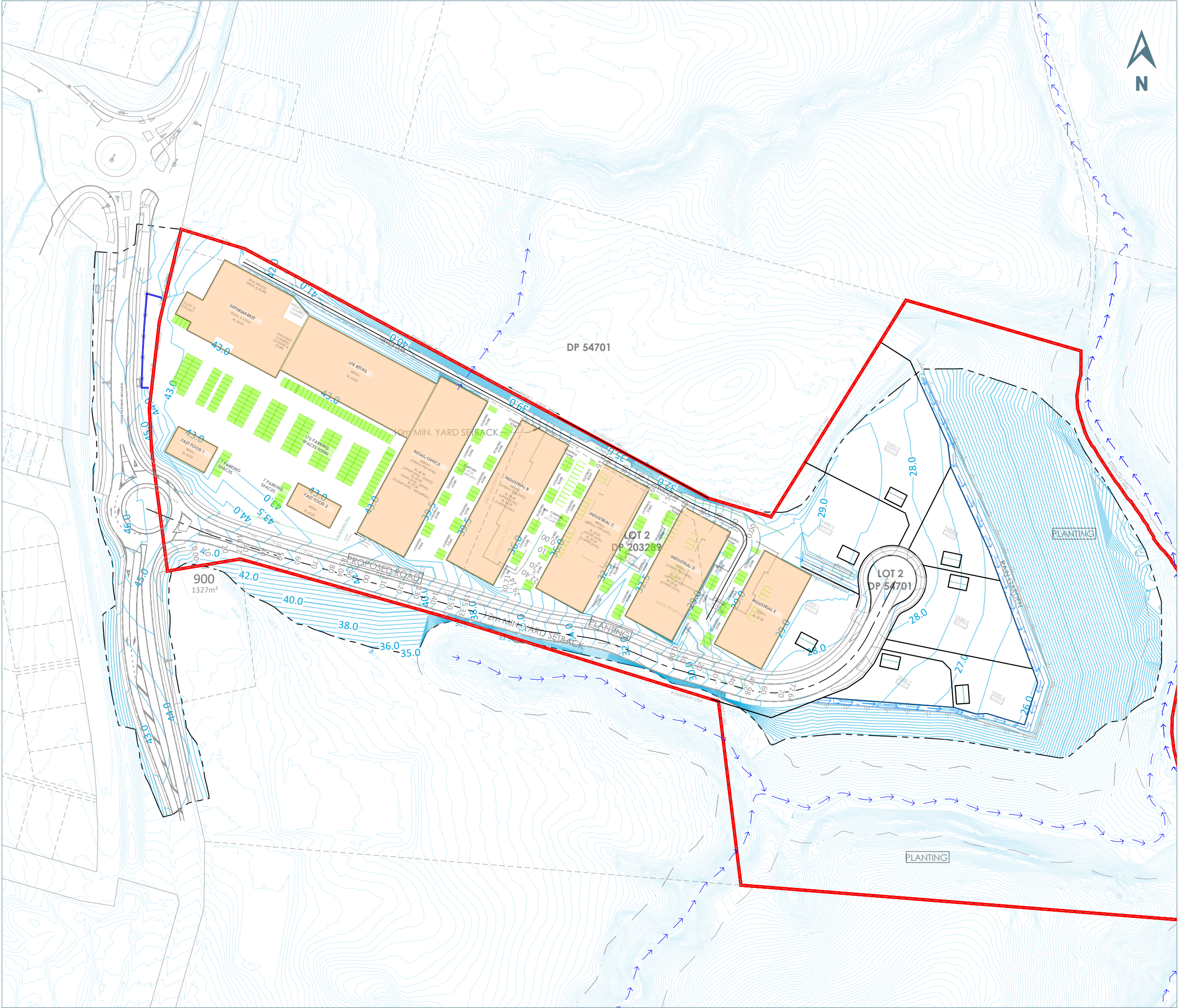
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|--|------------------------|-------------|
| PROJECT TITLE: | | |
| KNIGHT INVESTMENTS LIMITED 885 WHITFORD MARAETAI ROAD BEACHLANDS | | |
| SHEET TITLE: | | |
| STORMWATER CATCHMENT PLAN POST DEVELOPMENT | | |
| SCALE: (A1/A3) 1:1500 / 1:3000 | | |
| SCALE BAR 1:3000@A3 0 30 60 90 120 150m | | |
| ISSUE STATUS: DRAFT@21.12.2023 | | |
| PROJECT NUMBER: 2038-03 | DRAWING NUMBER: SK01-5 | REV: - |
| REVISION DETAILS: | | |
| dd.mm.yyyy | | |
| DRAWN: - | CHECKED: - | APPROVED: - |



DRAFT

- LEGEND
- EXISTING CONTOUR
 - PROPOSED MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - EARTHWORK EXTENT

NOTES:

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.

ORIGIN OF LEVELS

CODE: ADMF
NAME: CF 10
798866.761 mN
422204.973 mE
RL 46.995

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PROJECT TITLE:
KNIGHT INVESTMENTS LIMITED
885 WHITFORD MARAETAI ROAD
BEACHLANDS

SHEET TITLE:
FAST TRACK APPLICATION
MASTERPLAN CONTOURS

SCALE: (A1/A3) 1:1000 / 1:2000
SCALE BAR 1:2000@A3

ISSUE STATUS: DRAFT@24.02.2025

PROJECT NUMBER: 2038-06 DRAWING NUMBER: SK01 REV: -

REVISION DETAILS: dd.mm.yyyy

DRAWN: - CHECKED: - APPROVED: -