

SOUTHERN LINKS 1 INDUSTRIAL DEVELOPMENT

EARTHWORKS MANAGEMENT PLAN

PROJECT INFORMATION

PROJECT 298002

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REVISION A

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1. Statement of Experience

Author

My name is Sean McDonald. I am a Senior Engineer and Team Leader at Maven Waikato Ltd ("Maven"), a firm of consulting engineers and surveyors based in Hamilton. I have been employed by Maven since 2025. I hold a Bachelor of Engineering Technology (Highways) which I graduated from in 2006, hold a New Zealand Certificate of Engineering "Civil" (NZCE) and I am a member of Engineering New Zealand.

I have over 29 years of experience in the field of civil engineering including as a civil engineering technician, New Zealand army engineer, council engineer and consulting engineer, with over 20 years' of experience post degree. Since obtaining my degree I have worked on a variety of civil projects including State Highway works, 3 Waters Infrastructure works, Residential Land Development, Commercial and Industrial Land Development and major Infrastructure projects such as the upgrade of the Port Boteny (Sydney) Naphtha Storage Facilities, the Transpower upgrade and extension of the Whakamuru Substation, the Central Government Rotorua Youth Justice Facility and Contact Energy's new Tauhara Geothermal power station.

I confirm that I have read and understood the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, and agree to comply with its requirements.

I acknowledge that, as an expert, I have an overriding duty to assist the decision-maker impartially on matters within my area of expertise. In preparing this report, I have exercised my independent professional judgement, and the opinions expressed in this report are my own. I understand that my duty as an expert is not to advocate for the interests of the applicant or any other party.

I confirm that the matters addressed in this report are within my area of expertise, except where I expressly identify that I have relied upon information, assessments or opinions provided by others. I have made all reasonable enquiries and have not knowingly omitted any material facts known to me that might alter or detract from the opinions expressed in this report.

Reviewer

I am Min Shon, a Senior Civil Engineer and Team Leader at Maven Waikato Ltd. I hold a Master of Civil Engineering from the University of Auckland and am a Chartered Professional Engineer (CPEng) registered with Engineering New Zealand. I have over six (6) years of professional experience in civil engineering, with particular experience in land development, including earthworks, roading, and three waters infrastructure design.

I confirm that I have read and understood the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023, and agree to comply with its requirements.

I acknowledge that, as an expert, I have an overriding duty to assist the decision-maker impartially on matters within my area of expertise. In preparing this report, I have exercised my independent professional judgement, and the opinions expressed in this report are my own. I understand that my duty as an expert is not to advocate for the interests of the applicant or any other party.

I confirm that the matters addressed in this report are within my area of expertise, except where I expressly identify that I have relied upon information, assessments or opinions provided by others. I have made all reasonable enquiries and have not knowingly omitted any material facts known to me that might alter or detract from the opinions expressed in this report.

2. Introduction

2.1. Purpose of this Report

The Earthworks Management Plan (EWMP) relates to the Industrial Development at 160 Higgins Road, 20 Wickham Street and 24 Wickham Street, Frankton, Hamilton. The EWMP outlines the methodology associated with the proposed earthworks onsite.

2.2. Site Description

The Industrial Development is a contiguous industrial extension to the south of Hamilton, and forms part of the wider Southern Links (SL1) Growth Cell, a circa 440ha contiguous land area that stretches the south-western edge of Hamilton that includes the Hamilton Southern Links (RoNS) designation. The Industrial Development forms part of a listed project under the Fast-track Approvals Act 2024 (FTAA), which includes both residential and industrial components and together comprises circa 106ha of the overall SL1 Growth Cell. This EWMP relates to the industrial component, referred to as the Industrial Development.

The Industrial Development provides for the establishment of circa 22 industrial lots, together with infrastructure devices including wetlands and roading.

The proposal includes substantial enabling works to establish developable land, including preloading of road corridors and bulk earthworks across the site. New wastewater and water supply infrastructure including new wastewater pumpstations. An integrated stormwater management system including conveyance systems such as grass lined swales and piped stormwater infrastructure, as well as integrated detention/attenuation and treatment devices that will be combined into artificial stormwater wetlands, designed with the intent to discharge to ground water as relevant.

The site location is shown in figure 1 below.

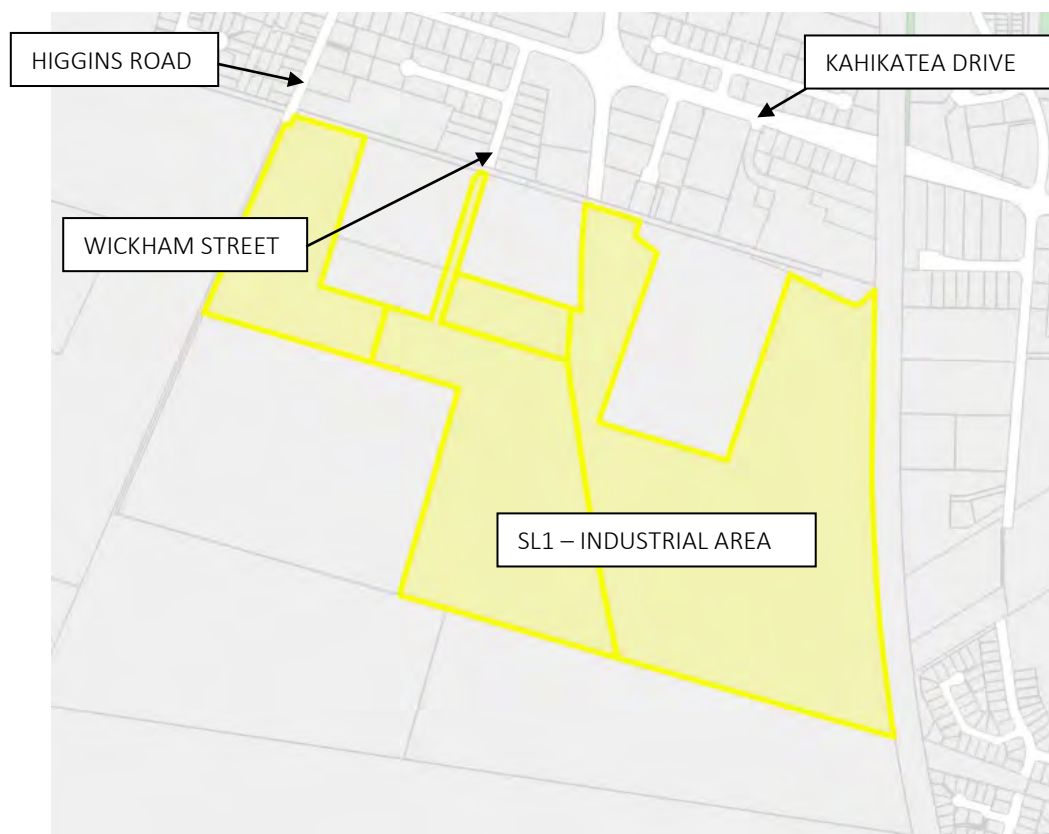


Figure 1: Site Locality

2.3. Legal Descriptions

This Industrial Area is currently split into four major parcels of land, which are summarised in Table 1 below:

Lot Description	Address	Area (Ha)
Lot 1 DP 584573	160 Higgins Road, Frankton, Hamilton	7.8866
Lot 1 DP603134	20 Wickham Street, Frankton, Hamilton	16.834
Lot 2 DP 603134	24 Wickham Street, Frankton, Hamilton	33.2747
Lot 1 DP 486522	16A Wickham Street, Frankton, Hamilton	2.1769

Table 1: Legal Descriptions

3. Geotechnical Investigation

Various site-specific geotechnical investigations have been conducted, and a Geotechnical Investigation Report has been prepared by CMW, to support the Substantive Application under the Fast-track Approvals Act 2024.

The report identifies the approximate distribution of prevailing landforms and geologies for the local area. The geology of the Industrial Area consists of low-lying areas comprised of Holocene peat deposits. The peat is underlain by interbedded Silts and Sands of the Late Pleistocene alluvial deposits of the Hinuera formation, which is underlain by Early Pleistocene, fluvially reworked igneous silt/clay of the Walton Subgroup Formation which also form the base of the nearby hills outside the site.

The exception is the imported gravel fill in the yard areas, the uncontrolled fill in the existing green waste site and the construction waste site in the north-eastern corner of the site. Please refer to the Geotechnical Investigation Report for more information.

From the ground investigations undertaken by CMW, they have summarised the site geology results in Table 2 below.

Geology	Unit Description	Top of Unit (mBGL)		Thickness (m)	
		Min	Max	Min	Max
Uncontrolled Fill	Stiff to very stiff Clayey Silt and medium dense Sand	0.0	0.2	0.5	3.2*
Peat (Swamp deposits)	Firm to very stiff fibrous organic Peat	0.1	1.0	0.3	12.0
Hinuera Formation	Loose to medium dense Sand with interbedded stiff to very stiff Silt, and lenses of Organic Silt	0.1	7.0	3.3	17.5
Walton Subgroup	Stiff to Hard Clay/Silt and dense to very dense Sand	5.2	19.8	0.2	>14.8
*Note: Unable to penetrate full depth, based on contours likely to be ~19m thick in the construction waste site					

Table 2: Summary of Strata Encountered

Upon completion of the proposed earthworks an Earthworks Completion Report will be prepared by the Geotechnical Engineer. This report will certify the adequacy of the earthworks and make recommendations on bearing strengths for foundation design purposes.

4. Earthworks and Sediment Control

Earthworks will be undertaken as required throughout the proposed development area in different development phases and will include preloading of road and infrastructure corridors, cut to fill operations for the construction of industrial lot areas, excavations for pavement construction, excavations for the artificial stormwater wetland construction, excavations for the wastewater pumpstations and associated drainage reticulation, formation of building platforms. Within each development stage, the Industrial Area will be further divided into different sub-catchment areas where specific erosion and sediment control measures are to be adopted.

4.1. Design Standards

Proposed measures for erosion and sediment control have been designed in accordance with Waikato Regional Council's Guide for Soil Disturbing Activities TR2009/02, best practice solutions.

4.2. Earthworks Onsite Progress and Future Programme

Earthworks will be undertaken in stages and it is envisaged that all earthworks will be completed within five (5) earthworks seasons. Applications for Winter Works will only be lodged if required.

It is proposed that the bulk earthworks operation will comprise of five separated work sections (Stage 1A, 1B, 2, 3, and NZTA Corridor). Stage 1A will be independent of the other four stages as it has a cut/fill balance within that stage. Stage 3 will function as a cut to fill borrow area for stages 1B, 2 and the NZTA Corridor works.

As Stage 1A is cut/fill neutral, it is anticipated that this will be the initial stage, however depending on commercial requirements, Stage 1B may run concurrently with Stage 1A. Earthwork plans are attached in Appendix A.

It is noted that the cut to fill borrow area in stage 3 may contain "contaminated fill material" and as such a testing regime, construction methodology and targeted fill placement will be required to place suitable "contaminated fill material" within the stage 1B and 2 fill placement areas with sufficient "Capping Cover" to allow disposal via fill under industrial land. All earthworks associated with the excavation of the "Latham's mountain" stockpile within the stage 3 area shall be supervised by a suitability qualified contaminated land specialist. The specialist shall undertake regular visual inspections of excavated materials, identify any evidence of unexpected contamination, direct additional sampling where required, and determine the appropriate management or disposal pathway for the material. Refer to Swiftsure's Contaminated Soils Management and Remediation Action Plan (25 June 2026) report for more details, attached in Appendix B. All material that is either unsuitable for fill placement and/or exceeds the contaminated fill acceptable limits for clean fill placement in stages 1B and 2 will be removed off-site to an appropriate disposal site and/or facility.

Works are intended to be carried out in the following steps:

- Install silt control measures, as shown on Engineering Drawings or agreed plans provided at Preconstruction meeting
 - Installation of stabilized site entrances, sediment retention ponds, decanting earth bunds, clean and dirty water diversion bunds, silt fencing and wellpoint dewatering devices.
- Place Preload materials on the road corridors
- Cut/Fill bulk earthworks to areas outside of the preload placement corridors
- Installation of deeper drainage infrastructure
 - Wastewater Pumpstations

- Artificial Stormwater Wetland Ponds
- Install drainage infrastructure systems, outlets, and riprap
- Form channel and building platform areas concurrently as site is stabilised
- Removal or Preload material
 - To be utilised as either Preload for future stages, and/or
 - Place as fill material in Stage 3
- Stabilise Road corridors by placing the subgrade improvement layer of grey/brown rock ready for civil construction to place
- Retain and maintain silt control measures until completion.

4.3. Earthworks Summary

As mentioned in the above section, the bulk earthworks on site will be divided into five separate work sections. These are from Stage 1A, 1B, 2, 3, and NZTA Corridor including artificial stormwater wetlands, and wastewater pumpstations. Please refer to the earthworks drawings for detail attached in Appendix A.

- Stage 1A
 - Preload Road Corridor
 - Bulk Earthworks
 - Artificial Stormwater Wetland 1 construction
 - Northern Wastewater Pumpstation (A) construction
- Stage 1B
 - Preload Road Corridor
 - Bulk Earthworks
 - Artificial Stormwater Wetland 2 construction
 - Central Wastewater Pumpstation (B) construction
- Stage 2
 - Preload Road Corridor
 - Bulk Earthworks
- Stage 3
 - Preload Road Corridor
 - Bulk Earthworks
 - Artificial Stormwater Wetland 3 construction
- Stage NZTA Corridor
 - Preload Road Corridor
 - Bulk Earthworks

4.4. Total Earthworks

Bulk Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	547,400 m ² (54.74ha)
Total volume of CUT	790,603 m ³
Total volume of FILL	927,154 m ³
Total Volume of FILL with Compaction Factor (1.2)	1,112,585 m ³
Maximum CUT and FILL depth	5.26m FILL / 19.47m CUT
Total Volume (shortfall of FILL)	321,982 m ³
Others	
Topsoil stripping (300 mm)	164,208 m ³

Table 3: Summary of Total Earthworks

4.4.1. Stage 1A Earthworks

Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	82,600 m ² (8.26ha)
Total volume of CUT	108,841 m ³
Total volume of FILL	8,612 m ³
Total Volume of FILL with Compaction Factor (1.2)	10,334 m ³
Maximum CUT and FILL depth	4.29m FILL / 4.16m CUT
Total Volume (surplus of CUT)	98,507 m ³
Others	
Topsoil stripping (300 mm)	24,786 m ³

Table 4: Summary of Stage 1A Earthworks

4.4.2. Stage 1B Earthworks

Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	182,484 m ² (18.25ha)
Total volume of CUT	16,426 m ³
Total volume of FILL	317,021 m ³
Total Volume of FILL with Compaction Factor (1.2)	380,426 m ³
Maximum CUT and FILL depth	4.28m FILL / 3.08m CUT
Total Volume (shortfall of FILL)	364,000 m ³
Others	
Topsoil stripping (300 mm)	54,745 m ³

Table 5: Summary of Stage 1B Earthworks

4.4.3. Stage 2 Earthworks

Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	171,805 m ² (17.18ha)
Total volume of CUT	1,042 m ³
Total volume of FILL	556,006 m ³
Total Volume of FILL with Compaction Factor (1.2)	667,207 m ³
Maximum CUT and FILL depth	5.26m FILL / 4.44m CUT
Total Volume (shortfall of FILL)	666,166 m ³
Others	
Topsoil stripping (300 mm)	51,542 m ³

Table 6: Summary of Stage 2 Earthworks

4.4.4. Stage 3 Earthworks

Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	76,303 m ² (7.63ha)
Total volume of CUT	660,377 m ³
Total volume of FILL	1,495 m ³
Total Volume of FILL with Compaction Factor (1.2)	1,794 m ³
Maximum CUT and FILL depth	3.48m FILL / 20.04m CUT
Total Volume (surplus of CUT)	658,583 m ³

Others	
Topsoil stripping (300 mm)	22,891 m ³

Table 7: Summary of Stage 3 Earthworks

4.4.5. NZTA Corridor Earthworks

Subgrade Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	89,800 m ² (8.98ha)
Total volume of CUT	22,513 m ³
Total volume of FILL	55,558 m ³
Total Volume of FILL with Compaction Factor (1.2)	66,669 m ³
Maximum CUT and FILL depth	3.48m FILL / 20.04m CUT
Total Volume (shortfall of FILL)	44,156 m ³
Others	
Topsoil stripping (300 mm)	26,962 m ³

Table 8: Summary of NZTA Corridor Earthworks

4.5. Stockpiles between Stages

Bulk earthworks are expected to generate a surplus of CUT material in Stage 3. The following approach will be adopted:

Stage	Net Cut/Fill	Action
Stage 1B	FILL Deficit 302,055 m ³ 364,000m³ Bulk Fill Deficit 54,745m³ 300mm Clean Fill/Granular Fill Capping Layer 7,200m³ Granular Road Pavement	To be sourced from Stage 3 Surplus Cut - Note Additional Cut material from Artificial Wetland Pond, Drainage Infrastructure and Pumpstation construction From Stage 1A and 1B will also be stockpiled within Stage 1B - Note Additional Cut material from Stage 1A pavement construction will also be stockpiled within Stage 1B
Stage 2	FILL Deficit 609,924 m ³ 666,166m³ Bulk Fill Deficit 51,542m³ 300mm Clean Fill/Granular Fill Capping Layer 4,700m³ Granular Road Pavement	To be sourced from Stage 3 Surplus Cut Note Additional Cut material from Artificial Wetland Pond and Drainage Infrastructure construction From Stage 2 and 3 will also be stockpiled within Stage 2.
Stage 3	Surplus CUT 631,392 m ³ 658,583m³ Surplus Bulk Cut 22,891m³ 300mm Clean Fill/Granular Fill Capping Layer 4,300m³ Granular Road Pavement	To be stockpiled in both Stage 1B and Stage 2 - Noting that Cut Material from Stage 3 will need to comply with the SWIFTSURE – Contaminated Soils Management and Remediation Plan – 27 March 2025 - Noting that it is expected that Stage 3 will require a 300mm clean fill capping layer (excluding topsoil)

Table 9: Summary of Stockpiles between Stages

Note: The additional CUT volumes detailed in Table 9 above have the following assumptions:

- 300mm Capping Layer is an approximate volume based on proposed LOT areas only
 - Excludes Road Corridors
 - Excludes SW Reserves
- Road Pavement volumes are an approximate volume based on proposed pavement design depth multiplied by approximate road length per stage and multiplied by design road pavement width
 - Excludes Road berms
 - Excludes Footpath construction

4.5.1. Stockpiling Details

Stockpiles will be limited to a height specified by the Geotechnical Engineer, with 2:1 side slopes, and protected with silt fences and toe bunds.

Stabilisation of stockpiles using hydroseeding or mulch will occur within seven days of stockpiling.

Stockpiles will be placed within the final earthworks Stage 1B & 2 footprint, ensuring minimal double handling, and avoiding contamination of clean catchments. Refinement to the filling strategy would see fill material being placed and engineered to avoid further handling or segregation.

Note: All stockpiling and reuse operations will be tracked with GPS or site logs to ensure material origin, volume, and placement areas are accurately recorded for the final Earthworks Completion Report.

4.6. Stockpile Locations

During the earthworks operations, all excavated materials generated in Stages 3, approximately 658,583 m³ of CUT, will be temporarily stockpiled in designated areas within the Industrial Area. These stockpile locations have been strategically selected to ensure minimal disruption to ongoing works and to facilitate efficient rehandling during subsequent stages and comply with the “Contaminated Soils Management and Remediation Plan”. The stored material will be reused as FILL in future stages (EW Stages 1B & 2), in accordance with the C200 – EARTHWORKS drawing from Maven Waikato Ltd. Proper erosion and sediment control measures will be implemented around stockpiles to prevent environmental impacts and maintain site safety and accessibility.

Please refer to Appendix A – Earthworks Drawings for further details.

4.7. Stage 3 (Borrow Area) Management

Earthworks operations within the Stage 3 'borrow area' will involve cutting into a landform approximately 20m higher than the neighbouring boundary, requiring strict geotechnical controls to mitigate the risks of slope failure and lateral sliding. All excavation, benched cutting, and material extraction will be systematically managed to protect the integrity of the neighbouring site in strict accordance with NZS 4404 (Land Development and Subdivision Infrastructure). To ensure short-term construction safety and long-term land stability, all cut batters will be maintained at a conservative 1 in 3 (1V:3H) slope gradient or formed in strict accordance with the specific design recommendations provided by the geotechnical engineers. A Geotechnical Earthworks Specification will be required prior to construction which will outline the specific geotechnical controls and recommendations.

Furthermore, because this borrow area serves as the primary source of FILL for other stages, all stripping, handling, and tracking of the subgrade material will be executed to maintain material quality and compaction integrity in full compliance with NZS 4431 (Code of Practice for Earth Filling for Residential Development). Continuous visual testing and geometric monitoring will be maintained throughout the cut phase, with formal engineering sign-off obtained upon completion to verify compliance with both NZS 4404 and NZS 4431 standards.

5. Existing and Proposed Erosion Control

As the site is currently a low-lying flat farmland, multiple sediment controls and devices need to be constructed onsite. Below we have outlined the general principles and philosophies that will be adopted for any current controls and/or future proposed controls.

All proposed controls are in general accordance with the Waikato Regional Council best practice erosion and sediment control measures as per WRC TR2009/02 guidelines.

Silt and erosion control measures shall remain in place and operational until the contributing catchment has been permanently stabilised and there is no longer a reasonable risk of sediment discharge from the relevant earthworks area. Removal of temporary controls shall be undertaken progressively and only following inspection by the Engineer or appropriately delegated person confirming that the area is adequately stabilised and that the controls are no longer required.

The site will be progressively stabilised with topsoil and grass seed as earthwork levels are achieved. Silt control measures will only be removed once the site is determined by the engineer to be stable in terms of silt run-off.

5.1. Proposed Controls

The following system of silt and sediment control protection measures are proposed: below sections covers the methodology for various stages of the development. For clarity, refer to staging plans (C200 PROPOSED CONTOUR OVERVIEW PLAN) as part of this application, in conjunction with the below staging works methodology.

5.2. Potential Environmental Impacts

During the earthworks there is a risk of dust nuisance during dry and windy weather. To manage potential dust effects, the following management measures are proposed:

1. That a maximum earthworks area of 20ha shall be opened at any one time.
2. Earthworks shall be effectively stabilised using the following methods:
 - a. Topsoiling and grassing
 - b. Hydroseeding
 - c. Using hay or straw mulching
3. An adequate supply of water for dust control and effective means of application is always available on-site during earthworks, until such time as the site is fully stabilised.
4. Sufficient water will be available for dust mitigation with water storage tanks retained on site until it is fully stabilised. The water tanks will be re-charged via truck and trailer water cart.
5. In the event dust control management is ineffective, the contractor shall employ the use of soil stabilisers (such as polymers or similar) or weatherproof cover where possible.

6. Additional Information

6.1. Fill Compaction

Each layer of material shall be compacted throughout its whole area and depth to achieve:

Not less than the following percentages of maximum dry density obtainable for the material by standard compaction at optimum moisture content determined by NZS 4402, Pt 2P: Test 14:		Clays and Silty Clays	Sands and Gravel
A	Within 500mm of the finished carriageway sub grade levels and within 3m of batter edges	98%	100%
B	Elsewhere	95%	97%
Clays		Air Voids % (as defined NZS 4402: Part 1)	Undrained Shear (measured by in-situ vane)
A	Within 500mm of road subgrade levels and within 3 meters	Average value less than 8% (any 10 tests) Maximum single value 10%	Average value not less than 170 KPa minimum single value 140 KPa
B	General Fill	Average value less than 10% (any 10 tests) Maximum single value 12%	Average value not less than 150 KPa minimum single value 110 KPa
C	Reserve Areas deeper than 600mm below finished formation level	Maximum value 15%	Minimum value 75 KPa

Table 10: Fill Compaction Requirements by Soil Types

6.2. Monitoring

All sediment control measures will be checked to ensure that they are performing as intended.

A site walk over shall be undertaken daily before leaving the site to identify any corrective maintenance required. A more thorough inspection will be undertaken at the end of each week, or before and after a forecast major storm event, to identify any preventative and/or corrective maintenance required.

A regular program of sediment, debris and trash removal will be undertaken to ensure sediment control measures do not become blocked and ensure they function as proposed. Any large floating matter including any organic matter, i.e., fallen tree litter, reaching the pond or discharge structures is to be removed immediately.

Specific monitoring and maintenance of each mitigation method is included below:

6.2.1. Decant Bund

- Inspect every day and before every forecasted rainfall event. Inspect for correct operation after every runoff event. Immediately repair any damage caused by erosion or construction equipment.
- Inspect Level Spreaders after every rainfall until vegetation is established and promptly undertake any necessary repairs. Ensure vegetation is kept in a healthy and vigorous condition.
- Clean out before the volume of accumulated sediment reaches 20% of the total volume. To assist in gauging sediment loads, clearly mark 20% volume height on the riser.

- Clean out with high-capacity sludge pumps, or with excavators (long reach excavators if needed) loading onto sealed tip trucks or to a secure area.
- Deposit the sediment in such a location so that it does not lead to a direct discharge to receiving environments. Stabilise all disposal sites as required.

6.2.2. Retention Pond

- Chemical treatment will be provided to the pond if 100mm of water clarity is not achieved before discharge, this will be achieved by dosing/flocculation.

6.2.3. Diversion Drains / Clean Water Cut-off Bunds

- Inspect after every rainfall event and during periods of prolonged rainfall for scour and areas where they may breach.
- Repair immediately if required to ensure that the design capacity is maintained.
- Remove any accumulated sediment deposited in the Runoff Diversion Channel / Bund due to low gradients and velocities.
- Carefully check outlets to ensure that these remain free from scour and erosion.

6.2.4. Silt Fence

- Inspect Silt Fences at least once a week and after each rainfall. Make any necessary repairs when bulges occur, or sediment accumulation reaches 50% of the fabric height.
- Any areas of collapse, decomposition or ineffectiveness need to be immediately replaced.
- Remove sediment deposits as necessary to continue to allow for adequate sediment storage and reduce pressure on the Silt Fence. Ensure that the sediment is removed to a secure area.
- Do not remove Silt Fence materials and sediment deposition until the catchment area has been appropriately stabilised. Stabilise the area of the removed Silt Fence.

6.2.5. Silt Socks

- Inspect Filter Socks at least once a week and after each rainfall. Make any necessary repairs when necessary.

6.2.6. Stabilised Vehicle Entrance

- Maintain the Stabilised Construction Entrance in a condition to prevent sediment from leaving the construction site. After each rainfall inspect any structure used to trap sediment for the Stabilised Construction Entrance and clean out, as necessary.

6.3. Stabilisation

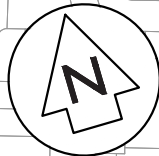
Stabilisation of earthworked areas shall be undertaken progressively as final ground levels are reached or where works are temporarily paused for more than 14 days. The following stabilisation measures and timing are proposed in line with the following Waikato Regional Council guidelines:

Condition	Stabilisation Method	Timeframe
Final earthwork levels achieved	Topsoil and grass seeding	Within 5 working days
Temporary pause in work >14 days	Hydroseeding or straw mulching	Within 7 calendar days
Final surface not expected within 60 days	Polymer stabilisation or erosion control matting	Within 10 working days
Post-winter shutdown	Stabilisation of all exposed area	Before 30 April annually

Table 11: Stabilisation Measures and Timing in WRC Guidelines

Maintenance: All stabilised areas will be monitored weekly and after heavy rainfall (>20mm/hr) to ensure full vegetation cover (minimum 80%) is achieved. Any bare patches or erosion will be repaired promptly with mulching or swift remedial action.

Appendix A – Earthworks Drawings



KAHIKATEA DRIVE

HIGGINS ROAD

WICKHAM STREET

LATHAM COURT

ARTIFICIAL
STORMWATER
WETLAND 1

STAGE 1A

NZTA
ROAD
CORRIDOR

ARTIFICIAL STORMWATER WETLAND 3

STAGE 3

RAILWAY

LOT 1 DPS 51437

STAGE 1B

NZTA
ROAD
CORRIDOR

STAGE 2

ARTIFICIAL STORMWATER WETLAND 2

LOT 2 DPS 51437

PART LOT 2 DPS 4764

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
 2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
 3. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016.
 4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY THEIR OPERATIONS.
 5. THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT HEALTH AND SAFETY REQUIREMENTS.
 6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY APPROVAL FROM UTILITY OPERATORS BEFORE COMMENCING WORK UNDER OR NEAR THEIR SERVICES.
 7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

LEGEND

- EX BDY
PROP BDY
PR MAJOR CONTOUR
PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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New Zealand

Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CONTOUR
OVERVIEW PLAN**

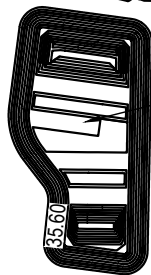
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Scale	1:5000 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200	Rev	A

RESOURCE CONSENT



HIGGINS ROAD

WICKHAM STREET



ARTIFICIAL
STORMWATER
WETLAND 1

37.00

35.60

40.80

40.20

40.00

40.00

38.00

LOT 1 DPS 51437

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
3. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016.
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6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY APPROVAL FROM UTILITY OPERATORS BEFORE COMMENCING WORK UNDER OR NEAR THEIR SERVICES.
7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

LEGEND

- EX BDY
- PROP BDY
- PR MAJOR CONTOUR
- PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
	By	Date	
Survey	MAVEN	05/2025	
Design	MKS	06/2026	
Drawn	MKS	06/2026	
Checked	SM	09/2026	



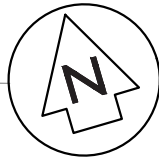
Maven Waikato
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Hamilton 3200
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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CONTOUR PLAN
STAGE 1A**

Project no.	298002		
Scale	1:2000 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200-1	Rev	A

RESOURCE CONSENT



LOT 1 DPS 51437

PART LOT 2 DPS 4764

LOT 2 DPS 51437

ARTIFICIAL STORMWATER WETLAND 2

RESOURCE CONSENT

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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LEGEND

---	EX BDY
---	PROP BDY
---	PR MAJOR CONTOUR
---	PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
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Design	MKS		06/2026
Drawn	MKS		06/2026
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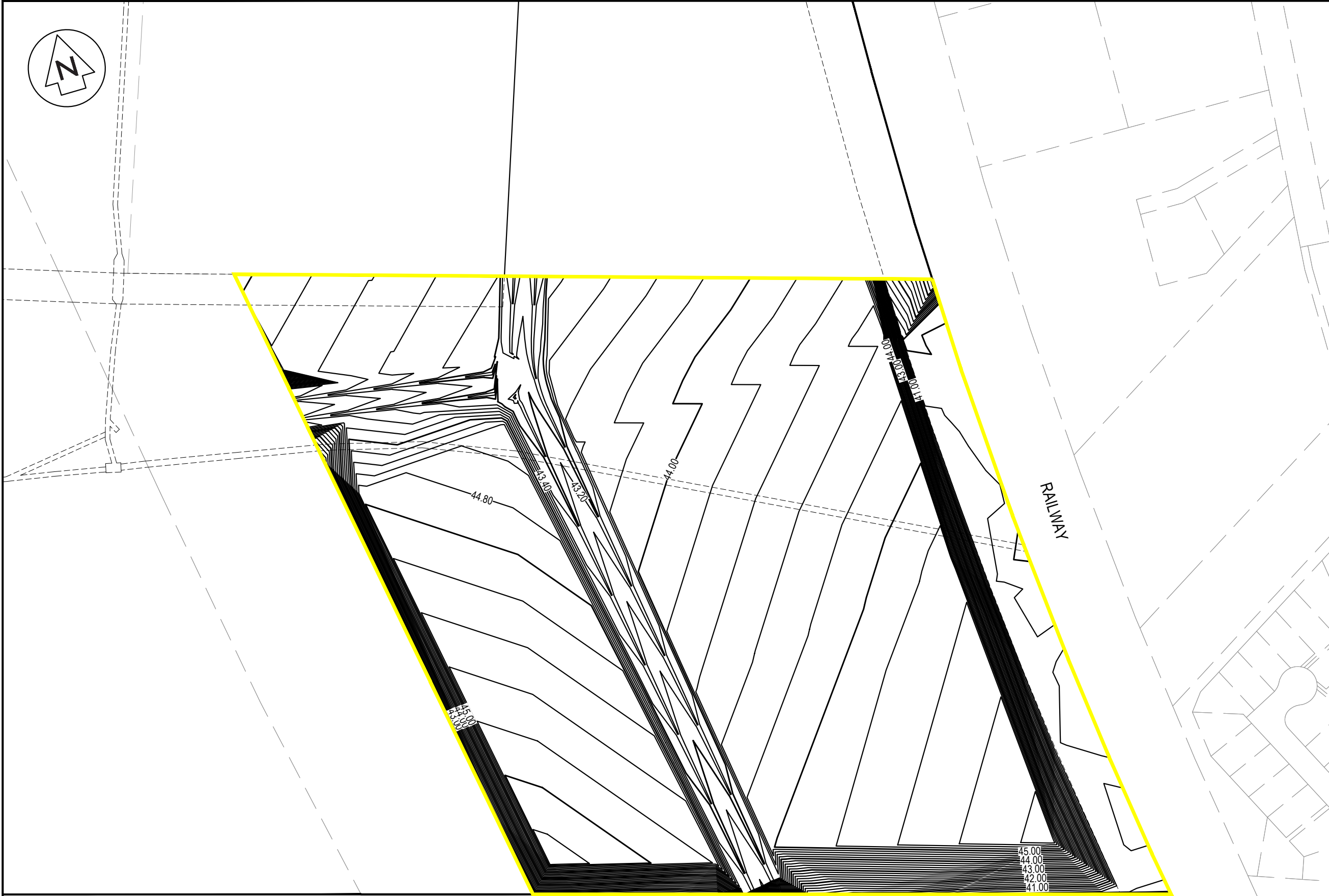
Project

**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title

**PROPOSED
CONTOUR PLAN
STAGE 1B**

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200-2	Rev	A



LOT 2 DPS 51437

RESOURCE CONSENT

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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LEGEND

---	EX BDY
---	PROP BDY
---	PR MAJOR CONTOUR
---	PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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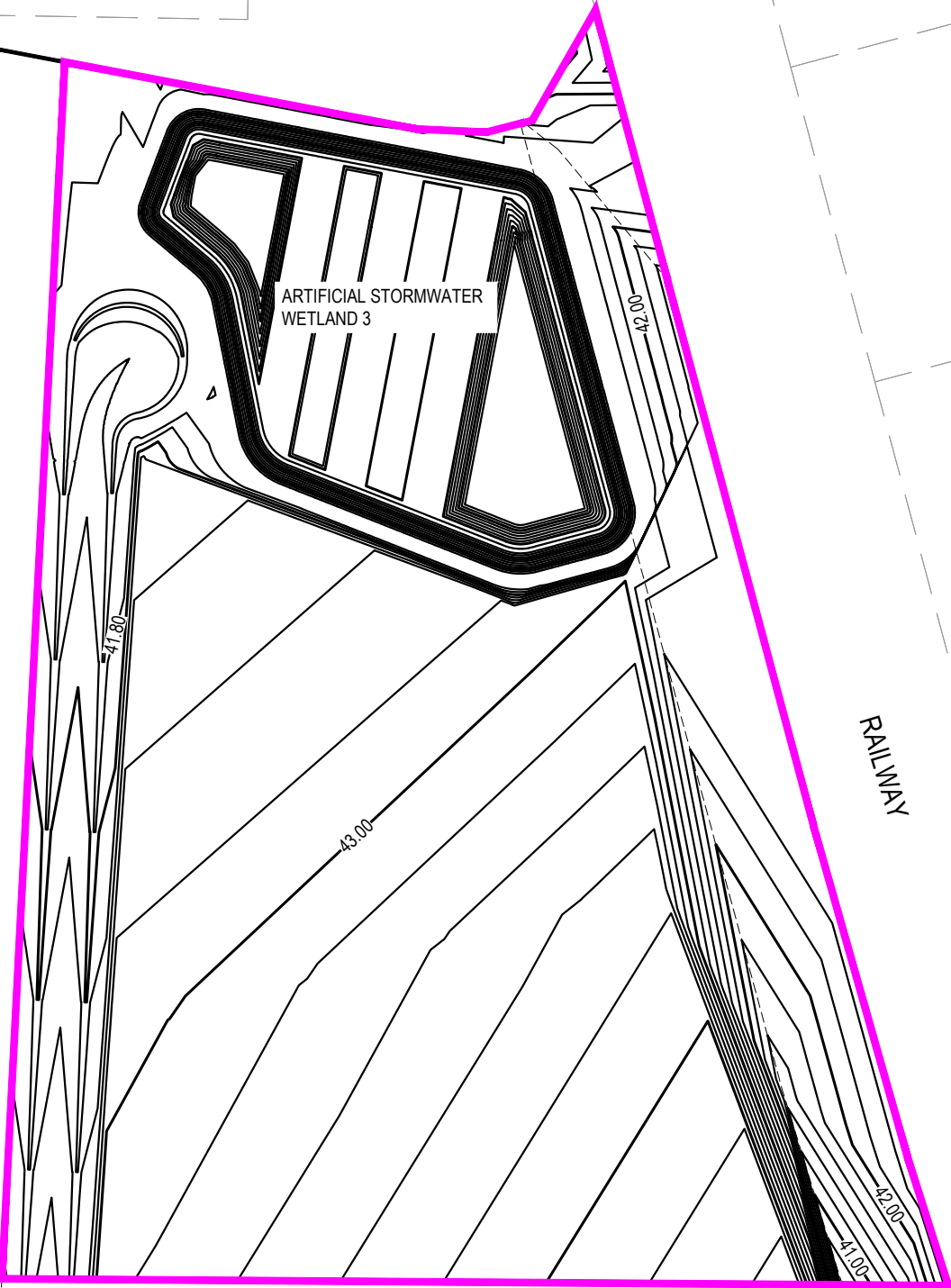
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**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title

**PROPOSED
CONTOUR PLAN
STAGE 2**

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200-3	Rev	A



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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LEGEND

---	EX BDY
---	PROP BDY
---	PR MAJOR CONTOUR
---	PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
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Drawn	MKS		06/2026
Checked	SM		09/2026



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Project

**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title

**PROPOSED
CONTOUR PLAN
STAGE 3**

Project no.	298002		
Scale	1:2000 @ A3		
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Drawing no.	C200-4	Rev	A

RESOURCE CONSENT



WICKHAM STREET

LATHAM COURT

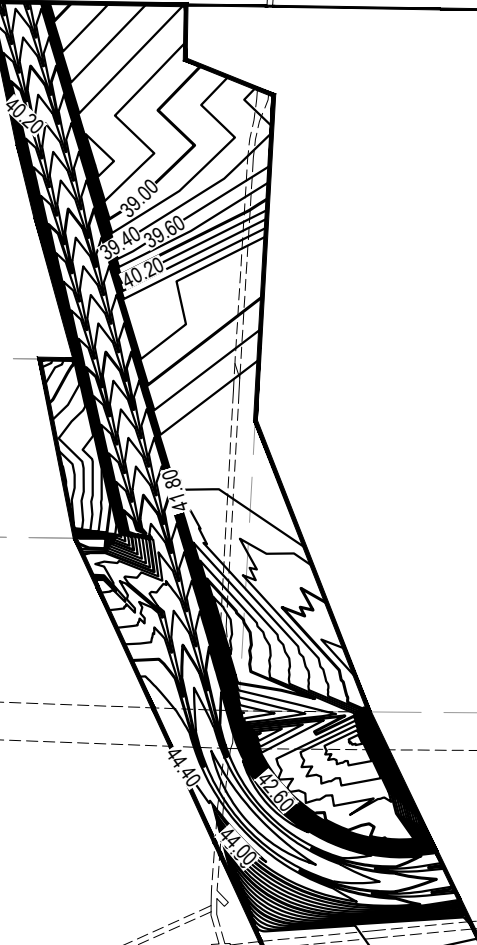
RAILWAY

LOT 1 DPS 51437

PART LOT 2 DPS 4764

LOT 2 DPS 51437

NZTA
ROAD
CORRIDOR



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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LEGEND

---	EX BDY
---	PROP BDY
---	PR MAJOR CONTOUR
---	PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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Project

**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title

**PROPOSED
CONTOUR PLAN
STAGE HSL**

Project no.	298002		
Scale	1:4000 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200-5	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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LEGEND

---	EX BDY
---	PROP BDY
---	PR MAJOR CONTOUR
---	PR MINOR CONTOUR

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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Survey	MAVEN		05/2025
Design	MKS		07/2026
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Checked	SM		09/2026

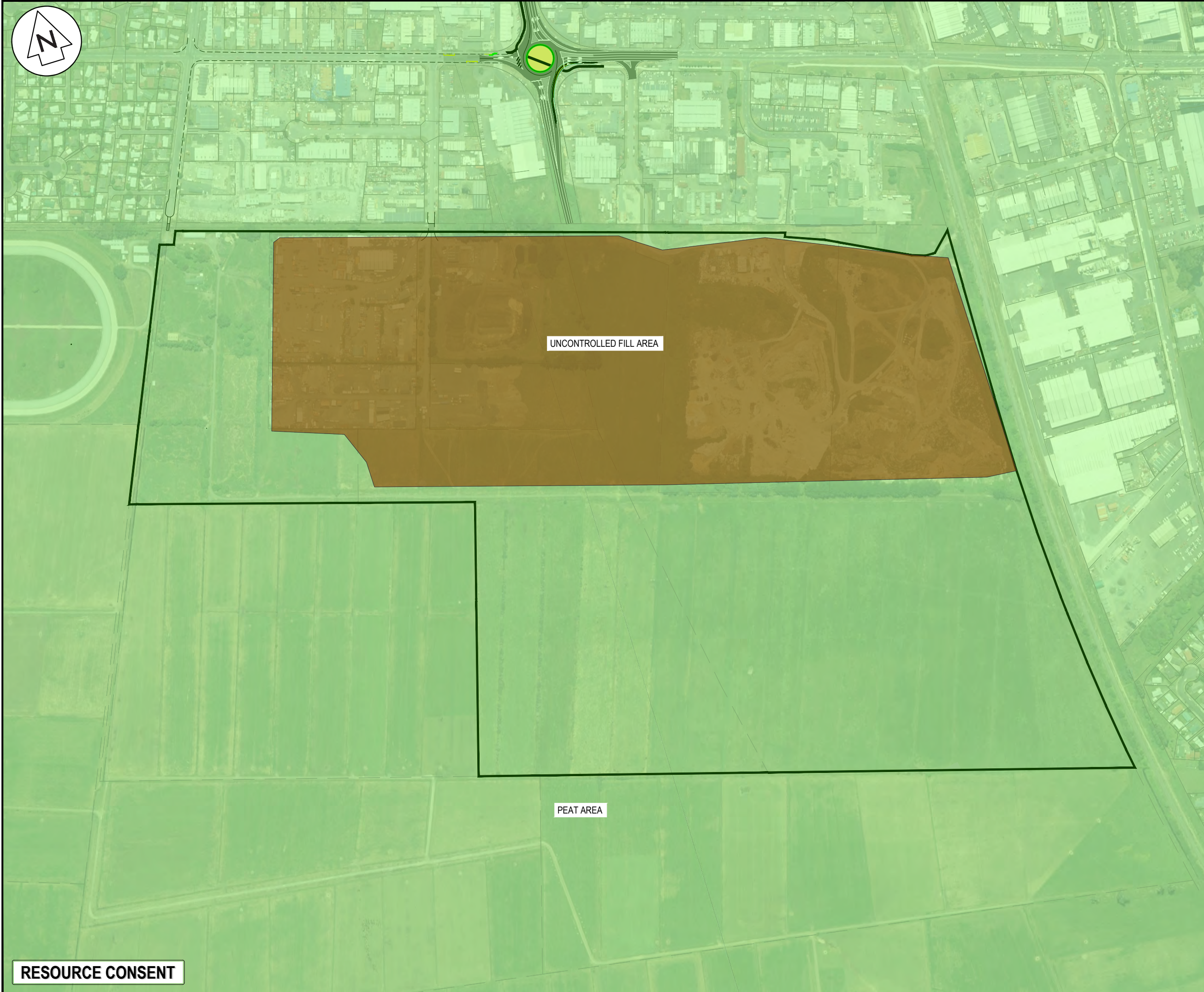
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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CONTOUR PLAN
STAGE HSL OPTION 2**

Project no.	298002		
Scale	1:4000 @ A3		
Cad file	298002-11-C200 EARTHWORKS.DWG		
Drawing no.	C200-6	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND

	EX BDY
	PROP BDY
	EX. UNCONTROLLED FILL AREA
	EX. PEAT AREA

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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Project

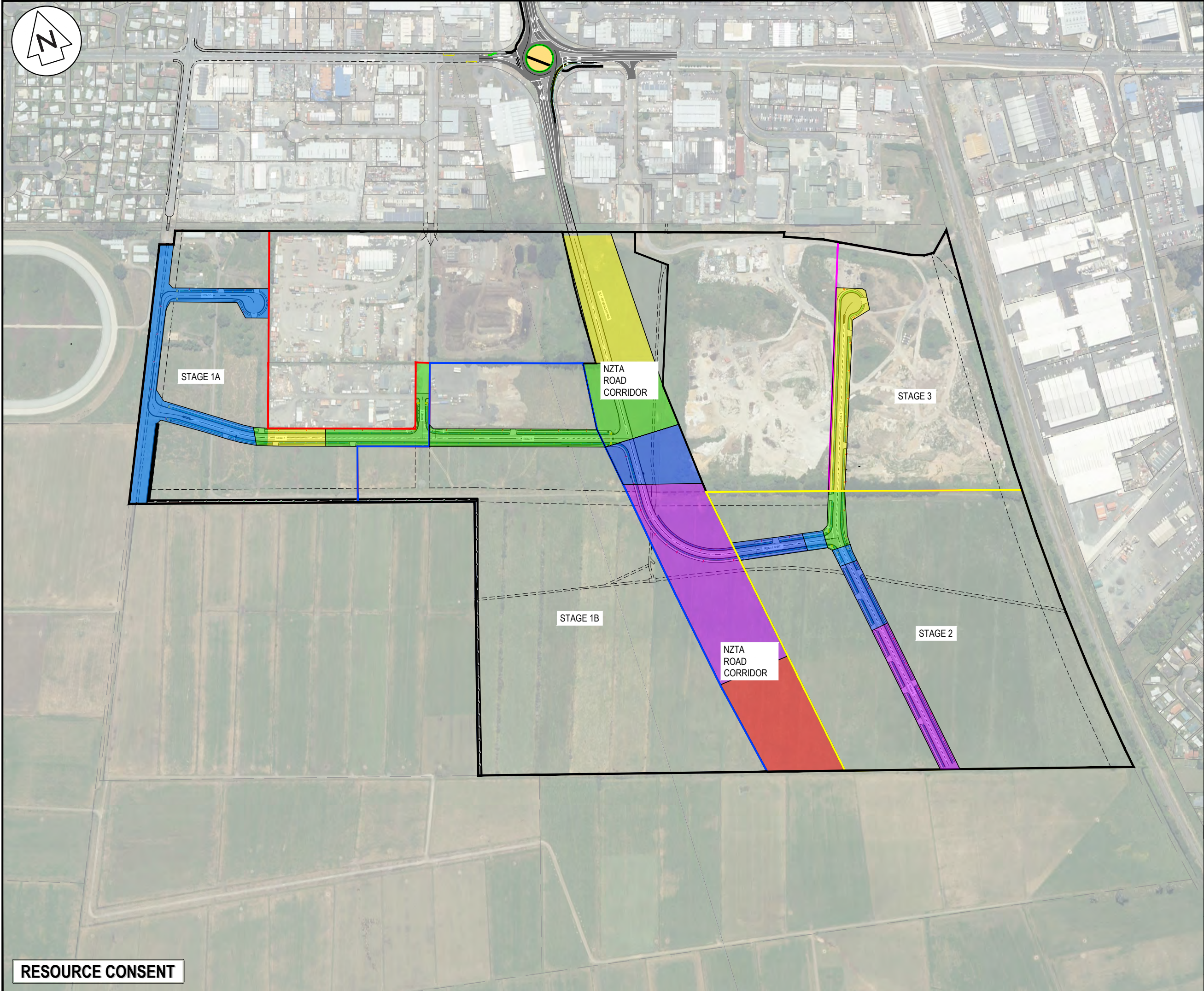
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title

**EXISTING
PEAT
OVERVIEW PLAN**

Project no.	298002		
Scale	1:5000 @ A3		
Cad file	298002-11-C215 PEAT PRELOAD.DWG		
Drawing no.	C214	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND

	EX BDY
	PROP BDY
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	1.5M PRELOAD
	2M PRELOAD
	3M PRELOAD
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	4.5M PRELOAD

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



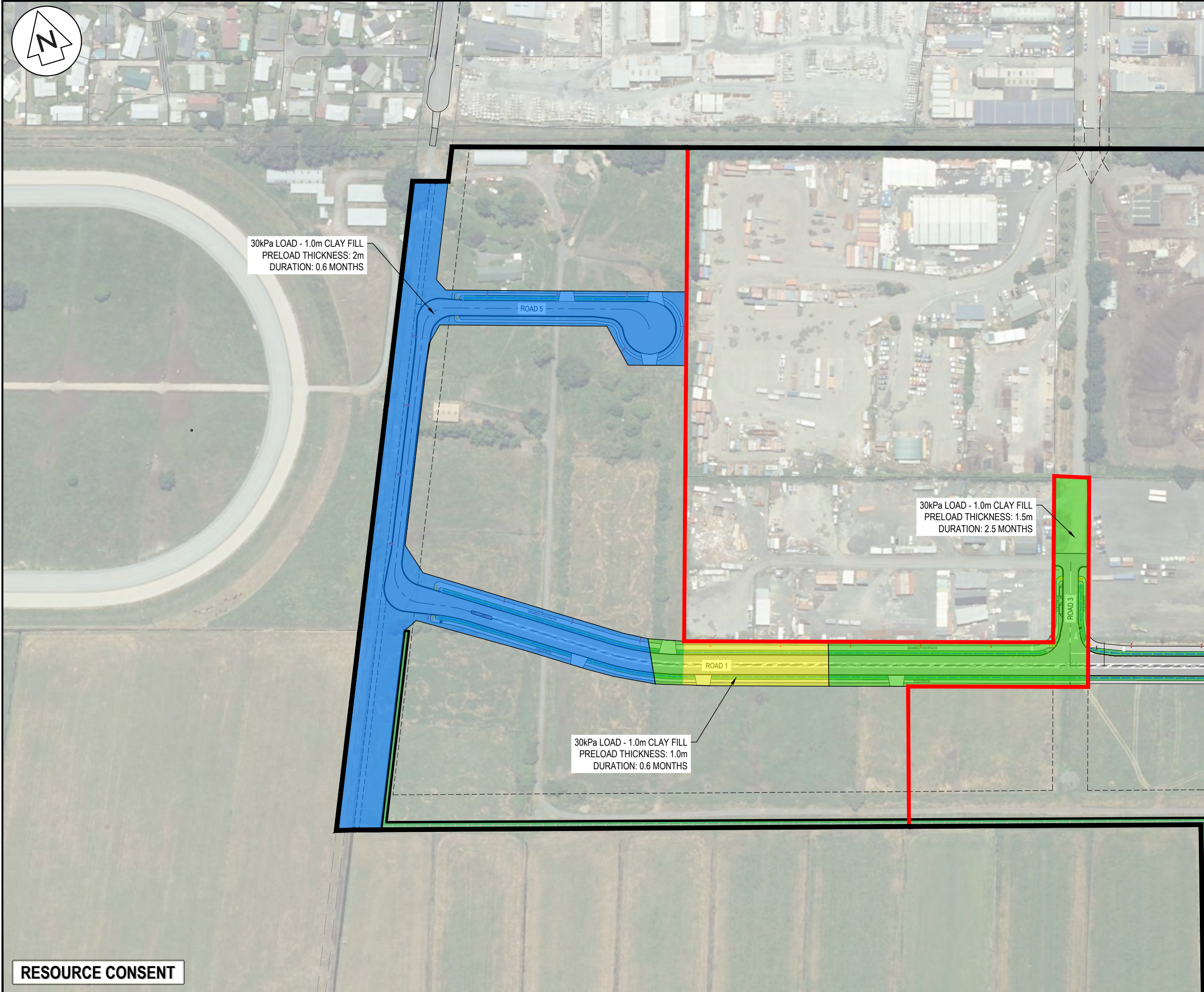
Maven Waikato
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Level 1 286 Victoria Street, Hamilton
New Zealand

Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
OVERVIEW PLAN**

Project no.	298002		
Scale	1:5000 @ A3		
Cad file	298002-I1-C215 PEAT PRELOAD.DWG		
Drawing no.	C215	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND

—	EX BDY
—	PROP BDY
—	1M PRELOAD
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—	2M PRELOAD
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A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026

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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
PLAN STAGE 1A**

Project no.	298002		
Scale	1:2000 @ A3		
Cad file	298002-11-C215 PEAT PRELOAD.DWG		
Drawing no.	C215-1	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND

EX BDY
PROP BDY
1M PRELOAD
1.5M PRELOAD
2M PRELOAD
3M PRELOAD
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4.5M PRELOAD

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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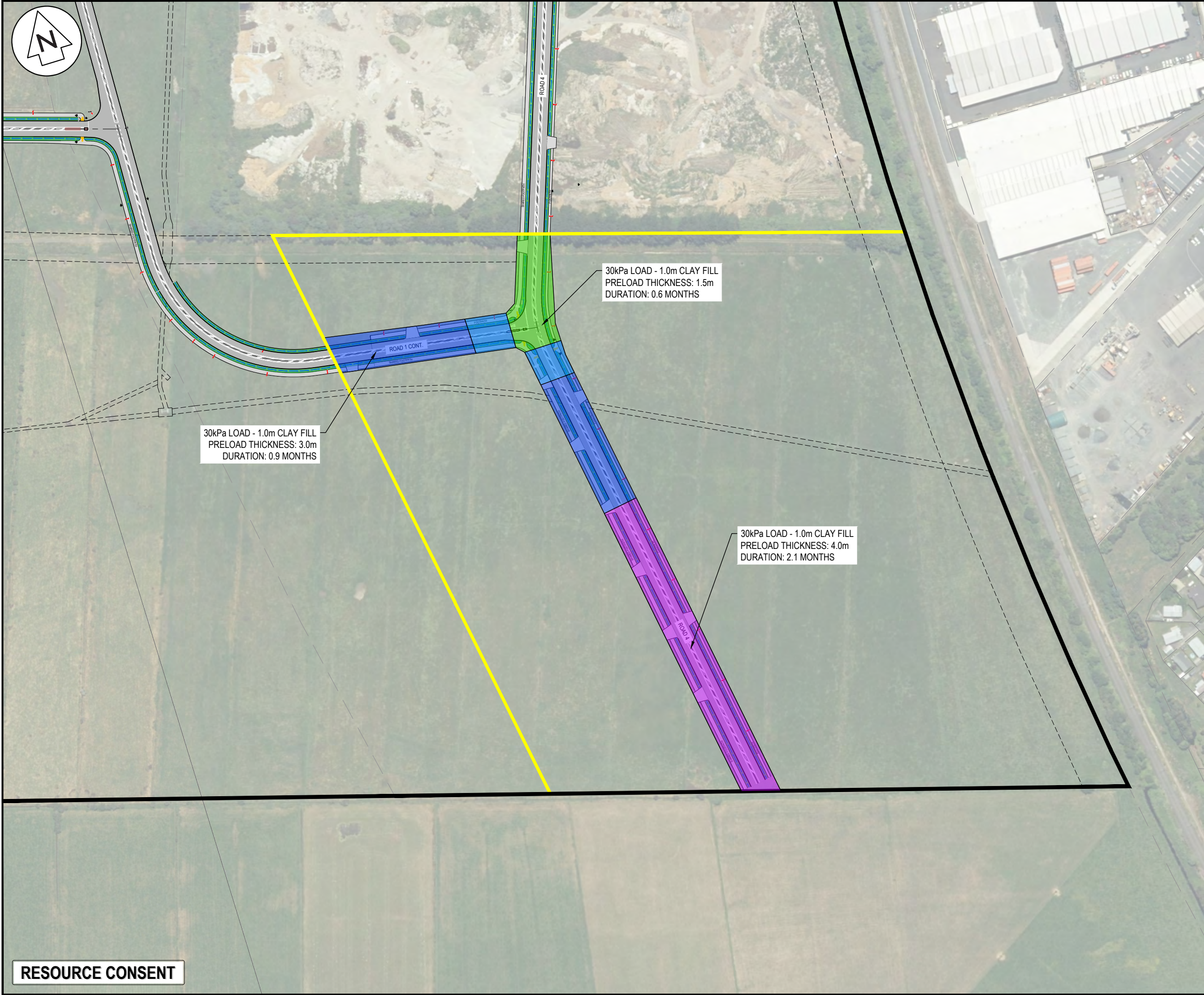
Maven Waikato
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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
PLAN STAGE 1B**

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C215 PEAT PRELOAD.DWG		
Drawing no.	C215-2	Rev	A

RESOURCE CONSENT



- NOTES
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LEGEND

	EX BDY
	PROP BDY
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A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
PLAN STAGE 2**

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C215 PEAT PRELOAD.DWG		
Drawing no.	C215-3	Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND	
	EX BDY
	PROP BDY
	1M PRELOAD
	1.5M PRELOAD
	2M PRELOAD
	3M PRELOAD
	4M PRELOAD
	4.5M PRELOAD

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
PLAN STAGE 3**

Project no.	298002		
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Cad file	298002-11-C215 PEAT PRELOAD.DWG		
Drawing no.	C215-4	Rev	A



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- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL INFRASTRUCTURE TECHNICAL SPECIFICATIONS.
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LEGEND

	EX BDY
	PROP BDY
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	1.5M PRELOAD
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	4.5M PRELOAD

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026

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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

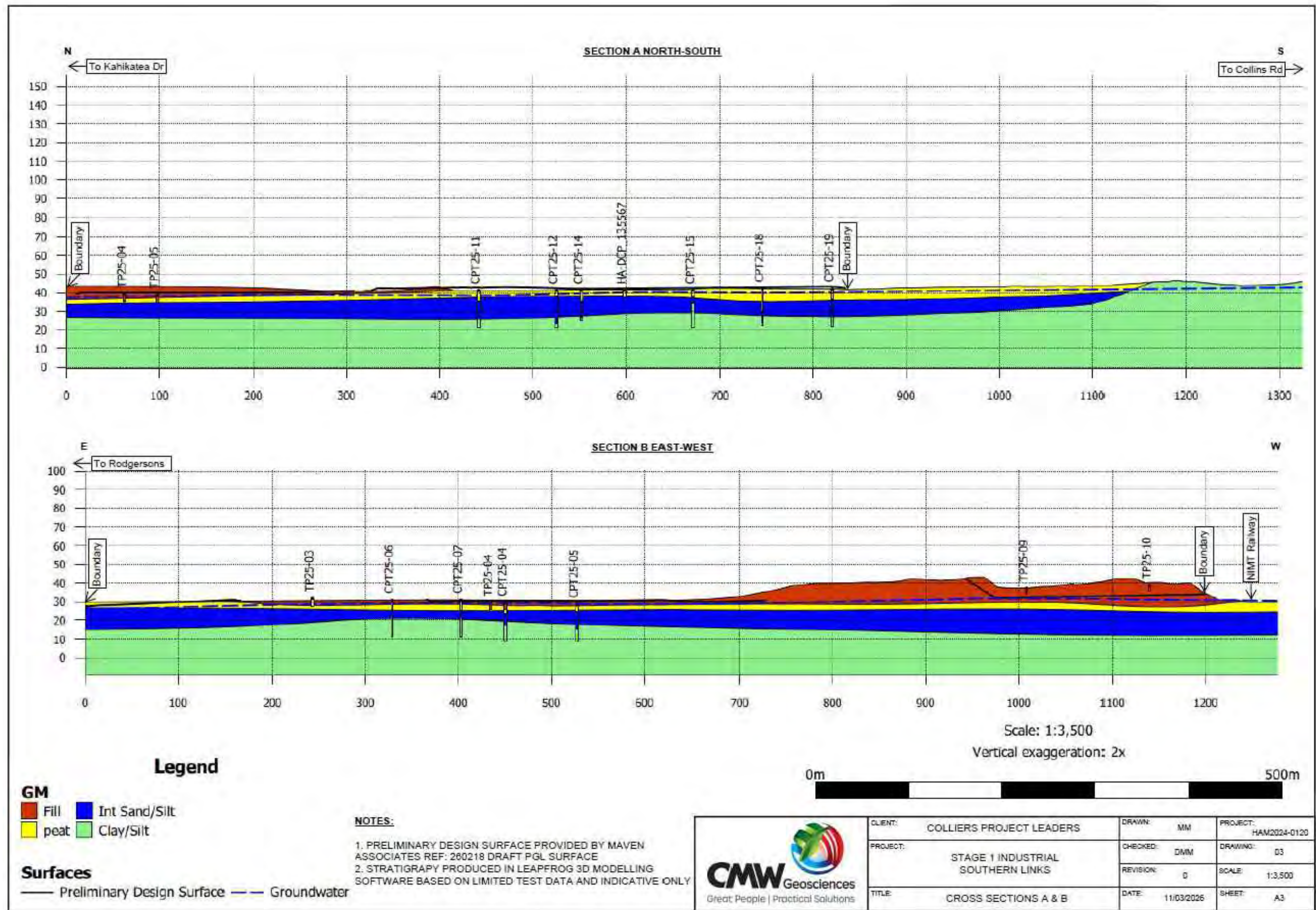
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**PROPOSED
PEAT PRELOAD
PLAN NZTA CORRIDOR**

Project no.	298002		
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Drawing no.	C215-5	Rev	A

RESOURCE CONSENT

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Rev	Description	By	Date
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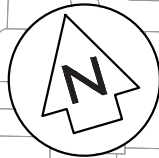


Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
PEAT PRELOAD
CROSS SECTIONS**

Project no.	298002
Scale	N.T.S.
Cad file	298002-11-C215 PEAT PRELOAD.DWG
Drawing no.	C215-6
Rev	A

RESOURCE CONSENT

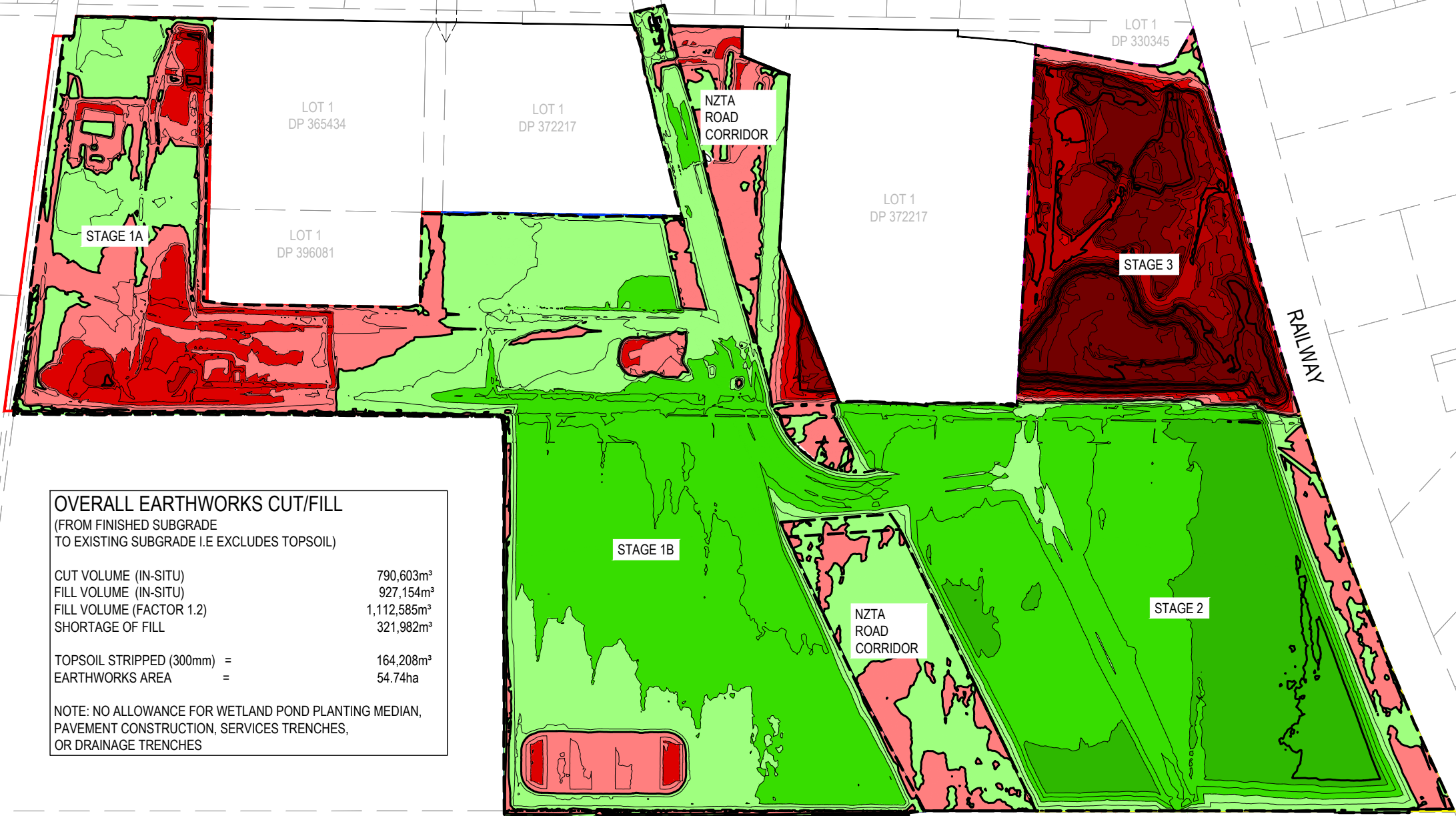


KAHIKATEA DRIVE

HIGGINS ROAD

WICKHAM STREET

LATHAM COURT



OVERALL EARTHWORKS CUT/FILL
(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)

790,603m³

FILL VOLUME (IN-SITU)

927,154m³

FILL VOLUME (FACTOR 1.2)

1,112,585m³

SHORTAGE OF FILL

321,982m³

TOPSOIL STRIPPED (300mm) =

164,208m³

EARTHWORKS AREA =

54.74ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES

- NOTES
- ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
 - COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
 - LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016.
 - IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY THEIR OPERATIONS.
 - THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT HEALTH AND SAFETY REQUIREMENTS.
 - THE CONTRACTOR SHALL OBTAIN ALL NECESSARY APPROVAL FROM UTILITY OPERATORS BEFORE COMMENCING WORK UNDER OR NEAR THEIR SERVICES.

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7	-10.000	-8.000	
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14	4.000	6.000	

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



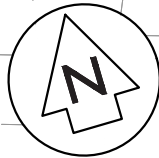
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Hamilton 3200
New Zealand

Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CUT/FILL
OVERVIEW PLAN**

Project no.	298002		
Scale	1:5000 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220	Rev	A

RESOURCE CONSENT



HIGGINS ROAD

WICKHAM STREET

STAGE 1A - EARTHWORKS CUT/FILL

(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU) 108,841m³
FILL VOLUME (IN-SITU) 10,334m³
FILL VOLUME (FACTOR 1.2) 8,612m³
SURPLUS OF CUT 98,507m³

TOPSOIL STRIPPED (300mm) = 24,786m³
EARTHWORKS AREA = 8.26ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES

LOT 1
DP 396081

LOT 1
DP 486522

LOT 1 DPS 51437

LOT 1
DP 372217

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
 2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
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14	4.000	6.000	

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title PROPOSED CUT/FILL PLAN STAGE 1A			
Project no.	298002		
Scale	1:2000 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220-1	Rev	A

RESOURCE CONSENT



LOT 1
DP 396081

LOT 1
DP 372217

LOT 1 DPS 51437

PART LOT 2 DPS 4764

LOT 2 DPS 51437

RESOURCE CONSENT

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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13	2.000	4.000	
14	4.000	6.000	

STAGE 1B - EARTHWORKS CUT/FILL

(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	16,426m ³
FILL VOLUME (IN-SITU)	317,021m ³
FILL VOLUME (FACTOR 1.2)	380,426m ³
SHORTAGE OF FILL	364,000m ³

TOPSOIL STRIPPED (300mm)	=	54,745m ³
EARTHWORKS AREA	=	18.25ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



Project
SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM

Title
PROPOSED
CUT/FILL PLAN
STAGE 1B

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220-2	Rev	A



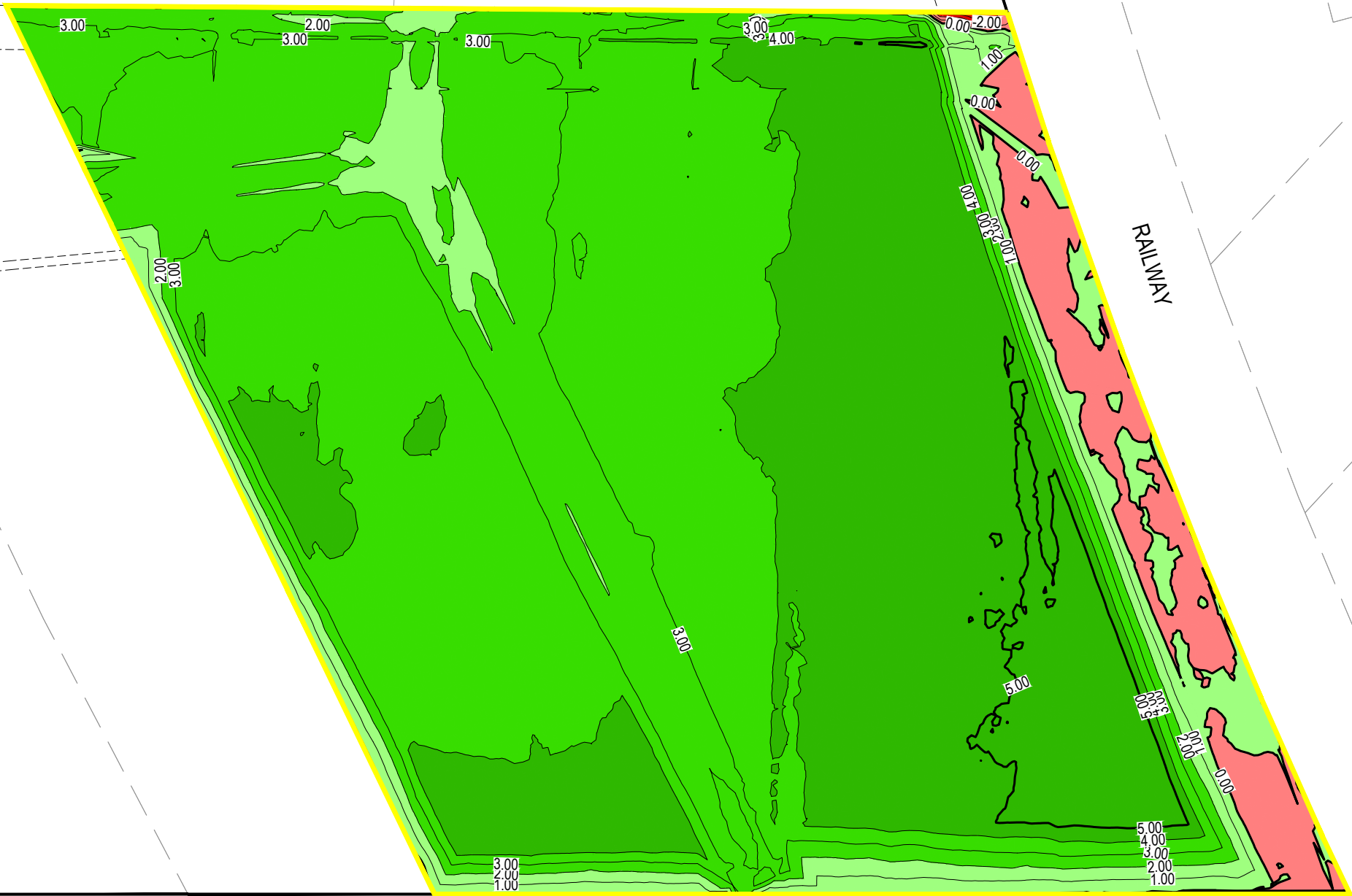
STAGE 2 - EARTHWORKS CUT/FILL

(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	1,042m³
FILL VOLUME (IN-SITU)	556,006m³
FILL VOLUME (FACTOR 1.2)	667,207m³
SHORTAGE OF FILL	666,166m³

TOPSOIL STRIPPED (300mm)	=	51,542m³
EARTHWORKS AREA	=	17.18ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES



NOTES

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A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CUT/FILL PLAN
STAGE 2**

Project no.	298002		
Scale	1:2500 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220-3	Rev	A

RESOURCE CONSENT

LOT 2 DPS 51437



LOT 1
DP 330345

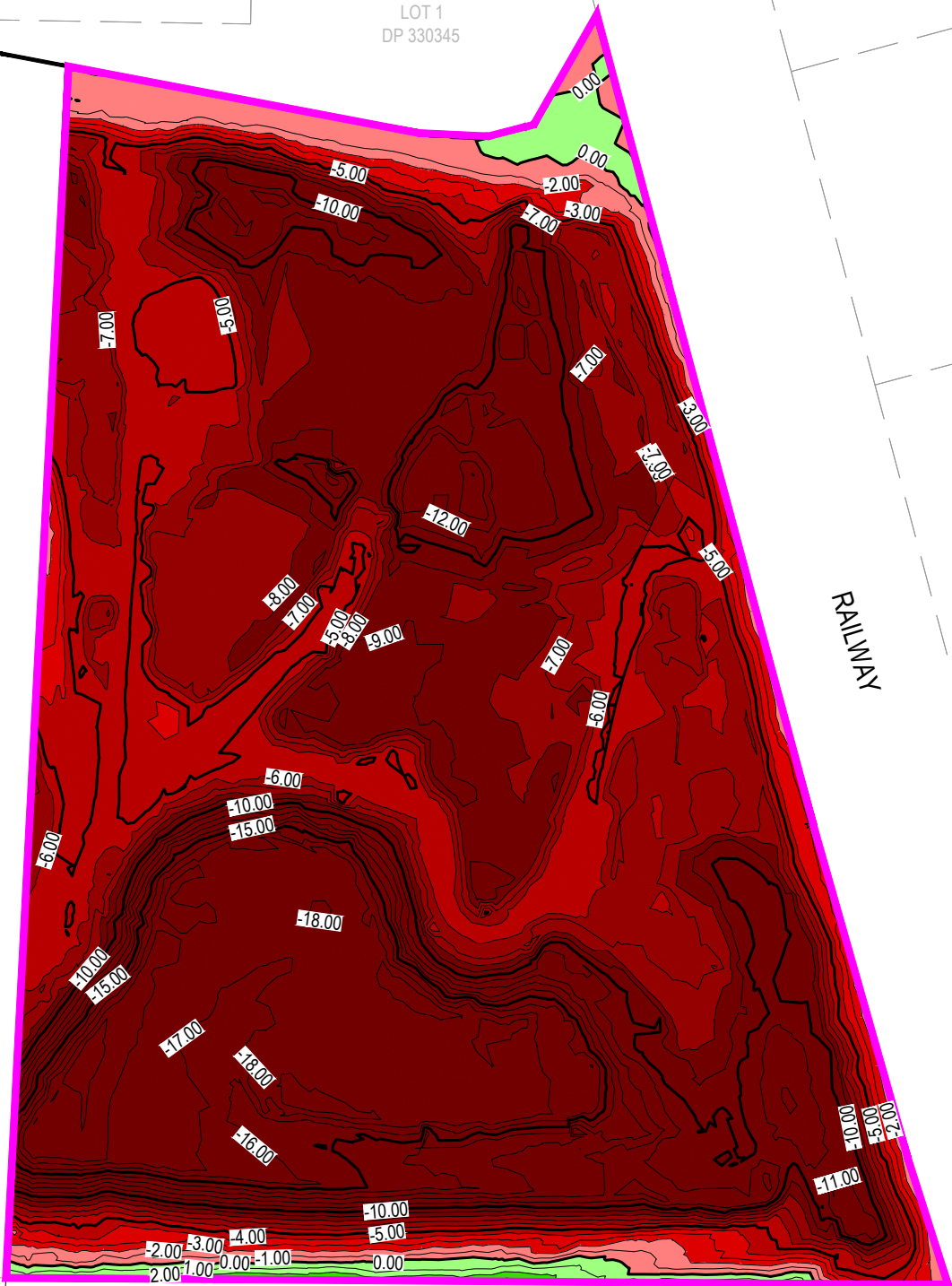
STAGE 3 - EARTHWORKS CUT/FILL

(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	660,377m³
FILL VOLUME (IN-SITU)	1,794m³
FILL VOLUME (FACTOR 1.2)	1,495m³
SURPLUS OF CUT	658,583m³

TOPSOIL STRIPPED (300mm) =	22,891m³
EARTHWORKS AREA =	7.63ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES



RESOURCE CONSENT

- NOTES
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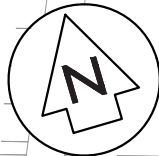
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Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026

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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CUT/FILL PLAN
STAGE 3**

Project no.	298002		
Scale	1:2000 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220-4	Rev	A



KAHIKATEA DRIVE

WICKHAM STREET

RAILWAY

NZTA
ROAD
CORRIDOR

NZTA
ROAD
CORRIDOR

OVERALL EARTHWORKS CUT/FILL

(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU) 22,513m³
FILL VOLUME (IN-SITU) 55,558m³
FILL VOLUME (FACTOR 1.2) 66,669m³
SHORTAGE OF FILL 44,156m³

TOPSOIL STRIPPED (300mm) = 26,933m³
EARTHWORKS AREA = 8.98ha

NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
PAVEMENT CONSTRUCTION, SERVICES TRENCHES,
OR DRAINAGE TRENCHES

NOTES

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A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026

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Project
SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM

Title	
PROPOSED CUT/FILL PLAN NZTA CORRIDOR	
Project no.	298002
Scale	1:4000 @ A3
Cad file	298002-11-C220 EW CUT&FILL.DWG
Drawing no.	C220-5
Rev	A

RESOURCE CONSENT

PART LOT 2 DPS 4764

LOT 2 DPS 51437



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
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Survey	MAVEN		05/2025
Design	MKS		07/2026
Drawn	MKS		07/2026
Checked	SM		09/2026



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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
CUT/FILL PLAN
NZTA CORRIDOR OPT.2**

Project no.	298002		
Scale	1:4000 @ A3		
Cad file	298002-11-C220 EW CUT&FILL.DWG		
Drawing no.	C220-6	Rev	A

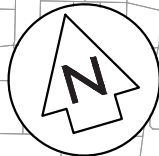
OVERALL EARTHWORKS CUT/FILL
(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	21,208m³
FILL VOLUME (IN-SITU)	52,024m³
FILL VOLUME (FACTOR 1.2)	62,429m³
SHORTAGE OF FILL	41,220m³

TOPSOIL STRIPPED (300mm)	=	17,396m³
EARTHWORKS AREA	=	5.80ha

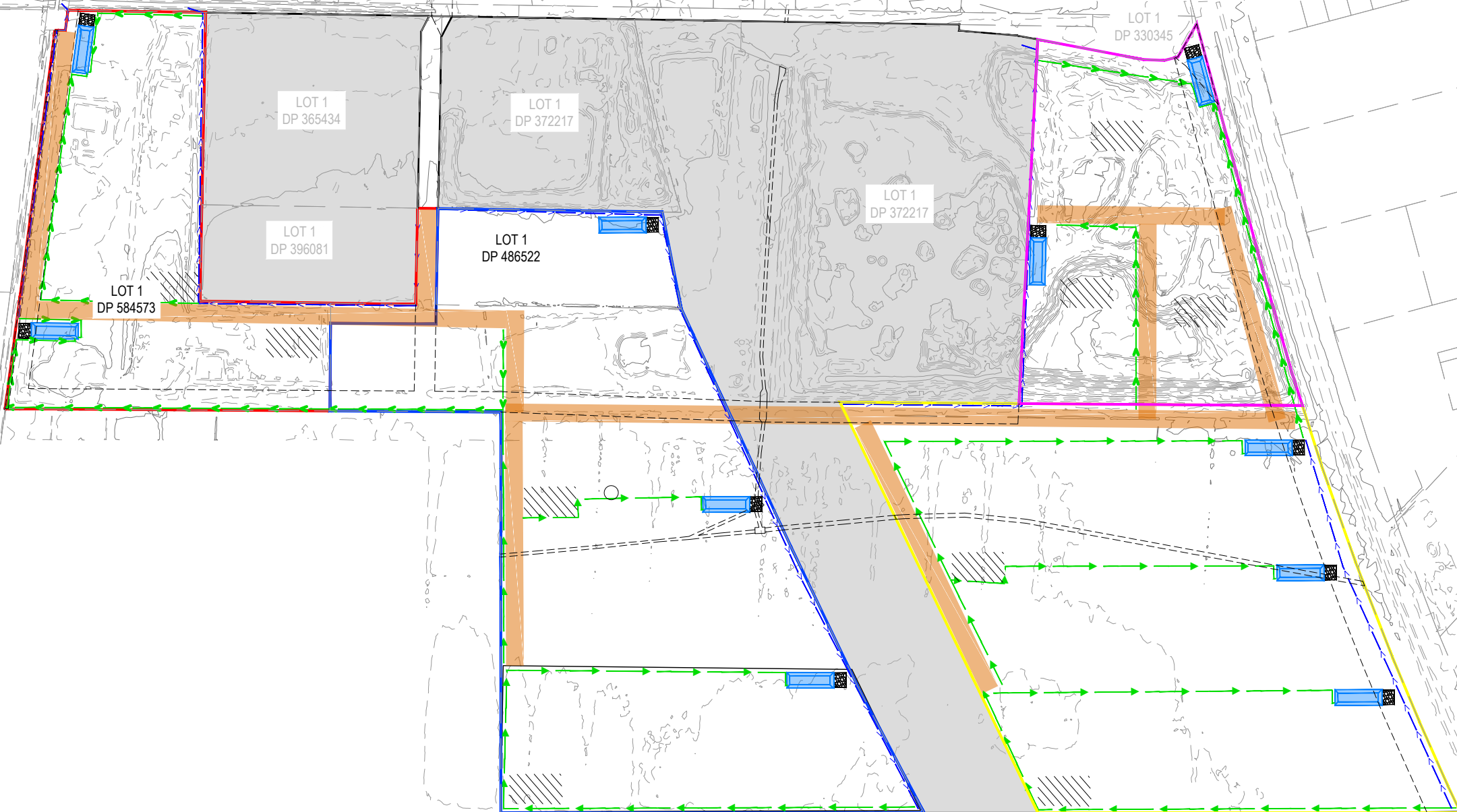
NOTE: NO ALLOWANCE FOR WETLAND POND PLANTING MEDIAN,
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OR DRAINAGE TRENCHES

RESOURCE CONSENT



HIGGINS ROAD

WICKHAM STREET



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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 7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

- Legend
- EX BDY
 - PR MAJOR CONTOUR
 - PR MINOR CONTOUR
 - PR CLEAN WATER
 - PR DIRTY WATER
 - ESC HAUL ROAD
 - PR BDY STAGE 1A
 - PR BDY STAGE 1B
 - PR BDY STAGE 2
 - PR BDY STAGE 3

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
Survey	MAVEN		05/2025
Design	NDL		06/2026
Drawn	NDL		06/2026
Checked	SM		09/2026



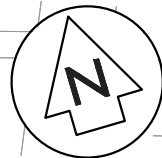
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Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED OVERALL
EROSION & SEDIMENT
CONTROL PLAN**

Project no.	298002		
Scale	1:5000 @ A3		
Cad file	298002-11-C230 ESC.DWG		
Drawing no.	C230	Rev	A

RESOURCE CONSENT



PROPOSED
STABILISED
CONSTRUCTION
ENTRANCE AS PER
HCC & WRC
STANDARDS

HIGGINS ROAD

PROPOSED DIRTY WATER DIVERSION BUND AS
PER WRC STANDARDS

WICKHAM STREET

SRP 1A
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 35.8
TOP LEVEL: 37.30
EMERGENCY SPILLWAY: 16.05 X 0.3

LOT 1
DP 365434

PROPOSED DIRTY WATER DIVERSION BUND
AS PER WRC STANDARDS
CREST ALL BUNDS TO BE 0.3 HIGHER THEN
TOP OF RESPECTIVE TOP OF POND

PROPOSED STABILISED
CONSTRUCTION ENTRANCE AS PER
HCC & WRC STANDARDS

LOT 1
DP 372217

SRP 1C
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 39.4
TOP LEVEL: 40.90
EMERGENCY SPILLWAY: 16.05 X 0.3

PROPOSED CLEAN WATER
DIVERSION BUND AS PER HCC
& WRC STANDARDS

PROPOSED CLEAN WATER
DIVERSION BUND AS PER HCC &
WRC STANDARDS

HAUL ROAD TO BE
CONSTRUCTED IN STAGE 1
FROM ENTRANCE TO STOCK
PILE AREA.
DROP OUT PITS EVERY 50m

LOT 1
DP 396081

PROPOSED STOCK
PILE 1 LOCATION TO
BE CONFIRMED ON
SITE AT
CONSTRUCTION

LOT 1
DP 486522

POND TO BE CONSTRUCTED IN
STAGE 2 AREA TO BE USED IN
STAGE 1 AND 2

LOT 1
DP 584573

SRP 1B
CATCHMENT AREA 4.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 37.1
TOP LEVEL: 38.60
EMERGENCY SPILLWAY: 16.05 X 0.3

LOT 1 DPS 51437

PROPOSED STOCK
PILE 2 LOCATION TO
BE CONFIRMED ON
SITE AT
CONSTRUCTION

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
3. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016.
4. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL SERVICES THAT MAY BE AFFECTED BY THEIR OPERATIONS.
5. THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT HEALTH AND SAFETY REQUIREMENTS.
6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY APPROVAL FROM UTILITY OPERATORS BEFORE COMMENCING WORK UNDER OR NEAR THEIR SERVICES.
7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

Legend

- EX BDY
- PR MAJOR CONTOUR
- PR MINOR CONTOUR
- PR CLEAN WATER
- PR DIRTY WATER
- ESC HAUL ROAD
- PR BDY STAGE 1A
- PR BDY STAGE 1B
- PR BDY STAGE 2
- PR BDY STAGE 3

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
Survey	MAVEN	05/2025	
Design	NDL	06/2026	
Drawn	NDL	06/2026	
Checked	SM	09/2026	



Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED STAGE 1A
EROSION & SEDIMENT
CONTROL PLAN**

Project no.	298002
Scale	1:2000 @ A3
Cad file	298002-11-C230 ESC.DWG
Drawing no.	C230-1
Rev	A

RESOURCE CONSENT



LOT 1
DP 396081

LOT 1
DP 486522

IT 1
72217

SRP 1C
CATCHMENT AREA 5.0Ha
VOLUME: 1500m² (3% CATCHMENT AREA)
DEAD STORAGE 450m² (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 39.4
TOP LEVEL: 40.90
EMERGENCY SPILLWAY: 16.05 X 0.3

PROPOSED CLEAN WATER
DIVERSION BUND AS PER HCC &
WRC STANDARDS

SRP 2A
CATCHMENT AREA 5.0Ha
VOLUME: 1500m² (3% CATCHMENT AREA)
DEAD STORAGE 450m² (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 39.4
TOP LEVEL: 40.90
EMERGENCY SPILLWAY: 16.05 X 0.3

SRP 2B
CATCHMENT AREA 5.0Ha
VOLUME: 1500m² (3% CATCHMENT AREA)
DEAD STORAGE 450m² (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 39.4
TOP LEVEL: 40.90
EMERGENCY SPILLWAY: 16.05 X 0.3

PROPOSED STOCK
PILE 3 LOCATION TO
BE CONFIRMED ON
SITE AT
CONSTRUCTION

PROPOSED DIRTY WATER DIVERSION BUNDS
AS PER WRC STANDARDS
CREST ALL BUNDS TO BE 0.3 HIGHER THEN
TOP OF RESPECTIVE TOP OF POND

LOT 1 DPS 51437

HAUL ROAD TO BE
CONSTRUCTED IN STAGE 2
FROM ENTRANCE TO STOCK
PILE AREA
ALL HAUL ROADS TO HAVE
DROP OUT PITS EVERY 50m

PROPOSED STOCK
PILE 4 LOCATION TO
BE CONFIRMED ON
SITE AT
CONSTRUCTION

PART LOT 2 DPS 4764

LOT 2 DPS 51437

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

Legend

- EX BDY
- PR MAJOR CONTOUR
- PR MINOR CONTOUR
- PR CLEAN WATER
- PR DIRTY WATER
- ESC HAUL ROAD
- PR BDY STAGE 1A
- PR BDY STAGE 1B
- PR BDY STAGE 2
- PR BDY STAGE 3

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
Survey	MAVEN		05/2025
Design	NDL		06/2026
Drawn	NDL		06/2026
Checked	SM		09/2026



Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED STAGE 1B
EROSION & SEDIMENT
CONTROL PLAN**

Project no.	298002
Scale	1:2500 @ A3
Cad file	298002-11-C230 ESC.DWG
Drawing no.	C200-2
Rev	A

RESOURCE CONSENT



- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
 2. COORDINATES IN TERMS OF NZ GEODETIC DATUM MT EDEN 2000
 3. LEVELS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016.
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 7. CONTRACTOR SHALL PROVIDE AS-BUILT OF WORKING SEDIMENT CONTROL DEVICES AND CONFIRMATION OF POND/DECENT VOLUMES TO ENGINEER.

- Legend
- EX BDY
 - PR MAJOR CONTOUR
 - PR MINOR CONTOUR
 - PR CLEAN WATER
 - PR DIRTY WATER
 - ESC HAUL ROAD
 - PR BDY STAGE 1A
 - PR BDY STAGE 1B
 - PR BDY STAGE 2
 - PR BDY STAGE 3

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	MAVEN		05/2025
Design	NDL		06/2026
Drawn	NDL		06/2026
Checked	SM		09/2026



Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED STAGE 2
EROSION & SEDIMENT
CONTROL PLAN**

Project no.	298002
Scale	1:2500 @ A3
Cad file	298002-11-C230 ESC.DWG
Drawing no.	C200-3
Rev	A

SRP 3A
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 40.00
TOP LEVEL: 41.50
EMERGENCY SPILLWAY: 16.05 X 0.3

SRP 3B
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 40.20
TOP LEVEL: 41.70
EMERGENCY SPILLWAY: 16.05 X 0.3

PROPOSED CLEAN WATER
DIVERSION BUND AS PER HCC &
WRC STANDARDS

PROPOSED DIRTY WATER DIVERSION
BUNDS AS PER WRC STANDARDS
CREST ALL BUNDS TO BE 0.3 HIGHER THEN
TOP OF RESPECTIVE TOP OF POND

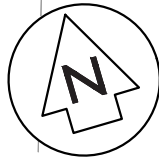
HAUL ROAD TO BE
CONSTRUCTED IN STAGE 3
FROM ENTRANCE TO STOCK
PILE AREA
ALL HAUL ROADS TO HAVE
DROP OUT PITS EVERY 50m

PROPOSED STOCK
PILE 6 LOCATION TO
BE CONFIRMED ON
SITE AT
CONSTRUCTION

SRP 3C
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 40.00
TOP LEVEL: 41.50
EMERGENCY SPILLWAY: 16.05 X 0.3

LOT 2 DPS 51437

RESOURCE CONSENT



PROPOSED DIRTY WATER DIVERSION
BUNDS AS PER WRC STANDARDS
CREST ALL BUNDS TO BE 0.3 HIGHER
THEN TOP OF RESPECTIVE TOP OF POND

PROPOSED STOCK PILE 7 LOCATION TO BE
CONFIRMED ON SITE AT CONSTRUCTION
STOCK PILE 7 AREA TO BE OPENED ONCE
SRP 1D IS INSTALLED AND APPROVED

LOT 1
DP 372217

SRP 4A
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 46.25
TOP LEVEL: 47.75
EMERGENCY SPILLWAY: 16.05 X 0.3

PROPOSED STOCK PILE 8
LOCATION TO BE CONFIRMED ON
SITE AT CONSTRUCTION
STOCK PILE 8 AREA TO BE
OPENED ONCE SRP 4A IS
INSTALLED AND APPROVED

LOT 1
DP 330345

SRP 1D
CATCHMENT AREA 5.0Ha
VOLUME: 1500m³ (3% CATCHMENT AREA)
DEAD STORAGE 450m³ (30% VOLUME)
DIMENSION: 16.05m X 48.15
BOTTOM LEVEL: 43.20
TOP LEVEL: 44.70
EMERGENCY SPILLWAY: 16.05 X 0.3

HAUL ROADS TO BE
CONSTRUCTED IN STAGE 1
FROM ENTRANCE TO STOCK
PILE AREA
ALL HAUL ROADS TO HAVE
DROP OUT PITS EVERY 50m

PROPOSED STOCK PILE 9 LOCATION TO
BE CONFIRMED ON SITE AT
CONSTRUCTION
STOCK PILE 9 AREA TO BE OPENED ONCE
SRP 1D IS INSTALLED AND APPROVED

- NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH WAIKATO REGIONAL COUNCIL EROSION AND SEDIMENT CONTROL: GUIDELINES FOR SOIL DISTURBING ACTIVITIES TR 2009/02.
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Legend			
	EX BDY		
	PR MAJOR CONTOUR		
	PR MINOR CONTOUR		
	PR CLEAN WATER		
	PR DIRTY WATER		
	ESC HAUL ROAD		
	PR BDY STAGE 1A		
	PR BDY STAGE 1B		
	PR BDY STAGE 2		
	PR BDY STAGE 3		

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
Survey	MAVEN		05/2025
Design	NDL		06/2026
Drawn	NDL		06/2026
Checked	SM		09/2026



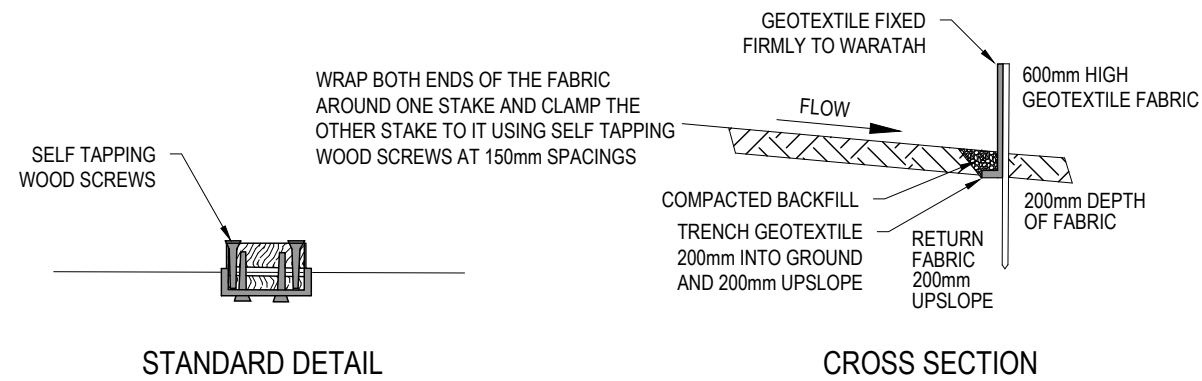
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**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED STAGE 3
EROSION & SEDIMENT
CONTROL PLAN**

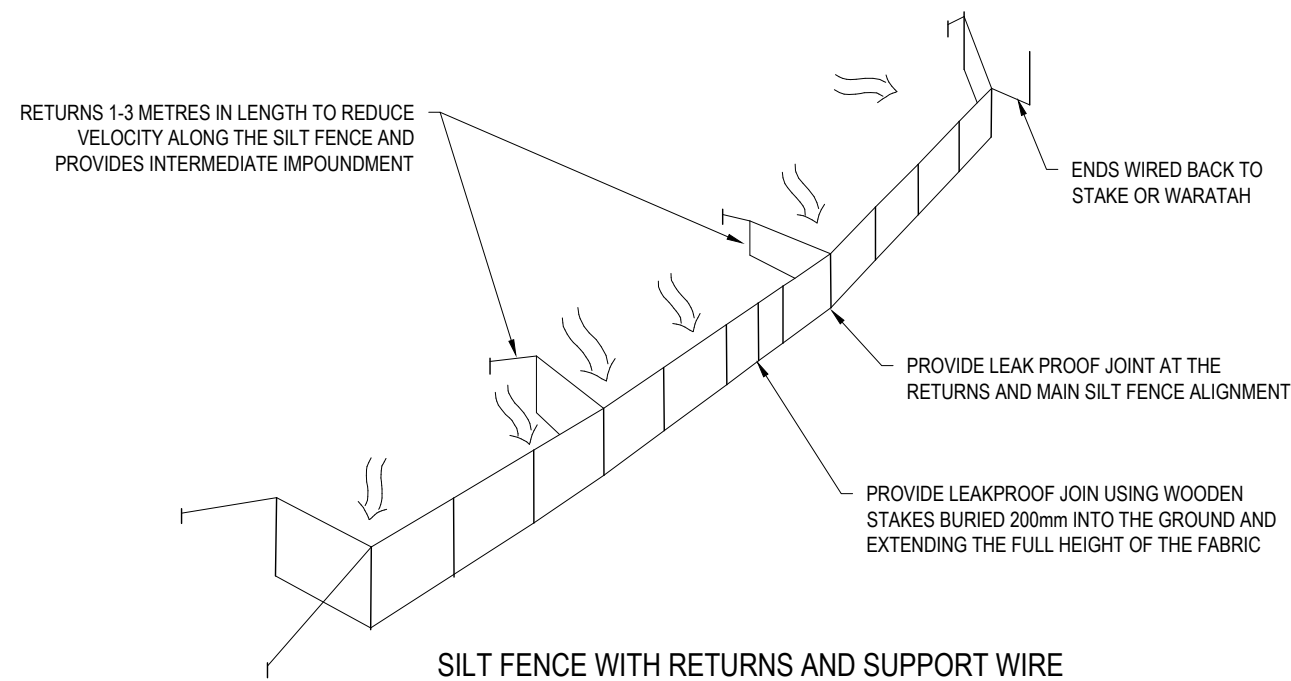
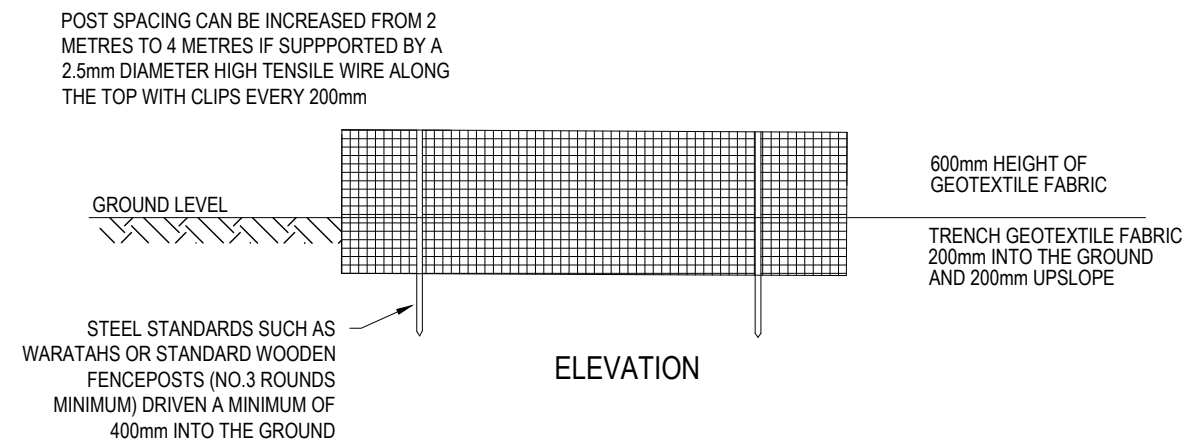
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Drawing no.	C200-4
Rev	A

RESOURCE CONSENT

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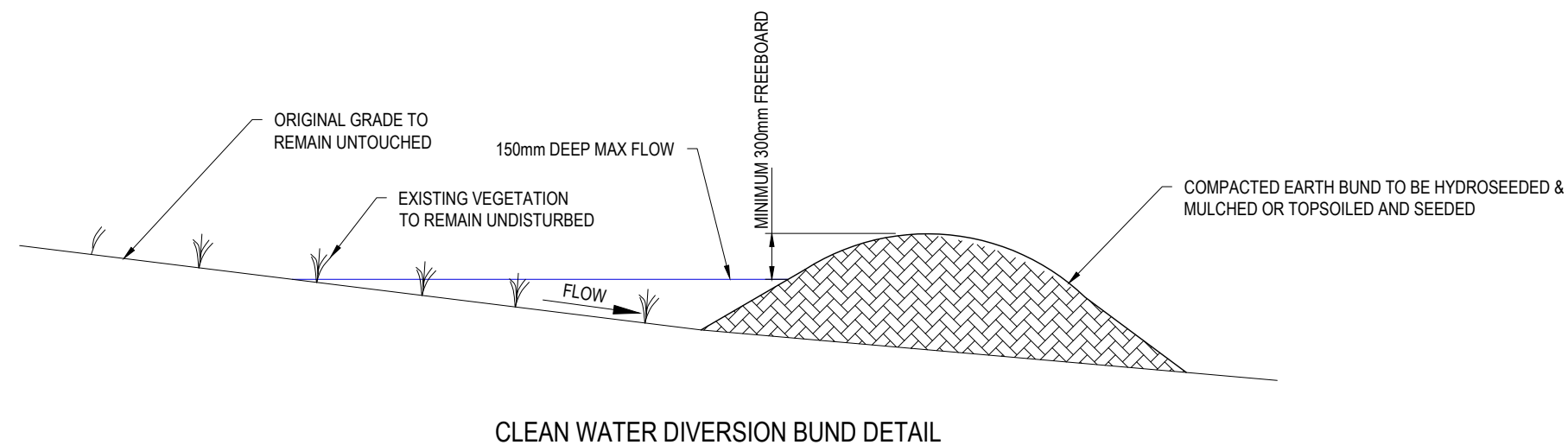
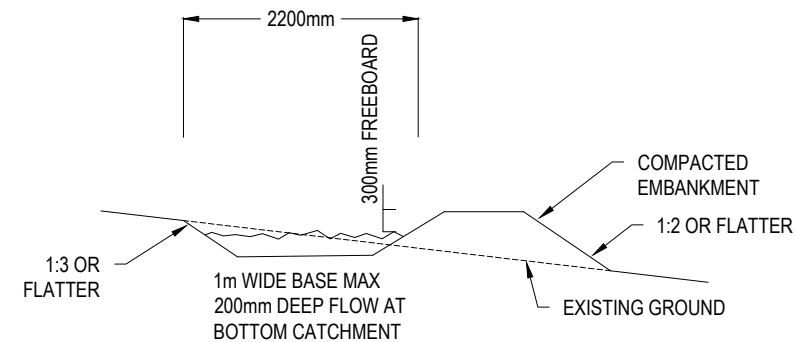
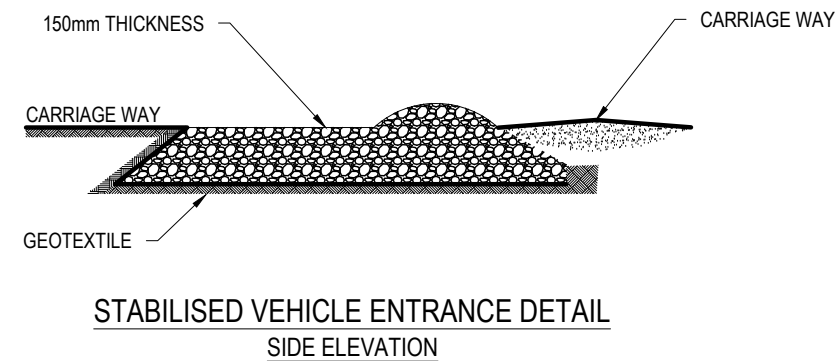
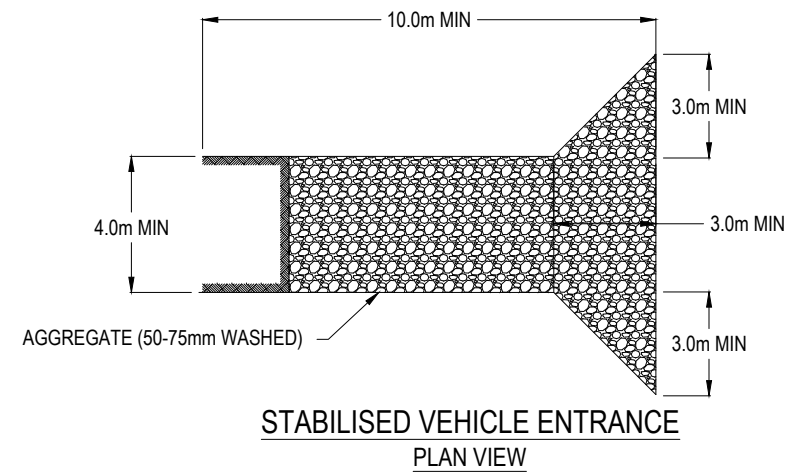


FABRIC JOIN



RESOURCE CONSENT

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Rev	Description	By	Date
	By	Date	
Survey	-	-	
Design	MKS	06/2026	
Drawn	MKS	06/2026	
Checked	SM	09/2026	
M A E N Maven Waikato 07 242 0601 info@maven.co.nz www.maven.co.nz 19 Kaimiro Street, Pukete Hamilton 3200 New Zealand			
Project			
SOUTHERN LINKS 1			
INDUSTRIAL STAGE 1			
HAMILTON, WAIKATO			
FOR SL1			
NORTHERN CONSORTIUM			
Title			
PROPOSED			
EROSION & SEDIMENT			
CONTROL DETAILS			
Project no.	298002		
Scale	-		
Cad file	298002-11-C240 ESC DETAILS.DWG		
Drawing no.	C240-1	Rev	A



A	FAST TRACK APP	MKS	09/2026
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Drawn	MKS	06/2026	
Checked	SM	09/2026	

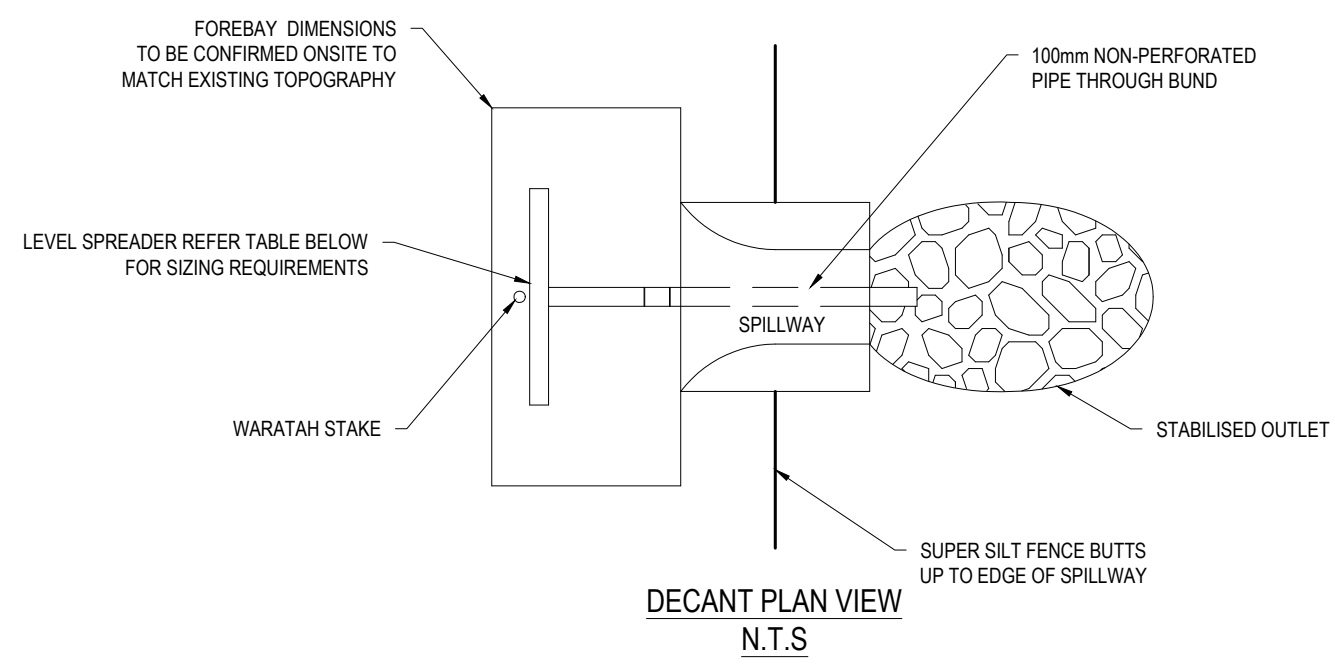
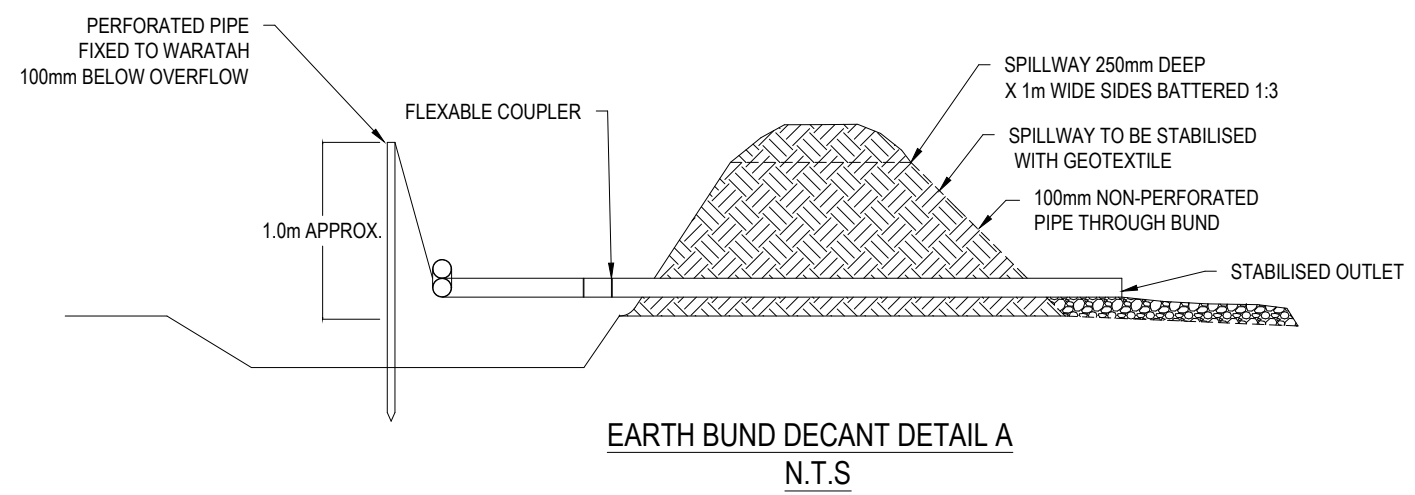


Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
EROSION & SEDIMENT
CONTROL DETAILS**

Project no.	298002
Scale	-
Cad file	298002-11-C240 ESC DETAILS.DWG
Drawing no.	C240-2
Rev	A

RESOURCE CONSENT



LEVEL SPREADER DESIGN CRITERIA (20 YEAR STORM EVENT)				
DESIGN FLOW (m ³ /sec)	INLET WIDTH (m)	DEPTH (m)	END WIDTH (m)	LENGTH (mm)
0-0.3	3	150	1	3
0.3-0.6	5	180	1	7
0.6-0.9	7	220	1	10

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	-		-
Design	MKS		06/2026
Drawn	MKS		06/2026
Checked	SM		09/2026



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07 242 0601
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19 Kaimiro Street, Pukete
Hamilton 3200
New Zealand

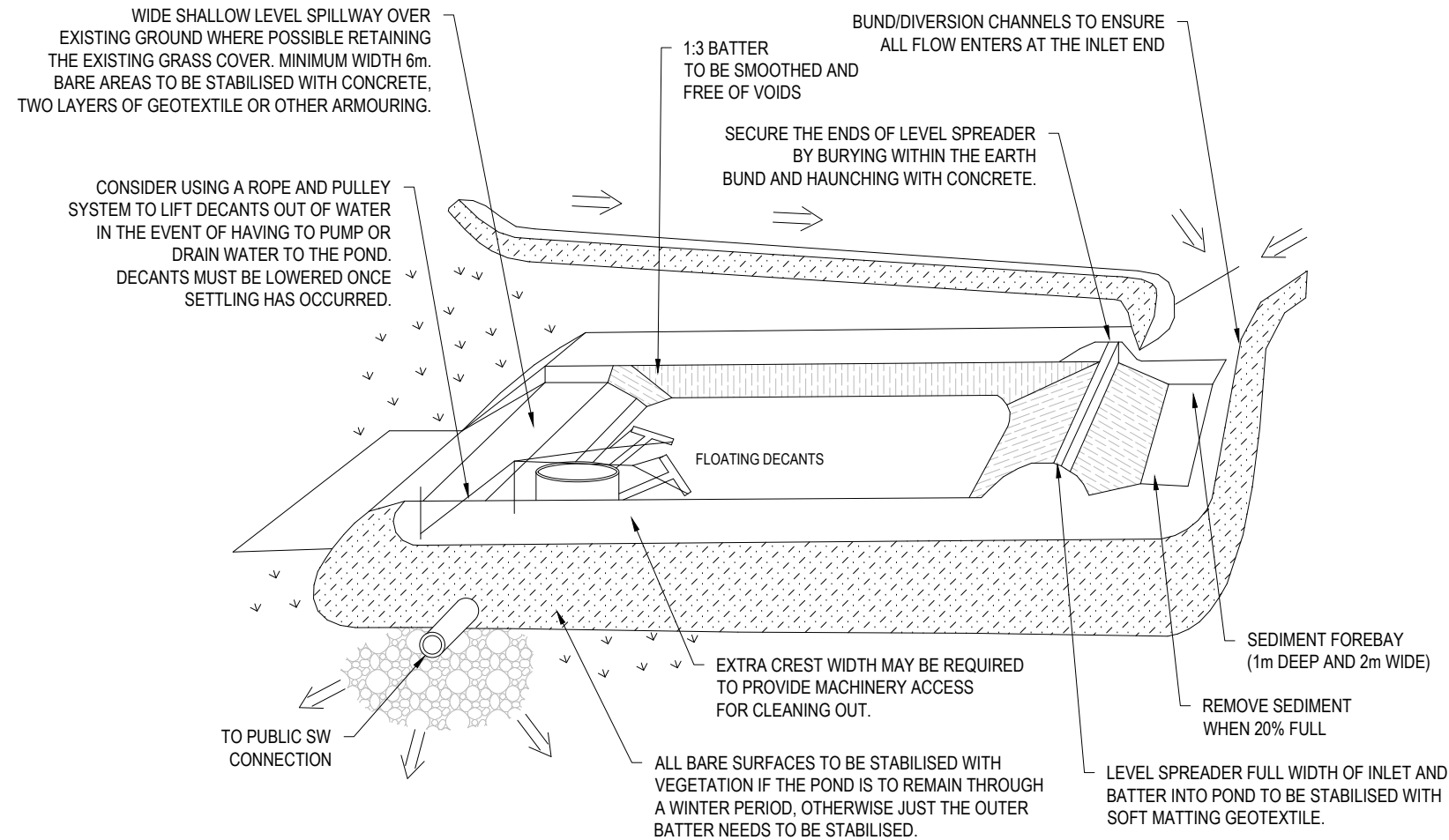
Project
**SOUTHERN LINKS 1
INDUSTRIAL STAGE 1
HAMILTON, WAIKATO
FOR SL1
NORTHERN CONSORTIUM**

Title
**PROPOSED
EROSION & SEDIMENT
CONTROL DETAILS**

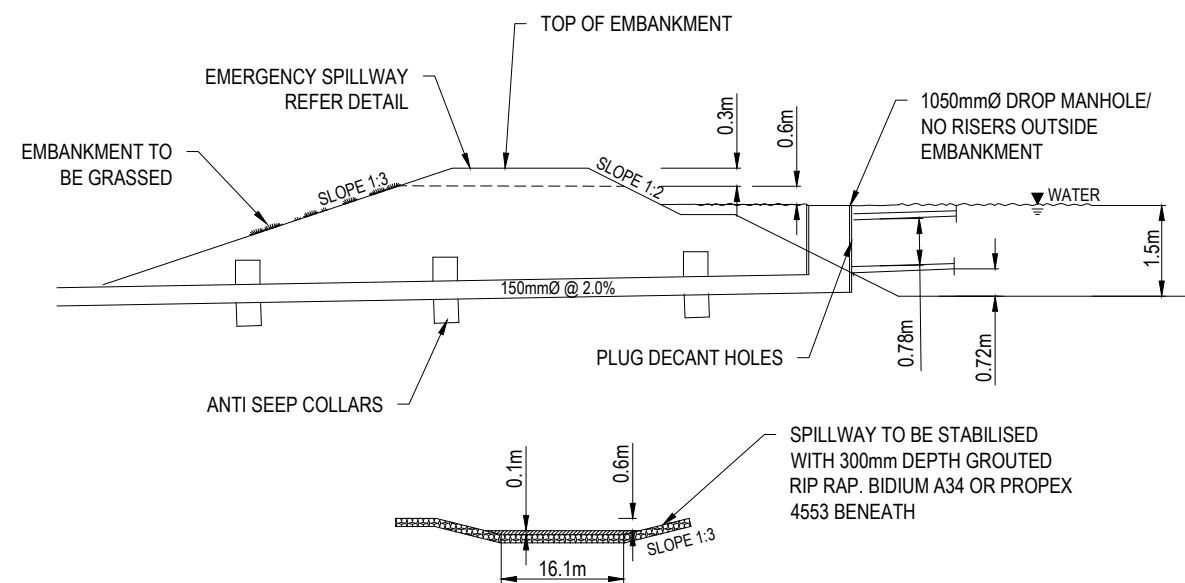
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Rev	A

RESOURCE CONSENT

DATE: 8/21/26 FILEPATH: F:\MVEN\HAMILTON\6. PROJECTS\298002 - SOUTHERN LINKS 1\11\02\240 ESC DETAILS.DWG



CROSS SECTION A-A OF SEDIMENT TREATMENT POND



EMERGENCY SPILLWAY

A	FAST TRACK APP	MKS	09/2026
Rev	Description	By	Date
		By	Date
Survey	-	-	-
Design	MKS	06/2026	
Drawn	MKS	06/2026	
Checked	SM	09/2026	
M Maven Waikato 07 242 0601 info@maven.co.nz www.maven.co.nz 19 Kaimiro Street, Pukete Hamilton 3200 New Zealand			
Project SOUTHERN LINKS 1 INDUSTRIAL STAGE 1 HAMILTON, WAIKATO FOR SL1 NORTHERN CONSORTIUM			
Title PROPOSED EROSION & SEDIMENT CONTROL DETAILS			
Project no.		298002	
Scale		-	
Cad file		298002-11-C240 ESC DETAILS.DWG	
Drawing no.		C240-4	Rev A

Appendix B – SWIFTSURE – Contaminated Soils Management and Remediation Plan



REMEDIATION ACTION PLAN: SL1 NORTHERN BLOCK – SOUTHPARK AGRI DEVELOPMENT LTD

Prepared by Swiftsure Consultants Ltd

25 June 2027



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Table 4 – Remedial Criteria

Table 5 – Roles and Responsibilities**Appendices****Appendix A – Masterplan****Appendix B - Site Location****Appendix B – Sample Locations****Swiftsure Consultants Ltd Document Control:**

Report Title	Remediation Action Plan: SL1 Industrial (Northern Block)		
Client	SouthPark Agri Development Ltd	Client Contact	Dillon Kelliher
Date	Revision Details / Status		
25 June 2026	Version 2		

SQEP Certifying Statement

I certify that the site has been assessed in accordance with current New Zealand Regulations and guidance documents and reported in general accordance with the Ministry for the Environment's Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (dated 2021).

I am considered by Swiftsure Consultants Ltd Limited to be a suitably qualified and experienced practitioner (SQEP) able to certify reports pursuant to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

Emma Lewis, Contaminated Land Specialist



Dated: 25 June 2026

1 Introduction

Swiftsure Consultants Ltd (“Swiftsure”) was requested by SouthPark Agri Development Ltd & Industrie Property Tahī Ltd (the “Client”) to prepare Remediation Action Plan (RAP) for the site at 160 Higgins Road and 16 Wickham Street, 16A Wickham Street, and 24 Wickham Street, Dinsdale, Hamilton (the “site”).

This work has been carried out in accordance with our signed agreement dated 22 October 2024.

2 Project Description

The SL1 Industrial North development area forms part of the wider Southern Links (SL1) Growth Cell, a strategically significant growth area located on the southern edge of Hamilton. The wider SL1 Growth Cell encompasses approximately 440 ha and includes land designated for the Hamilton Southern Links Road of National Significance (RoNS).

The proposed SL1 Industrial North development comprises approximately 60 ha of industrial land within a larger 106 ha master-planned development that includes both industrial and residential components.

The SL1 Industrial North land is currently held in multiple ownerships and comprises the following parcels:

- Lot 1 DP 603134 and Lot 2 DP 603134 (Southpark Agri Development Limited; approximately 50 ha);
- Lot 1 DP 584573 (Industrie Property Tahī Limited and S&S Property Investments Limited; approximately 7.8 ha); and
- Lot 1 DP 396081 and Lot 1 DP 486522 (Industrie Property Tahī Limited; approximately 2.1 ha).

The site is currently used for a mixture of rural and associated activities.

The proposed development is being progressed under the Fast-track Approvals Act 2024 and seeks approval for a comprehensively master-planned, staged development. The application includes all necessary approvals under the Resource Management Act 1991, including the regional and district resource consents required to enable the proposed development. This report has been prepared to assess potential contaminated land issues associated with the proposed industrial development and to support the resource consent application.

3 Purpose and Scope

The objective of the RAP is to outline the strategy for the removal or management of contaminated soil during earthworks to mitigate the risk posed by contaminants. This RAP is with regards to the fill mound site and paddocks only – the wider site is included as a separate standalone report.

This RAP details appropriate procedures for dealing with impacted soil with the development area. Included are also procedures to be followed should an unexpected discovery of impacted soil occur during site redevelopment.

This RAP has been prepared in general accordance with the following documentation:

- Ministry for the Environment's (MfE's) Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand (MfE, 2021).
- Ministry for the Environment's (MfE's) Contaminated Land Management Guidelines No.5 – Reporting on Contaminated Sites in New Zealand (MfE, 2021).
- Approved Code of Practise: Management and Removal of Asbestos (2016) (AcoP, 2016). New Zealand Guidelines for Assessing and Managing Asbestos in Soil (2017) (GAMAS, 2017).
- Health and Safety at Work (Asbestos) Regulations (2016), (HSWAR, 2016).

The RAP is a 'living document' that will also be used to inform the Licensed Asbestos Removalist of minimum procedures to manage ground disturbance activities in areas where elevated asbestos has been identified. This document will be reviewed and amended as necessary during site works to ensure the environmental and human health risks associated with contaminated soil are managed appropriately.

4 Definitions

4.1 Friable

Friable is defined as: 'In relation to asbestos or ACM, in a powder form or able to crumbled, pulverised, or reduced to a powder by hand pressure when dry' (ACoP, 2016).

4.2 Non-Friable

Non-friable material is defined as: 'asbestos or ACM, means not friable (and, for the purposes of this definition, asbestos and ACM include material containing asbestos fibres reinforced with a bonding compound)' (ACoP, 2016).

4.3 Asbestos Containing Dust

Asbestos Containing Dust is defined as: 'dust or debris that has settled within a workplace and is, or is assumed to be, contaminated with asbestos' (ACoP, 2016)

4.4 Trace

'Trace level means an average concentration over any eight-hour period of less than 0.01 asbestos fibres per millilitre of air.' (ACoP, 2016).

4.5 Asbestos Contaminated Soil

'Work involving asbestos-contaminated soil is permitted either as asbestos-related work or asbestos removal work. However, asbestos-related work is only permitted if a competent person (usually a suitably qualified and experienced practitioner (SQEP) has determined the soil does not contain enough asbestos or ACM to lead to airborne asbestos contamination above trace level. If the amount of ACM or friable asbestos in the soil is likely to lead to airborne asbestos contamination above trace level, the only work that may be carried out is asbestos removal work. See section 19 of this code for further information.' (ACoP, 2016)

5 Detailed Site Investigation

A DSI was undertaken to determine whether site is a 'piece of land' subject to the NES-CS as well as the Waikato Regional Plan, and to assess the potential risk to human health and the environment. The DSI was for the wider site – this RAP and information provided herein is with regards to the fill mound and paddocks only. Refer to **Appendix B** for the extent of the site.

5.1 Desk Study Review

Historical aerial imagery indicates the site was largely undeveloped in 1943, consisting primarily of dense scrub and natural vegetation, with surrounding land used for rural farming. By 1971–1974 the vegetation had been cleared and the land subdivided into paddocks, indicating use for pastoral or arable farming. Minor earthworks were visible in the north-western portion of the site by the mid-1970s.

Historical aerial photographs from the late 1980s to early 1990s, show development began to occur in the surrounding area. Large-scale earthworks and land disturbance were evident in the north-eastern portion of the site by 1990, with access tracks and nearby buildings associated with adjacent activities such as the horse racing track. Through the 1990s and 2000s, the wider site experienced increasing soil disturbance, filling, and development, including stockpiling of materials, and the establishment of yard areas. By 2015 the central portion of the site contained stockpiles of material, while the western portion had been developed into laydown and storage yards. The eastern half continued to show signs of significant land disturbance and filling.

Council records indicate several investigations have been undertaken within the wider site and have Hazardous Activities and Industries List (HAIL) notations associated with activities such as waste management, timber treatment, transport depots, and fill sites. Waipā District Council also noted that the site has consent to receive construction, demolition, and industrial fill, with past compliance issues resulting in an abatement notice i.e. "Latham's Mountain".

A Preliminary Site Investigation undertaken by HD Geo (2020) at 160 Higgins Road assessed proposed earthworks associated with a cleanfill facility. The facility reportedly accepts only non-contaminated materials and operates with controls such as fencing, locked gates, and inspection of incoming loads. Based on the desktop review, site inspection, and available information, the risk of contamination was considered low, and the proposed earthworks were considered a permitted activity under the NESCS provided a CSMP is implemented.

A recent site visit confirmed the site is currently unused and filling activities on the fill mound no longer operate. The mound was heavily vegetated with numerous observations of construction and building waste as well as other miscellaneous waste items.

Significant areas of fill and stockpiled materials were observed, including a large, vegetated mound known locally as "Latham's Mountain." Anecdotal information indicates that building and demolition waste material has been disposed of at "Latham's Mountain" for the last 30 years. Waikato Regional Council reported that a resource consent was held for "*Authorisation to Place up to 35,000 cubic metres per year of construction, demolition & industrial waste into & onto land*".

Long-term and intensive application of superphosphate fertilizers has been scientifically linked to the accumulation of cadmium in agricultural soils. Monitoring data indicates that the national average concentration across all agricultural land classes is 0.4mg/kg of soil (range 0 – 2.5 mg/kg). The concentrations of cadmium in soil are driven largely by phosphate fertiliser use history and soil tillage. Regions with a long history of intensive agriculture and soils with a high phosphatic fertiliser demand

tend to have higher cadmium concentrations, with Waikato, Taranaki and Bay of Plenty recording the highest average soil concentrations¹.

While there is no record of superphosphate use at the site in the Waikato Regional Council (WRC) Land Use Information Register, the Council considers sites with a history of prolonged and intensive superphosphate application to represent a potential contamination risk.

Although general pastoral and dairy farming activities are not individually listed on the HAIL, associated on-farm practices such as sheep dipping, livestock holding yards, farm waste dumps, and the storage or use of agricultural chemicals and petroleum products are included due to their potential to result in soil and groundwater contamination. These ancillary activities are not always documented in public records or identifiable through desktop assessments, but their historical occurrence on the site remains a credible possibility.

¹ Cadmium and New Zealand Agriculture and Horticulture: Cadmium Management Group. December 2019

5.2 Soil Investigation

Soil sampling was undertaken on 17 December 2025 and 4 February 2026. Sample locations are included as **Appendix B**. Sampling was undertaken in two areas: the fill mound and the grazing paddocks.

Twelve test pits were advanced using a 20-tonne excavator within the fill mound. Test pits were located where access permitted and to provide a reasonable distribution of sampling locations. Soil samples were collected from various depths and analysed for a combination of heavy metals, asbestos and PAHs. A total of 21 soil samples were collected, and nine bulk samples were collected for presence/absence asbestos.

Han augers were used within the paddocks to collect 8 shallow soil samples for heavy metals and SVOCs on selected samples. Three bulk samples were collected for presence/absence asbestos.

5.3 Asbestos Controls

During the test pitting investigation within the fill mound, due to the presence of potential friable asbestos and the potential high risk of airborne fibre release, specific controls were employed to implemented to protect human health and comply with regulatory requirements. Works within the fill mound were conducted by a competent person trained in asbestos identification, risk management, and safe handling. A Licensed Class A supervisor oversaw the controls as follows:

- Personal Protective Equipment (PPE):
 - Disposable Type 5/6 coveralls (with hood).
 - Half-face respirators with P3 filters.
 - Gloves and safety boots (covered with disposable boot covers.)
- Dust and Fibre Control Measures:
 - Minimise soil disturbance using low-impact tools (e.g. trowel or spade).
 - Wet methods to suppress dust and fibres.
 - No dry brushing or use of high-pressure air/water.
- Area Containment and Access Control:
 - Establish a clearly defined exclusion zone using fencing and signage.
 - Limit access to trained personnel only.
 - Use drop sheets or plastic sheeting in work areas if appropriate.
- Decontamination Procedures:
 - On-site decontamination area for PPE and equipment.
 - Double-bagging of asbestos-contaminated waste in labelled, heavy-duty asbestos bags.
 - All disposable PPE must be treated as asbestos waste.

Due to health and safety constraints, it was not possible to obtain and sieve 10 L of soil at each location (as described within the New Zealand Guidelines for Assessing and Managing Asbestos in Soils).

The following key observations were during the site investigation:

- The large mound is heavily vegetated and was difficult to access in several areas.
- Various waste materials were observed across the mound, including car bodies, concrete, rubble, tiles, roofing materials, timber, power poles, and scrap metal.
- The toe of the mound, located toward the south-eastern side, appeared to represent the oldest part of the fill.
- Suspected asbestos-containing materials (ACMs) were observed in several locations.
- Gravel tracks were present across the mound, likely providing access during historical filling activities.
- Fill material extended for all test pits with various locations where suspected ACM debris was encountered. Brick, roofing tiles glass, timber and metal were noted in numerous pits.
- A significant building fire was encountered in one test pit where fire-damaged building materials were uncovered. It looked to be likely that the building had been set on fire in situ and buried.
- Construction and demolition debris was noted in several areas across the paddocks adjacent to the fill mound.

A summary of the results is as follows:

- Selected heavy metals (arsenic, cadmium, copper, chromium, lead, nickel and zinc) exceeded the adopted background criteria in most samples.
- No samples exceeded the adopted human health or environmental criteria for heavy metals.
- Asbestos was detected above laboratory detection in one soil sample but was below the adopted human health criteria.
- Bulk samples taken from the paddock did not contain asbestos.
- Two bulk samples from the fill mountain contained asbestos.

The investigation found that soils within the grazing paddocks could not be classified as cleanfill but had contaminant concentrations below the adopted human health and environmental criteria. This material was therefore suitable for reuse within the site.

The investigation confirmed that soils associated with the fill mound referred to as “Latham’s Mountain” contain fragments of asbestos-containing material (ACM) within fill material. Although laboratory analysis did not detect free asbestos fibres within the analysed soil matrix, this is not considered inconsistent with the field observations or the known history of filling at the site. Asbestos contamination associated with demolition waste is typically highly heterogeneous, with asbestos present as discrete fragments of ACM within otherwise clean soil. The presence of ACM fragments confirms that asbestos-containing demolition materials are present within the fill at “Latham’s Mountain” and that additional fragments may remain undiscovered within the filled area.

From a human health perspective, the primary risk relates to the disturbance of soils containing ACM, which may result in the release of airborne asbestos fibres during activities such as excavation, piling, landscaping, or redevelopment. Appropriate management measures will therefore be required for any future ground disturbance within the affected areas.

Overall, the results indicate that soils within the fill mound ("Latham's Mountain") are likely highly variable due to the heterogeneous nature of the fill materials and the full composition of the fill mass cannot be completely characterised and the presence of additional contamination cannot be ruled out. Provision should therefore be made for the management of unexpected contamination during future ground disturbance works.

6 Site Description

6.1 Site Details and Layout

Table 1 provides a summary of details relating to the site. **Appendix B** shows the location of the site.

Table 1: Site Details

Item	Description
Physical address	160 Higgins Road and 16 Wickham Street, 16A Wickham Street, and 24 Wickham Street, Dinsdale, Hamilton
Legal description	• LOT 1 DP 584573 • LOT 2 DP 603134 • LOT 1 59491 • LOT 1 DP 365434 • LOT 1 DP 396081 LOT 1 DP 486522 • LOT 1 DP 372217
Relevant authorities	Waikato Regional Council Waipa District Council
Zoning	Industrial
Current use	Unused former fill site, farmland/grazing.

7 Proposed Development

The site forms a part of the overall Southern Links designation (SL1). SL1 was approved under the fast-track process in October 2024 and will provide HCC with future housing and industrial. It is Swiftsure's understanding that the Client is currently undertaking the Substantive Application phase for the Northern Industrial Block (refer to **Appendix A**).

The site is approximately 60-hectare block of light industrial and farmland land to the south of Higgins Road and Wickham Street. Industrial Stage 1 of SL1 (Figure 1) will involve the development of industrial lots and associated infrastructure pertaining to stormwater management and roading.

8 Published Geology

8.1 Geology and Hydrogeology

Geological maps² for the area depict the regional geology for the low-lying areas as comprising Holocene peat deposits. The peat is underlain by interbedded Silts and Sands of the Late Pleistocene aged alluvial deposits of the Hinuera formation, which is underlain by Early Pleistocene aged, fluvially reworked igneous silt/clay of the Walton Subgroup Formation which also form the base of the nearby hills.

The geotechnical investigation for the area³ states that the site contains areas of gravel yards, material stockpiles, and pastureland overlying Peat, Hinuera Silts/Sands and Walton Subgroup Silts and Clays. The topography is generally level between RL38 and 41. However there are large uncontrolled fill and excavations onsite ranging between RL36 m up to RL61. The regional groundwater table is generally within 3 metres of the surface. It states that the ground conditions encountered during the site investigations were generally consistent with the published geology with the exception of imported gravel fill in the gravel yard areas. CMW summarised the strata as follows:

Table 2: Geology Summary

Geology	Unit Description	Top of Unit (m bgl)		Thickness (m)	
		Min	Max	Min	Max
Uncontrolled fill (Gravel Yard/Latham's Mountain)	Stiff to very stiff Clayey Silt and medium dense Sand	0.0	0.2	0.5	3.2*

² Geological Map of New Zealand: 1:125K. Institute of Geological and Nuclear Sciences Ltd, 2010.

³ Geotechnical Investigation Report: Southern Links Industrial Stage 1 – Resource Consent/Substantive Fast Track Application, CMW, 17 June 2026

Geology	Unit Description	Top of Unit (m bgl)		Thickness (m)	
Peat (swamp deposits)	Firm to very stiff fibrous organic Peat	0.1	1.0	0.3	12.0
Hinuera Formation	Loose to medium dense Sand with interbedded stiff to very stiff Silt, and lenses of Organic Silt	0.1	7.0	3.3	17.5
Walton Subgroup	Stiff to very Stiff Silt and Dense to Very dense Sand	5.2	19.8	0.2	>14.8

*Note: unable to penetrate to full depth, based on contours likely to be ~19m thick in the construction waste site

The site is located within the highly modified Mangaotukutuku Stream catchment. There are numerous artificial water channels/farm drains. Hamilton Lake and the Waikato River are located approximately 2.5km to the north of the site.

There are 7 bores within 500m of the site as follows:

Table 3: Bore Information

Bore ID	Static Water Level (m)	Status
Bore 72 - Station 7946	4.5	Existing
Bore 72 - Station 1349	1.0	Existing
Bore 72 - Station 1348	1.0	Existing
Bore 72 - Station 1347	2.0	Existing
Bore 72 - Station 2039	-	Existing
Bore 72 - Station 13319	-	Existing
Bore 72 - Station 1346	0.5	Existing

8.2 Geomorphology

Existing geotechnical assessments for the SL1 area⁴ state that the site is within a wetland/alluvial plain and that this landform is defined by an essentially level to gently undulating plain at between RL43m and RL35m (Moturiki Datum) that lies to the west of the Low Hamilton Hills. The report states that the plains are often crossed with a network of open drains which are typical of farmland in peat areas. Most of the site is low-lying flat farmland.

8.3 Groundwater

The Geotechnical report² prepared for the wider area states that groundwater was encountered between 0.0m to >16.2m below the existing ground surface at time of testing. Groundwater within the Low Hamilton Hills areas is expected to get closer to the ground surface the lower in elevation the ground surface is. Perched groundwater tables can be present within the layered Walton Subgroup deposits.

9 Conceptual Site Model

A conceptual site model (CSM) has been developed to assess the potential exposure pathways present at the site. A contamination conceptual site model consists of three primary components. For a contaminant to present a risk to human health or an environmental receptor, all three components are required to be present and connected. The three components of a conceptual site model are:

- Source of contamination.
- An exposure route, where the receptor and contaminants come into contact (e.g. ingestion, inhalation, dermal contact).
- Receptor(s) that may be exposed to the contaminants.

The potential source, pathway, receptor linkages at this subject site are provided in **Table 4** below

Table 4: Conceptual Site Model

Source	Contaminant of Concern	HAIL Code	Exposure Pathway	Potential Receptor	Pathway Complete?
Uncontrolled building and demolition waste	Asbestos Heavy metals	E1 - Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition (current and former structures). I- any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.	Exposure of workers to contaminants in soils and groundwater during site redevelopment – dermal contact, ingestion or inhalation of dust/vapours	Construction workers.	Complete Pathway – Contaminants in soils are at levels to pose a risk to human health.
			Exposure of future site users to contaminants in soils – dermal contact, ingestion or inhalation of dust/vapours.	Future site users.	Complete Pathway – Contaminants in soils are at levels to pose a risk to human health.
			Exposure of general public to contaminants in soils– dermal contact, ingestion or inhalation of dust/vapours.	General public.	Incomplete Pathway – General public do not have access to the site.
			Groundwater resources for public consumption.	Leaching and migration of soil contaminants into groundwater.	Potential Pathway –Contaminants in soils may be at levels to have the potential to leach. Leachability testing would confirm this.
			Surface water	Sediment and runoff directly into surface water.	Potential Pathway –Contaminants in soils may be at levels to have the potential to leach. Leachability testing would confirm this.
		I- any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity	Exposure of workers to contaminants in soils and groundwater during site redevelopment – dermal contact, ingestion or inhalation of dust/vapours.	Construction workers.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to human health.
			Exposure of future site users to contaminants in soils – dermal contact, ingestion or inhalation of dust/vapours.	Future site users.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to human health.

Source	Contaminant of Concern	HAIL Code	Exposure Pathway	Potential Receptor	Pathway Complete?
Superphosphate application	Cadmium	that it could be a risk to human health or the environment.	Exposure of general public to contaminants in soils– dermal contact, ingestion or inhalation of dust/vapours.	General public.	Incomplete Pathway – General public do not have access to the site.
			Groundwater resources for public consumption.	Leaching and migration of soil contaminants into groundwater.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to groundwater
			Surface water	Sediment and runoff directly into surface water.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to surface water.
Filling activities	PAHs Heavy metals Asbestos	G.5 Waste disposal to land (excluding where biosolids have been used as soil conditioners)	Exposure of workers to contaminants in soils and groundwater during site redevelopment – dermal contact, ingestion or inhalation of dust/vapours.	Construction workers.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to human health.
			Exposure of future site users to contaminants in soils – dermal contact, ingestion or inhalation of dust/vapours.	Future site users.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to human health.
			Exposure of general public to contaminants in soils– dermal contact, ingestion or inhalation of dust/vapours.	General public.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to human health.
			Groundwater resources for public consumption.	Leaching and migration of soil contaminants into groundwater.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to groundwater
			Surface water	Sediment and runoff directly into surface water.	Incomplete Pathway – Contaminants in soils are not at levels to pose a risk to surface water

10 Remedial Approach

Based on the findings of the DSI, soils within the paddock areas have been assessed as being suitable for reuse within the project footprint, subject to appropriate earthworks management controls. No active remediation is considered necessary for these areas, provided that soil handling, placement, and reuse are undertaken in accordance with the requirements of this RAP and any relevant site management procedures.

10.1 Assessment of Onsite Fill

It is understood the landowners intend to reuse the construction waste fill stockpile known as "Latham's Mountain" where practicable. To assess its suitability for reuse, Swiftsure undertook preliminary contaminant testing of surface soils within the stockpile as part of the Detailed Site Investigation (DSI)⁵. The investigation identified the presence of asbestos-containing material (ACM), zinc and polycyclic aromatic hydrocarbons (PAHs) at low but detectable concentrations.

The results indicate that the stockpile is unlikely to represent a significant source of contaminant migration or pose a risk to surrounding land. However, due to the heterogeneous nature of the construction and demolition fill, the stockpile cannot be fully characterised through discrete sampling alone, and the presence of further contamination cannot be ruled out.

The principal risk associated with reuse of the material relates to the potential disturbance of ACM during earthworks, which could result in the release of airborne asbestos fibres. Accordingly, appropriate asbestos management controls will be required during excavation, handling and placement of the material.

The suitability of the stockpiled fill for reuse will be confirmed through additional targeted sampling, validation and construction-phase monitoring by Swiftsure. Preliminary testing and management requirements are provided in **Section 10.2**.

10.2 Resue of Onsite Fill

Preliminary investigation results indicate that a proportion of the surficial fill within "Latham's Mountain" may be suitable for reuse, subject to further characterisation and implementation of appropriate management controls. These controls should include supervision by a suitably qualified land contamination specialist, visual inspection of excavated materials, targeted laboratory testing, and airborne asbestos fibre monitoring during earthworks.

A preliminary excavation methodology has been developed in consultation with the project team. The stockpile is proposed to be excavated in stages of approximately 1,000 m³. Each batch of material will be screened to remove oversized construction and demolition waste (e.g. concrete, steel and other debris), with the remaining soil placed into discrete stockpiles for contaminant assessment.

Stockpiles containing contaminant concentrations exceeding the applicable acceptance criteria will either require disposal to an appropriately licensed landfill or, where approved by a suitably qualified land contamination specialist and permitted by the relevant regulatory approvals, be managed onsite beneath a suitably designed clean cover system.

⁵ Detailed Site Investigation, SL1 Northern Block, Swiftsure, 25 June 2026

Stockpiles demonstrated to comply with the relevant acceptance criteria may be reused onsite in accordance with the recommendations provided in Section 8.1.2 of the CMW Geotechnical Investigation (June 2026). The final earthworks methodology, testing frequency and reuse criteria should be confirmed during detailed design and incorporated into the Construction Environmental Management Plan and earthworks specifications.

10.3 Unexpected Discovery Protocol

Given the uncertainties around “Latham’s Mountain”, a conventional pre-defined excavation-based remediation strategy is not considered appropriate or proportionate at this stage. Instead, remediation and contamination management for this area will be undertaken through the implementation of an Unexpected Discovery Protocol (UDP) during all intrusive works involving the fill mound and any other areas of uncertified or potentially disturbed ground.

The UDP will apply to all future earthworks, trenching, excavation, or other ground disturbance activities undertaken within the fill mound area. The purpose of the UDP is to ensure that any previously unidentified contamination or suspect materials encountered during works are identified promptly and managed in a safe, compliant, and environmentally appropriate manner.

10.4 Site Supervision

A suitably qualified contaminated land specialist should supervise all earthworks associated with the excavation and assessment of the “Latham’s Mountain” stockpile. The specialist should undertake regular visual inspections of excavated materials, identify any evidence of unexpected contamination, direct additional sampling where required, and determine the appropriate management or disposal pathway for the material.

The stockpile should be excavated in stages of approximately 1,000 m³. Each stage of material should be screened to remove oversized construction and demolition waste (e.g. concrete, steel and other debris), with the remaining soil placed into discrete stockpiles for contaminant testing.

Based on the results of contaminant testing and field observations, stockpiles that comply with the applicable acceptance criteria may be reused onsite. Material exceeding the relevant criteria should either be disposed of at an appropriately licensed landfill or, where appropriate and approved by the contaminated land specialist and relevant regulatory authorities, managed onsite beneath a suitably designed clean cover system.

10.5 Air Monitoring

A suitably qualified contaminated land specialist shall implement and manage the asbestos air monitoring programme throughout the earthworks. The monitoring programme shall be risk-based and adapted to reflect the nature of the works, known areas of ACM contamination, and any unexpected contamination encountered during excavation.

Near-source static air monitoring shall be undertaken using four (4) monitoring locations positioned on the north, south, east and west sides of the active excavation area, approximately 25m beyond the earthworks zone where practicable. This arrangement is intended to account for changing wind directions throughout the working day and provide representative monitoring of potential airborne asbestos fibre emissions. Each sample shall collect a minimum air volume of 480 L in accordance with WorkSafe guidance.

The frequency of air monitoring shall be determined by the contaminated land specialist based on the level of risk. Daily monitoring is recommended during works within known ACM-affected areas, with the

monitoring programme adjusted as required in response to changing site conditions or the discovery of previously unidentified asbestos contamination.

All air samples shall be analysed by an asbestos laboratory approved by the Asbestos Institute of New Zealand (AINZ) and operating under ISO/IEC 17025 accreditation.

The contaminated land specialist shall maintain a project-specific air monitoring register documenting monitoring locations, sampling dates, laboratory results and the corresponding excavation areas. This record will provide traceability of monitoring results throughout the duration of the project.

A personal air monitoring programme is also recommended for plant operators undertaking excavation works. As a minimum, personal monitoring should be undertaken weekly, or fortnightly where risks are demonstrated to be low. Increased monitoring frequency should be implemented when working within known ACM-contaminated areas or where unexpected asbestos contamination is encountered.

10.6 Contamination Indicators

Potential indicators of contamination may include, but are not limited to:

- Stained or discoloured soils.
- Hydrocarbon or chemical odours.
- Ash, clinker, or burnt materials.
- Buried refuse, demolition waste, or other anthropogenic materials.
- ACMs.
- Drums, tanks, or other buried infrastructure; and/or
- Groundwater exhibiting sheen, odour, or other evidence of contamination.

10.7 UDP Process

If suspect contamination or unusual materials are encountered during works, the following actions shall be implemented:

1. Works shall cease immediately in the affected area.
2. The suspect material shall be isolated and secured to prevent unnecessary disturbance or cross-contamination.
3. The area shall be assessed by a Contaminated Land Specialist (CLS).
4. Where necessary, additional sampling and laboratory analysis shall be undertaken to determine the nature and extent of contamination.
5. Based on the assessment findings, the material shall be either:
 - Managed for reuse onsite (if demonstrated to be suitable).
 - Segregated and stockpiled pending further classification; or
 - Removed and disposed of offsite to an appropriately licensed or consented facility.

6. Any required health and safety controls, including dust suppression, worker protection measures, and contamination containment procedures, shall be implemented as necessary.

10.8 Remediation Strategy

Accordingly, the remediation strategy for the site will comprise the following:

- Reuse of suitable soils from the paddock areas within the project footprint.
- Controlled earthworks and soil handling practices during construction.
- Implementation of an Unexpected Discovery Protocol for all intrusive works in the fill mound and other potentially variable fill areas; and
- Assessment, segregation, and offsite disposal of any contaminated or unsuitable materials encountered during works.

This approach is considered appropriate given the current understanding of site conditions and the variable nature of the fill materials. The strategy adopts a risk-based and adaptive remediation framework, which is considered the most practical and effective means of managing residual uncertainty associated with the fill mound while enabling the proposed works to proceed.

11 Remedial Criteria

The proposed remedial goal for this assessment is the values for Industrial / Commercial human health criteria.

Table 5: Remedial Criteria

	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
Background Criteria ⁶⁷	27.21	0.6	17.18	49	150	11,9	162.7
	6.8	0.22	30	25	20	7.6	53
Human Health Criteria (Commercial/Industrial) ⁸	<u>70</u>	<u>1,300</u>	<u>6,300</u>	<u>>10,000</u>	<u>3,300</u>	<u>6,000</u>	<u>400,000</u>
Environmental Criteria (Commercial/Industrial) ⁹	150	33	650	420	2,500	-	480
Soil Asbestos Investigation Criteria			Site End Use				
0.001% w/w asbestos for FA and AF			All sites uses				
No ACM in surface soils (0 – 0.1 m)			All site uses				
0.05% w/w asbestos for ACM			Commercial/industrial				

⁶ Criteria from Appendices (Waikato Surface Soils Background Data), Internal Document: Caldwell, J. 2017. Waikato Regional Council Standard Operating Policies for Defining Cleanfill Acceptance Criteria. Document # 10581789.

⁷ Criteria from Waikato Regional Council 'Natural background concentrations in the Waikato region' - 95% upper limit background concentrations for selected elements in soil of the Waikato region -.

⁸ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (Commercial/Industrial land use).

⁹ Landcare Research: Technical Document. Eco-Soil Guideline Value for typical soil, aged contamination source, and a commercial/industrial land use.

11.1 Health and Safety at Work (Asbestos) Regulations 2016 (Asbestos Regulations)

As outlined in the GAMAS, the Asbestos Regulations impose specific obligations in relation to asbestos removal or asbestos-related work involving soil that is likely to lead to airborne contamination over the acceptable trace level. when one or more of these conditions are met:

Work involving asbestos in soil is classified into these categories:

- Unlicensed asbestos removal work.
- Asbestos-related work.
- Licensed asbestos removal work, divided into two categories:
 - Class A licensed asbestos work
 - Class B licensed asbestos work.

Given the concentrations of asbestos in soil were found to above 0.001% w/w FA/AF and/or 0.01% w/w ACM, remedial works should be undertaken as licensed asbestos removal.

The asbestos removalists must prepare and implement an Asbestos Removal Control Plan (ARCP).

WorkSafe NZ should be notified at least 5 working days prior to starting work.

An independent licensed assessor should provide a clearance certificate once the site has been validated.

12 Roles and Responsibilities

Table 5: Roles and Responsibilities

Role	Responsibility
Site Owner	To distribute this RAP and be responsible for ensuring that the site works are undertaken in accordance with this document and any revisions to this document.
Contractor TBC	The Contractor will be required to ensure that personnel involved in the site works are made familiar with this plan prior to commencing work on the site, and that there be regular reminders about its requirements. The requirements within in this plan should be followed at all times.
Contaminated Land Specialist Swiftsure Consultants Ltd	A suitably qualified and experienced practitioner (SQEP/Contaminated Land Specialist) as defined in the NES-CS, should liaise with the contractor during the course of the works. The Contaminated Land Specialist will provide specialised contaminated land support to the Site Owner and Site Contractor and will be responsible for undertaking site supervision, validation sampling of remedial activities completed, and for preparation of a Soil Validation Report (SVR) at the completion of works.
Asbestos Removal Supervisor TBC	Responsible to ensure that the asbestos works are undertaken in accordance with this Asbestos Removal Control Plan (ARCP), RAP, health and safety legislation and all applicable asbestos regulations and guidance. The asbestos removal contractor must provide a supervisor that is "competent in managing the removal of asbestos in soil", or utilise the person identified as SQEP below.
Licensed Asbestos Assessor TBC	A licensed asbestos assessor is required to carry out air monitoring during licensed asbestos removal works and undertake validation sampling / issue a validation report at the conclusion of licensed asbestos works.

13 Site Management

Due to the potential for encountering asbestos-containing materials (ACMs), the engaged Licensed Asbestos Removalist shall, prior to the commencement of earthworks, prepare and implement an Asbestos Removal Control Plan (ARCP). The ARCP shall complement the management measures outlined in this RAP and set out the specific health, safety, and operational controls applicable to the proposed asbestos removal and associated earthworks. Landfill acceptance of excavated materials shall be obtained prior to works commencing.

A site meeting shall be held and attended by the Client, the Contractor, Asbestos Removalist, Licensed Assessor, the Contaminated Land Specialist and any other personnel involved with the earthworks to discuss the risks and site procedures for handling contaminated soils.

Prior to works commencing, the Contractor shall establish controls including but not limited to:

- Access to the earthwork areas shall be restricted to authorised personnel; this shall be achieved via security fencing and be always maintained as secure. Access to this area will be following appropriate site induction procedures.
- Signage, including site works information, health and safety requirements, and site reporting requirements shall be in place in accordance with the ACoP.
- Decontamination facilities.
- Dust control systems including a full height fence with dust cloth.
- Health and safety facilities including first aid points.
- Stormwater (surface runoff) diversion and collection systems.

14 Excavation of Asbestos Contaminated Soil

The following methodology shall be adhered to when excavating asbestos containing soil and shall be put in place by the contractor during the earthworks at the site.

Specific job-related methodology will be outlined in the separate ARCP provided by the engaged Licenced Asbestos Removalist. This will be submitted to the client and WorkSafe as part of the notification process a minimum of five days prior to works commencing.

- All asbestos removal works shall be supervised by a Class B licensed Asbestos Removal Supervisor in line with WorkSafe NZ requirements.
- Access to the area must be restricted prior to commencement of excavation works. Please see the below note on exclusion zones.
- Personnel operating machinery involved in excavations, stockpiling and transferral of fill must adhere to requirements within this plan.

- Excavators used during the works should ideally be closed cab with laboratory grade HEPA filters fitted over the air inlets. Should open cabs be used, operators should be wearing appropriate PPE and RPE.
- Any personnel handling the asbestos containing soil or material must have the appropriate training and experience for handling asbestos materials and of the required decontamination procedures.
- Access to asbestos removal area by other work parties will only be allowed during 'tools down' periods under the direct supervision of the Contractor and when wearing appropriate PPE and RPE.
- At completion of asbestos removal, a visual inspection will be undertaken by a licensed asbestos assessor or "Competent Person" as defined by WorkSafe.
- The area will remain isolated until a Clearance Certificate has been issued stating the area is "Safe to re occupy" at which time restrictions may be lifted.

14.1 Personal Protective Equipment (PPE)

When working with Class B asbestos contaminated soils, appropriate personal protective equipment (PPE) and respiratory protective equipment (RPE) is required to be worn in order to minimise the effects if any exposure to asbestos fibres, specifically the inhalation of airborne asbestos fibres. The following PPE and RPE is required to be worn by any workers while within the works exclusion zone:

- Disposable overalls (rated type 5, category 3 (EN ISO 13982-1)).
- Steel cap boots or gumboots (should have no laces or material insets as these can become contaminated and are difficult to clean. If these are not available or practical, then disposable boot covers should be worn over your footwear).
- Gloves.
- RPE should have a minimum of a P3 filter attached and should be worn at all times when within the removal area.

14.2 Air Monitoring

Due to the likely non-homogenous nature of asbestos contamination in soil, control air monitoring is recommended to be undertaken daily during the asbestos removal works in order to inform that appropriate procedures are being undertaken to minimize the possibility of airborne fibres being produced by the works.

This requirement shall include, at a minimum:

- Be undertaken by an independent competent person as defined by the ACOP.
- Be undertaken using a membrane filter method.
- Include the placement of an air monitor on each boundary of the soil disturbance work zone.

14.3 Dust Suppression

Sprinklers will be installed around the boundaries of the earthwork area and dust suppression equipment installed within the interior. These will be operating at all times during removal, with the exception of prolonged/heavy rain events. Work will cease if unacceptable concentrations of dust are generated.

Surface water run off must be avoided, and in the event that surface water runoff is generated, this should be collected and filtered in accordance with the ARCP water filtration methods.

15 Onsite Retention of Material

Should ACM be encountered as part of the UDP this material may be suitable for onsite retention. In this event, the following should be followed:

- The controls provided in **Sections 13, 14 and 16** should be adhered to when excavating and moving the contaminated soil around site.
- The proposed location of the retained asbestos contaminated soil should be provided to Council for approval in advance of excavation.
- Once the contaminated soil is in place, the area should be cordoned off and dust control/sediment runoff measures in place until the final cap is in place.
- A hard cap comprising asphalt will cover and seal the isolated asbestos contamination.
- A geotextile membrane will place under the asphalt seal when placing the cap. Should the cap be removed in the future, this membrane will prevent the capping itself from becoming contaminated. In addition, this membrane acts as a demarcation layer for the residual asbestos in soil.
- All works should be supervised by a Contaminated Land Specialist and documented within a Works Completion Report.
- A Long-Term Management Plan will be prepared for the site. The plan will:
 - Document the location and volume of the retained contaminated soil.
 - Outline maintenance checks of the cap required to be undertaken periodically or following significant natural disasters.
 - Outline controls that will be required should the containment area be disturbed during future development.

16 Offsite Disposal

This section provides further information with regards to the offsite disposal of asbestos contaminated waste material if encountered during the UDP:

16.1 Vehicle Movements

Trucks and trailers will be required to have their wheels washed before exiting the site. This will be maintained by the removal contractor. There is to be no tracking of material onto roads or footpaths. A visual inspection should be undertaken for each truck and trailer before it leaves the site to look for possible asbestos contamination. Any possible asbestos contamination found should be appropriately remediated before the truck or trailer leaves the exclusion zone to avoid the spread of asbestos contamination to the surrounding areas.

16.2 Stockpiling

Stockpiling of asbestos containing soil is not recommended, however should stockpiling be required, stockpiles must be placed on top of 200 µm plastic sheeting to avoid contamination of underlying surfaces. They should be kept damp and covered with 200 µm plastic sheeting, geocloth or equivalent to avoid rain related run-off, and wind disturbance.

16.3 Transport and Disposal of Asbestos Waste

Asbestos containing material (including used PPE) excavated around sample S09 shall be placed in vehicles double-lined in 200µm thick virgin plastic. Once full these vehicles should be completely sealed with 200µm thick virgin plastic so that no spillage or dispersal of the waste to the atmosphere occurs. Care must be taken to ensure that the integrity of the plastic is not damaged during handling or transportation.

Controlled wetting of waste shall be employed where practicable, to reduce dust emission during bag sealing and in cases of accidental bag rupture during transportation. Excessive water logging shall be avoided as the excess contaminated water may leak out of the bags, creating a future source of airborne asbestos fibres.

The asbestos waste shall be disposed of at an appropriate waste facility authorised by the Resource Management Act 1991 to accept asbestos waste and where a certificate of disposal shall be issued. This will include the name of the authorised waste facility, weighbridge docket and registration number of vehicles for every disposal. Copies of waste disposal certificates and related documentation must be kept by the Contractor and supplied to the site.

Should it be necessary to temporarily store asbestos waste prior to transport for disposal then all plastic bags containing the waste shall be held in leak-proof metal containers or bins suitably marked and held in a secured area displaying appropriate warning signs.

16.4 Contaminated Water

Water used for cleaning asbestos-contaminated equipment (including vehicles) shall be placed into a plastic lined drum or skip and disposed of at an appropriately licensed facility. If excessive water is applied, ponding or runoff may occur which could permit the transport and accumulation of asbestos fines from outside of the site. Water from the work area shall be retained inside the boundary of the site and wash water directed back into excavations and the site.

17 Decontamination

17.1 Personal Decontamination

Prior to work commencing, a decontamination area will be identified. Personal decontamination should be undertaken as outlined in the ACoP. All disposable PPE used during removal works are to be considered asbestos containing waste and are to be disposed of appropriately.

17.2 Equipment and Vehicle Decontamination

All items of equipment used during asbestos removal (such as spades) must be treated as one of the following:

- Decontaminated using wet or dry decontamination methods as outlined in the ACoP (i.e. fully dismantled and cleaned under controlled conditions); or

- Placed in sealed containers (and used only for asbestos removal work); or
- Disposed of as asbestos waste.

For vehicles in Class B licensed removal sites a thorough visual inspection would be undertaken and controlled removal of visible debris and soil should take place. Attention should be given to the tracks and buckets of excavators.

While there is no requirement for surface tests looking for asbestos containing dust to be undertaken after the removal of Class B asbestos containing material, a Licensed Asbestos Assessor or “Competent Person” as defined by WorkSafe can opt to have these taken if there is reason to believe asbestos containing dust associated with the Class B removal has not been appropriately remediated or encapsulated.

18 Imported Fill

If imported fill is required to be used at the site, it shall meet the Waste Management Institute of New Zealand technical guidelines for disposal to land¹⁰ which defines clean fill material as Virgin Excavated Natural Material (VENM) such as clay, soil and rock that are free of combustible, putrescible, degradable or leachable components.

19 Validation & Clearance

Should remediation be required as part of the UDP, validation sampling will be required to confirm the area has been sufficiently remediated.

The Contaminated Land Specialist should work in parallel with the demolition contractor and licensed assessor to undertake validation testing associated with the demolition of the buildings.

A Contaminated Land Specialist shall be engaged to undertake validation testing to ensure the remedial targets have been met. Validation sampling should be undertaken in accordance with CLMG based on areas and volumes to be remediated and will be at the discretion of the Contaminated Land Specialist dependent on the supplementary site investigation and associated remedial volumes.

A Site Validation Report (SVR) shall be prepared by the Contaminated Land specialist and provided to WDC and WRC at completion of works.

Access to the asbestos removal area will be restricted until a Licensed Asbestos Assessor or “Competent Person” as defined by WorkSafe has carried out a visual inspection and issued a Clearance Certificate stating the site is “safe to re-occupy”.

The clearance certificate will be provided by the site to WDC and WRC for their records. In preparation of the clearance inspection, all asbestos containing waste must have been removed from the site.

¹⁰ Technical Guidelines for Disposal to Land (Waste Management Institute New Zealand), September 2023

20 Limitations

This report is the property of SouthPark Agri Development Ltd and Swiftsure Consultants Ltd. It was produced for the purpose stated above in accordance with the conditions of the contract dated 22 October 2024. It does not purport to provide legal or financial advice. Swiftsure Consultants Ltd accepts no liability to any other party or for any other purpose.

We have only reviewed readily available information. This information may contain errors and omissions, for which we cannot be responsible: we have not validated any information unless specifically stated.

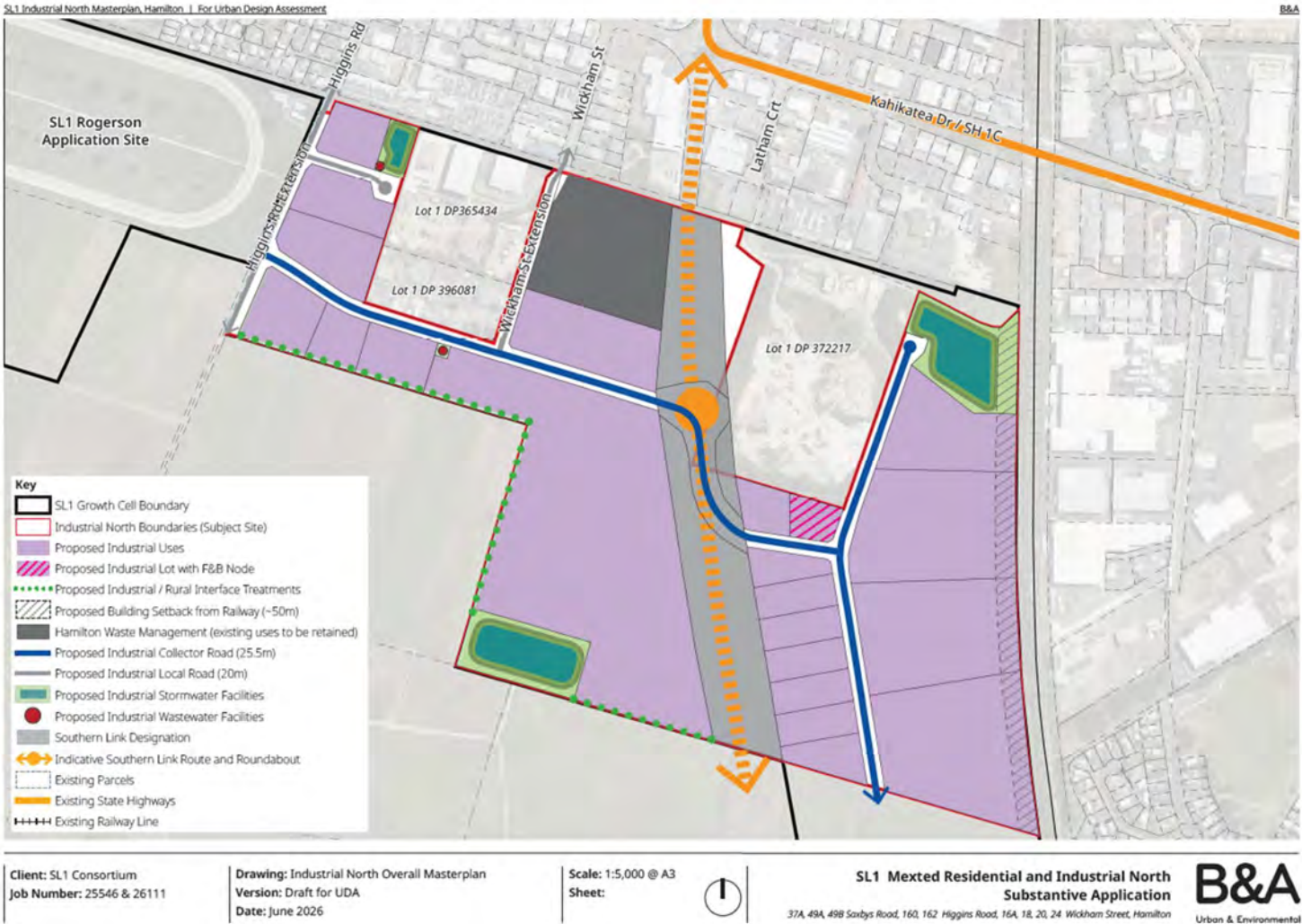
Characterisation of soils is dependent on the number of sample locations, methods of sampling and the uniformity of subsurface conditions. There is the possibility that contamination present on the site has not been described. Whilst contaminant concentrations may be estimated at chosen sample locations, conditions at any location removed from the specific points of sampling can only be inferred on the basis of geological and hydrogeological conditions and the nature and the extent of identified contamination. Subsurface conditions can vary, resulting in uneven distribution of contaminants across a site which cannot be defined by these investigations. The conclusions of this report are made on the basis that the site conditions revealed by the investigation are representative of the actual conditions across the site at the time of sampling.

The contents of this report are based upon our understanding and interpretation of current legislation and guidelines ("Standards") as consulting professionals and should not be construed as legal opinions or advice. Unless special arrangements are made, this report will not be updated to take account of subsequent changes to any such Standards. This report should be read in full, having regard to all stated assumptions, limitations and disclaimers.

The recommendations in this report are based on information provide to Swiftsure Consultants Ltd at the time of writing this report.

This report is current as of 25 June 2026. Site conditions may change in future, as may regulations and guidance. Readers must make their own judgements as to whether this report remains current at the time of reading, and/or seek further advice from Swiftsure Consultants Ltd.

APPENDIX A: Masterplan



APPENDIX B:

Site Location



APPENDIX B: Sample Locations

