Report

Earthworks Management and Erosion and Sediment Control Plan

Green Steel Project

61 Hampton Downs Road, Hampton Downs, Waikato

Prepared for National Green Steel Limited

Prepared by Earthtech Consulting Limited

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Earthworks Management and Erosion and Sediment Control Plan

Green Steel Monofill

61 Hampton Downs Road, Hampton Downs, Waikato

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1. Project Background and Plan Summary

1.1 Project Scope

National Green Steel Limited proposes to develop an integrated metals resource recovery and steel manufacturing plant at 61 Hampton Downs Road, Hampton Downs, Waikato. The plant will extend over a large portion of the 53*ha* property, requiring bulk earthworks comprising approximately 1.1 million m^3 of cut, 0.9 million m^3 of fill for the main building platform, and total estimated cut and fill earthworks volumes of some 1.3 million m^3 and 1.1 million m^3 respectively (excluding the monofill).

The steel manufacturing plant comprises the development of a steel smelter facility at 61 Hampton Downs Road, on a property that combines five (5) lots as shown in Figures 1.1 and 2.1, 2.2 and 2.3. The smelter complex will require the construction of a large main building platform for the proposed arc furnace, mill areas, transformers and switches, stores and administration buildings, covering a combined area of some 21.2*ha*, as shown in Figure 2.2 and in the site plan of Figure PD3 of the Project Development Drawings (Appendix A). The extent of the earthworks area required for the construction of the main platform is 32.7*ha*. The development area overall, comprising the *main platform, monofills* and several proposed *perimeter platforms*, is approximately 44.7*ha* (across the property area of 53.7*ha*), as shown in Figures 2.2 and 2.3

1.2 Project Plan Approach and Summary

The Green Steel project development is planned to be carried out in three principal Stages as follows:

- **Stage 1: Northern Main Platform, SW Monofill and EAF Building Platform**
  - Excavation of the SW Monofill and fill to the northern main platform portion
  - Construction of the northern stormwater containment/storage pond
  - Excavation of the cuts around the southern horseshoe in the southern and southwestern portions of the site and construction of the EAF and Steel Melt Shop building platform

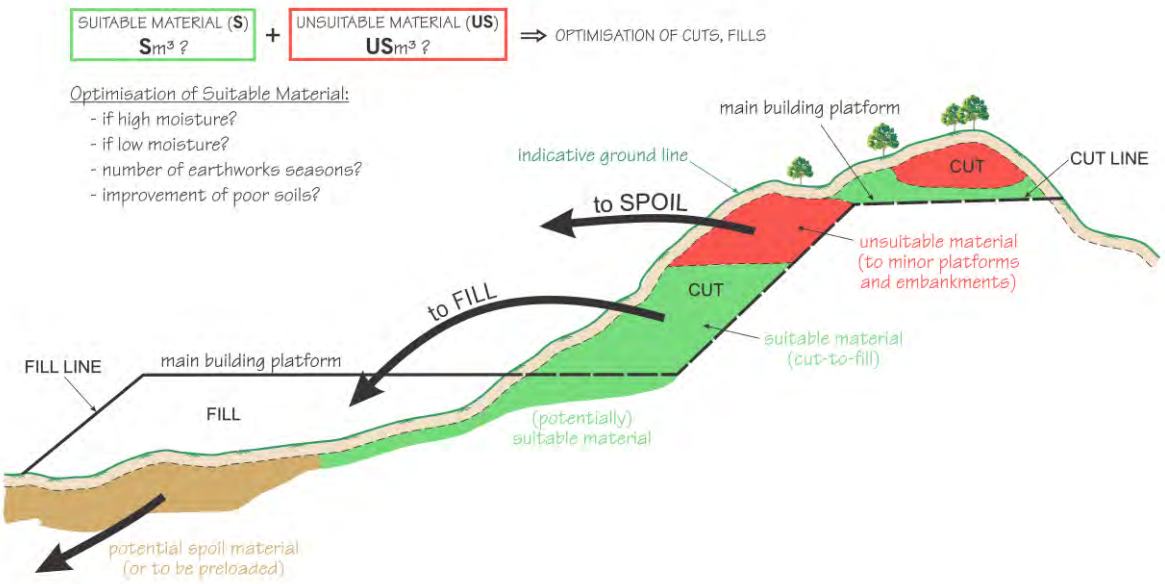
- **Stage 2: Southern Cuts and Construction of the Southern and Central Main Platform**
  - Excavation of the cuts around the southern *horseshoe* in the southeastern, southern and southwestern portions of the site, including the RL19*m* MRSS platform

- **Stage 3: Construction of the Peripheral Platforms**
    - Cut to fill of the peripheral platforms around the outer *horseshoe*, i.e. RL35*m* (NE); RL19 (E), RL35*m* (SE); RL35*m* (SW) and RL14 (SW).

The development works will require detailed planning of the earthworks based on the layout design attached in Appendix A and presented in Earthtech's Geotechnical Report[1] (Earthtech, 2024) covering:

- Cuts and fills are to be planned over earthworks seasons, ensuring optimisation of soil conditioning (i.e. drying, blending and stockpiling) for placement as suitable fill material.
- Placement of preloads, landscaping embankments (where relevant) and stockpiles.
- Project programme and materials quantities to develop workable timelines, i.e. cut and fill quantities versus time.
- Stormwater management (Figure 7.2), and an Erosion and Sediment Control Plan (ESCP), i.e. this document. Importantly, the planning of earthworks within preplanned designated earthworks catchment areas (Figures 7.2 to 7.7).
- Avoiding and minimising sediment loss.
- Final long-term protection of the site against erosion and sediment loss.
- An Assessment of Environmental Effects.

This Earthworks Management Plan (EMP) and combined Erosion and Sediment Control Plan (ESCP) is based on the current knowledge of the site. Some information gaps will be addressed by detailed geotechnical investigations at a later stage to verify soil material characteristics at deeper depths. The approach to the earthworks planning is diagrammatically illustrated in a sketch as follows:



[1] Earthtech (2024). *Preliminary Geotechnical Assessment Report. 61 Hampton Downs Road, Hampton Downs.* Report prepared for National Green Steel Limited. Ref: R4392-2 Rev C.pdf. 3 May 2024.

The total estimated earthworks volumes presented in this plan are shown in Table 1 below, and estimated volumes of soil material type are provided in Table 2. Proposed cuts and fills are shown in Figure 2.4. An Earthworks Management Plan, which provides information on the balance of earthworks, is shown in Figure 7.1.

Table 1: Estimated Preliminary Cut and Fill Volumes

Platform	Cut (m^3)	Fill (m^3)	Possible Undercut and/or Unsuitable Material (m^3)
Main	1,033,800	878,700	Est. 106,000
Perimeter	254,100	215,800	Est. 20,000
Totals	1,287,900m^3	1,094,500m^3	126,000m^3
Monofills	504,100m^3	0m^3	
Adjusted fill (allowing for undercuts)	+126,000m^3	+126,000m^3	
Adjusted fill (allowing for use of excess fill material)	+0m^3	+714,620m^3	
Adjusted Totals	**1,918,000m^3**	**1,935,120m^3**	
Variance	-1%		

*Earthworks cut/fill balance overall is an estimated -17,120m^3

Table 2: Estimated Cut Material Volumes for Soil Type

Soil Material Type (from Site Cut Sources)	Estimated Cut Soil Volumes (m^3)
Peat & Stream Aluvium	116,300
HK-Ash Soils	46,800
Terrace Alluvium Soils	744,100
Amokura Soils	1,010,800
Total	**1,918,000m^3**

Notes:

(1) Kaawa Formation soils may also be present in areas of Terrace Alluvium and Amokura soils.

(2) Detailed geotechnical investigations to be conducted through monofill geology to confirm soil types, thus not included.

This combined Earthworks Management and Erosion and Sediment Control Plan (ESCP) has been prepared to support a Resource Consent application for the proposed Green Steel Project development at 61 Hampton Downs Road, Hampton Downs, Waikato. The ESCP has been prepared in general accordance with the Waikato Regional Council Technical Report No. 2009/02 *Erosion and Sediment Control Guidelines for Soil Disturbing Activities, January 2009* (TR2009/02), and supporting factsheets. Other documents relied upon in the preparation of this ESCP are referenced in this plan.

2. Project Location and Site Description

2.1 Site Location and Access

The site is located at 61 Hampton Downs Road, Hampton Downs, Waikato. Access is via State Highway 1 (SH1), turning west into Hampton Downs Road and entering the property from the northern side via a section of Harness Road and an existing tar-sealed road (turning south). The Hampton Downs Motorsport Park is located immediately north of the property, and the operational Hampton Downs Landfill site is situated to the west – both are accessed from Hampton Downs Road. The Hampton Downs Landfill site (Figure A below) serves the solid waste disposal needs of the cities of Auckland and Hamilton, as well as several other areas of North Island. The Spring Hill Corrections Facility is situated to the south, as shown in Figure A below. A site location plan is presented in Figure 1.1.

Figure A: The site at 61 Hampton Downs Road, Hampton Downs, Waikato, viewing southwards from the hillside on the northern side of Harness Road.

2.2 Site Description

The property comprises five (5) lots: Lot 1 of DPS45893 and Lots 1 to 4 of DP310030. None of the five lots have been developed as rural living lots.

The northern portion of the site is defined by lower-lying flat ground at approximately RL3.5*m*, stepping up to higher ground in the central area varying in elevation from approximately RL7.5*m* to RL10*m*, then stepping up to an area of gently sloping ground varying in elevation from approximately RL12*m* to RL18*m*. The ground then rises moderately to the south, southeast and southwest at an approximate overall grade of 16° to 20°, forming a peripheral *horseshoe* ridge around the proposed development, as shown in Figure 2.1.

An existing farm race (horse track) is situated in the western portion of Lot 1, at an elevation of approximately RL3.5*m*. The proposed development area is located within an area on the northern and western side of the peripheral *horseshoe*-shaped ridge line (Figure 2.2). A historical aircraft landing strip is situated on the northwest-facing spur line, on the boundary between Lots 4 and 5, in

the site's southern portion. High ground forming the southern perimeter of the *horseshoe* varies in elevation from approximately RL42*m* to RL51*m*.

Several existing flow paths originate from the ridgeline around the property, draining in a northerly direction. Additionally, several existing man-made farm drains transect the lower-lying ground in Lot 1. Outward-facing slopes from the property, i.e. southeast-facing in Lot 5 and south-facing in Lot 4, are steep with notable slip movement in parts.

3. Purpose of this Plan

The Resource Management Act 1991 (RMA) controls land-disturbing activities in New Zealand with the purpose of promoting sustainable management of natural and physical resources. The RMA places a general duty of care on every person to avoid, remedy or mitigate any adverse effects of activities on the environment. Undertaking works that may cause land disturbances and their associated discharges is authorised either through a rule in the District or Regional Plan as a permitted activity or through Resource Consent.

Following several site visits during 2024, the required Erosion Sediment Control (ESC) techniques and practices have been selected for this site and are provided in this Erosion and Sediment Control Plan (ESCP). These have been considered based on the following ten (10) fundamental principles of ESC (also commonly referred to as the 'Ten Commandments' (Environment Waikato/WRC, 2009)) outlining the critical features of an earthworks operation:

1) Minimise disturbance
2) Stage construction
3) Protect steep slopes
4) Protect watercourses (and wetlands and other sensitive features, if identified) – in particular, the environmental protection of the existing Waipapa Stream which runs along the southern and western boundaries of the site (Figure 2.1)
5) Stabilise exposed areas rapidly
6) Install perimeter controls
7) Employ detention devices
8) Experience and training
9) Make sure the plan evolves
10) Assess and adjust

A useful process diagram to select the best practice option(s) and develop an ESC Plan for development/construction is provided in Auckland Council's GD05 document (Auckland Council, June 2016), shown in Figure B below:

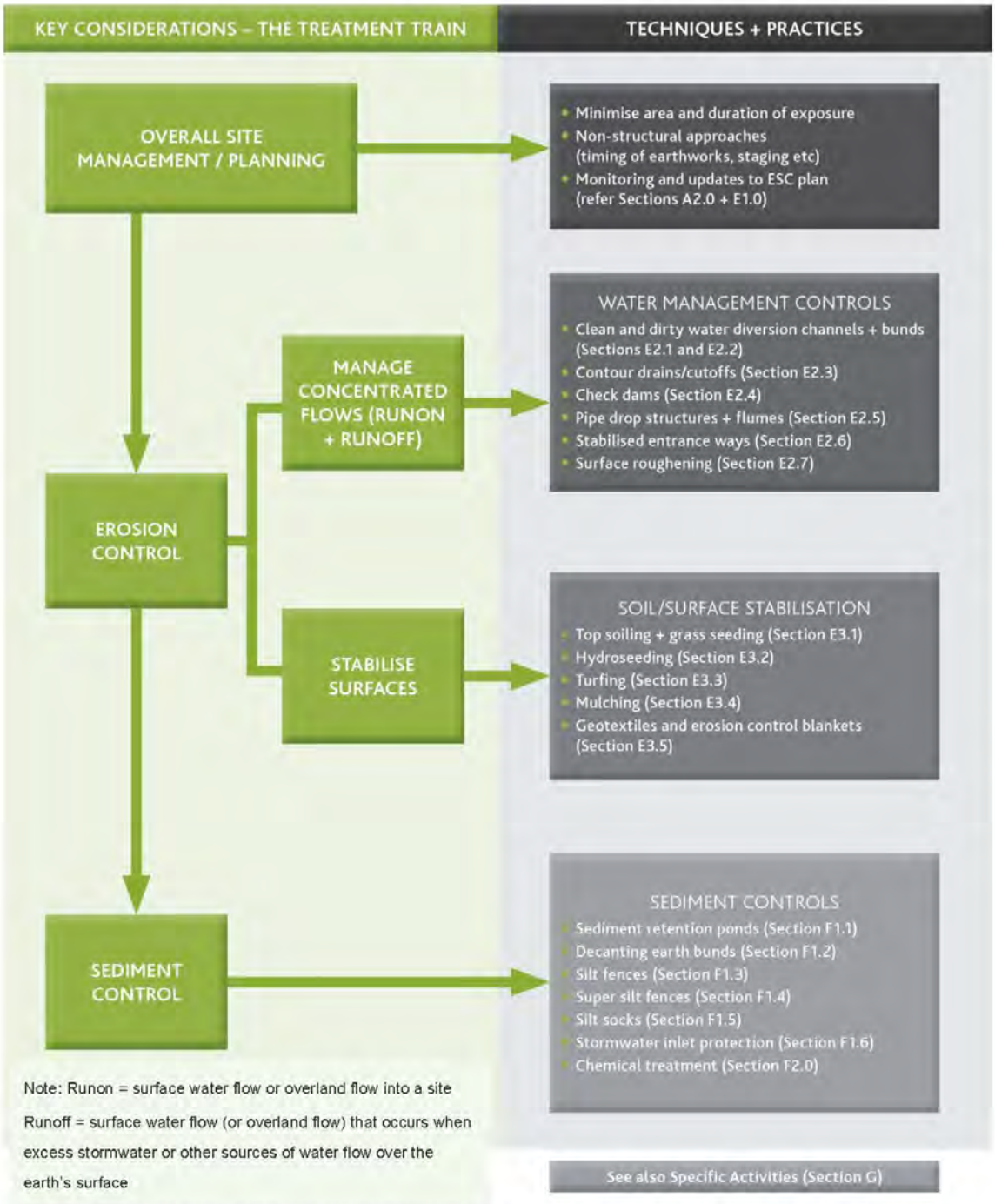


Figure 9: Process to select the best practice option(s) and develop an ESC Plan for development / construction

Figure B: Process diagram to select the best practice option(s) and develop an ESC Plan for development/construction (Source: Auckland Council's GD05 document, June 2016)

4. Earthworks Management Plan (EMP)

4.1 Platform Layout

The proposed smelter complex will require the construction of a single large main building platform for the proposed arc furnace, mill areas, stores and administration buildings, and an additional raised platform for transformers and switches, as shown in Figures 2.1, 2.2 and the proposed concept plant layout in Appendix B. The extent of the earthworks for the development, comprising the *main platform* and several proposed *perimeter platforms*, is shown in Figures 2.2, 2.3 and the cut/fill plan in Figure 2.4.

4.2 Cut and Fill Footprints

The main building platform (*main platform*) is to be constructed to a finished platform level of RL14*m*, with a secondary *MRSS platform* elevated at RL19*m* situated in the southeastern corner for the MRSS equipment, i.e. transformer(s), switchgears, switches. Several *perimeter platforms* are to be constructed at provisionally proposed elevations RL14*m* and RL35*m*, as shown in Figure 2.3. Three-dimensional (3D) images are shown in Figures C and D, illustrating the extent and final landform of the proposed earthworks on the site.

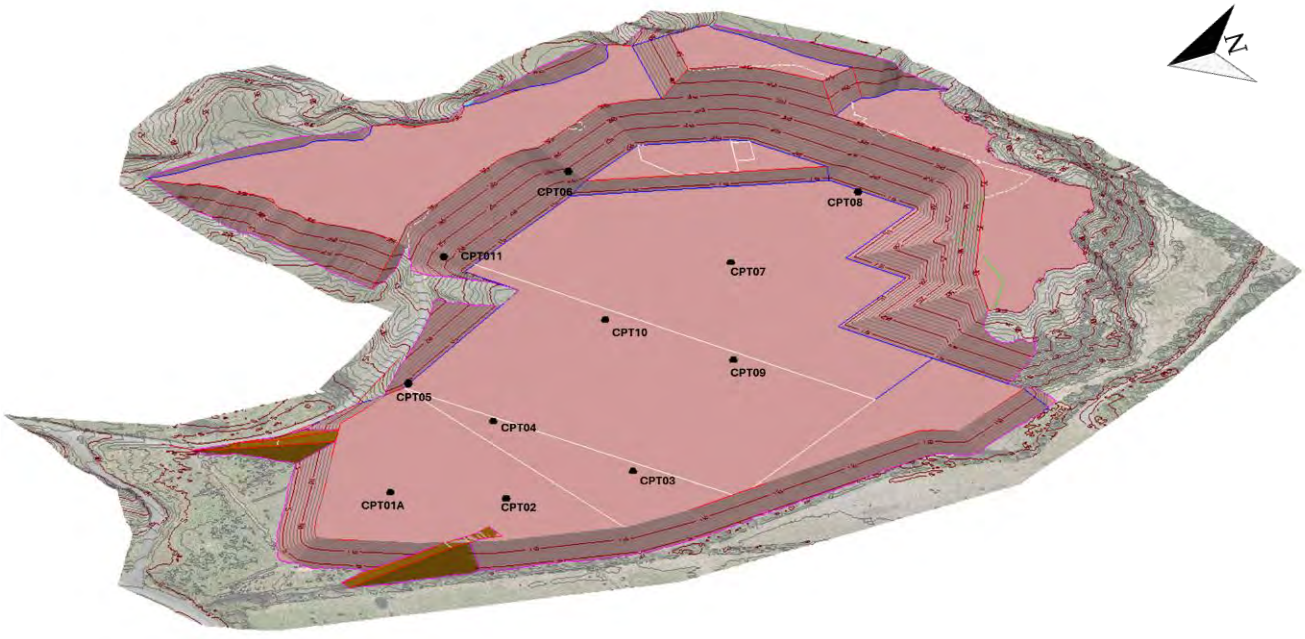


Figure C: 3D illustrative image of the site illustrating the extent and final landform of the proposed earthworks. Locations of the CPT investigations are shown in the image.

Figure D: 3D illustrative site image illustrating the proposed steel manufacturing plant and associated buildings, shredder plant, materials laydown platform areas, monofill sites, and stormwater pond.

Undercuts of up to 1*m* to 2*m* are anticipated across the soils of the northern part of the main platform and 0.5*m* elsewhere. Earthtech's experience on neighbouring sites is that there could be a variance in geology across sections of the proposed development area, and soils unsuitable for engineered fill may be encountered. Allowance for such (spoil) volumes is provided in Table 1. The main platform area is some 212,000m^2, thus an estimated 0.5*m* of undercut = 106,000m^3. Estimated undercut across the *perimeter platforms* is 20,000m^3.

Applying geosynthetic soil reinforcement materials (geogrids) will enhance geotechnical design requirements and reduce the cost of earthworks and soil foundations. Extensive preloading was used on the adjacent Springhill Corrections Facility site to reduce predicted long-term settlements in some terrace alluvium areas.

The earthworks balance overall is some -17,120m^3 of remaining fill material, thus a variance of only 1%. This excess could be reduced to close to zero by losses in material volume reductions from cut to compacted fill and by additional fill, material utilised around the monofill to provide flatter grades (1 on 4, i.e. 14°) slopes around the northern and western sides. Alternative use, still to be determined, would require the construction of a screening embankment along the southwestern and northern portions of the site. However, this surplus is expected to be largely lost in the settlement of the required fills across the site and the remaining material utilised for landscaping. Earthworks management details are provided in Figures 2.4 and 7.1.

4.3 Site Soils Encountered

Site geology and assumptions of soils encountered from analysis of the electronic cone penetrometer testing (CPT) data and hand auger logs are described in Earthtech (2024). Refusal of the CPT probe is expected to be on the surface of the weak Amokura rock. Borehole drilling is required to confirm this assumption and to prove piling depths where required (to at least six pile diameters below the refusal depth).

Several soil material types are described in Earthtech (2024). Weaker soils, described as *Stream Alluvium*, may require undercutting and probable placement in landscape fill areas. No acid-sulphate-type soils were encountered during the geotechnical investigations, but they cannot be ruled out. Where encountered, such soils could be relocated to appropriately selected spoil/embankment areas. Preloading of the lower soils situated in the northern fill (lower fill) areas will be required to allow for suitable consolidation and strengthening of the soils over-determined timescales.

Three, and possibly four, soil types were identified in the proposed cut areas on the site as follows:

i. *Hamilton-Kauroa Ashes (H-K Ash)* – This has been identified as a 1*m* to 3*m* mantle over some of the higher ground. The material consists of stiff to very stiff sandy clay that reworks easily as engineered fill.

ii. *Rhyolitic Terrace Deposits (eQa)* – *Terrace Alluvium* – These materials can be highly variable and prone to some settlement under high fill loads or high building loads. Ahead of earthworks operations, we recommend testing the soil samples obtained from the recently conducted (April 2025) test pits at a soil laboratory to better understand the soil characteristics. This soil material is estimated to constitute a high cut volume, as shown in Table 2.

Karapiro Formation (eQk) – *Terrace Alluvium* - soils may be encountered in the cuts. This material is generally a sensitive silt; cut to waste or use with caution.

iii. *Amokura Formation (Mwa)* – This is the "bedrock material" across the site. The residual soil profile is typically only workable during the summer months. The bedrock itself is easily worked as engineered fill. The unit (and any engineered fill) is suitable for light structures with a design allowable bearing capacity of 100*kPa* (ultimate bearing capacity of 300*kPa*).

iv. *Kaawa Formation (Pk)* – The CPT (CPT11) signature indicated this material to be located on the northeastern flanks of the site. This is a very sand-rich profile that was identified on the prison site. It is better suited to bulk earthworks than the weathered Amokura Formation.

4.4 Acid Sulphate Soils Management

Areas of the site are mapped showing to potentially comprise acid sulphate soils, as shown in the plan attached in Appendix C. The extent of the proposed building platform, and the earthworks cut/fill line are indicated in this plan.

Mapped areas are described in order of probability as follows (Appendix C):

- High Probability: Area extends up to approximately RL10*m*, covering the lowering-lying portion of the site where organic clays and peaty soils are encountered.
  Comment:
  (i) This area lays within the fill area of the main building platform, and there are no areas of high probability within proposed cuts.
  (ii) No acid sulphate-type soils have been encountered in the Test Pit (TP – refer TP1a)) and hand auger bores (HAs) across this area. However, possible presence cannot be ruled out.

- Moderate Probability: Area extends from approximately RL10*m* up to RL15*m*.
  Comment:
  (i) A major portion of these areas lay within the proposed fill areas of the main building platform, and a minor portion within proposed cuts (>RL14*m*).
  (ii) No acid sulphate-type soils have been encountered in the Test Pits (TP - refer to TP5 and TP9) and hand auger bores (HAs) across this area – including the southern/southwestern portion of the site.

- Low Probability: Fringe areas around high and moderate probability areas – particularly along Harness Road in the northern portion of the site.
  Comment:
  (i) Most of these areas lay within the proposed fill areas. No acid sulphate soils were encountered in the hand auger bores in the southern/southwestern portion of the site (SW monofill investigations)

- Negligible Probability: The majority of cut earthworks are in this area (refer to Figure 2.4).

Where, or if, acid sulphate soils are encountered on the site, this would be more likely during Stage 1 earthworks. The following management approach will be adopted:

- Fully identify the extent of the acid sulphate soils and record where encountered on a plan for site records.
- Where acid sulphate soils are within the bulk fill area, leave them undisturbed in place and place compacted fill material over the top (entombing the acid sulphate soils).

- Where acid sulphate soils are within a cut, or required undercut area, or within 1*m* of final fill level – excavate (remove) all acid sulphate soils and place in the deepest available area of the fill. Cover with compacted fill material, thus entombing the acid sulphate soils.

5. Earthworks Catchment Areas

The site has been divided into several proposed catchment areas, as shown in Figure 7.2 and Table 3 below. Each catchment area is strategically located and bordered with the objective of controlling runoff waters from proposed earthworks areas. Additionally, the areas are practicably formed with the aim of maximising earthworks volumes whilst minimising the surface area affected. Stormwater and sediment control details of each catchment area are shown in Figures 7.2 through 7.7. Sediment loss from the site can be expected to be minimal through adherence to the EMP and ESCP within the designated catchment areas. The catchment boundaries may be adjusted to suit actual conditions encountered on site but are provided in this plan to be followed from *Day 1* of earthworks development (Figure 6.1).

Catchment areas detailed in Table 3 below provide estimated rainfall runoff volumes for the 10% AEP (24 hours). The rainfall values make allowance for the *Representative Concentration Pathways* RCP6.0 scenario for a global climatic increase in temperature of 2.2 degrees.

Table 3: Stormwater and Erosion Sediment Control Catchment Areas

Stage	Catchment Area Name	Catchment Area Description	Earthworks Catchment Area (m^2)	Catchment Area (ha)	Est. Max 10% AEP Vol. 24hrs (m^3)
1	**E1a**	Lower Fill	60,300	6.0	6,012
	E1b	Lower Fill and Cut	61,500	6.2	6,132
	E1c	Mid Fill and Cut	66,700	6.7	6,650
	EMb	SW Monofill (inner)	41,500	4.2	4,138
		Stage 1 Totals	**230,000**	**23.0**	**22,931**
2	**E2a**	Lower Fill	61,600	6.2	6,142
	E2b	Lower Fill and Cut	55,200	5.5	5,503
	EMb (portion)	SW Monofill (inner)	15,900	1.6	1,585
		Stage 2 Totals	**132,700**	**13.3**	**13,230**
3	**E3a**	Peripheral Platform	33,100	3.3	3,300
	E3b	Peripheral Platform	20,600	2.1	2,054
	EMb (portion)	SW Monofill (inner)	15,900	1.6	1,585
		Stage 3 Totals	**69,600**	**7.0**	**6,939**
Monofill Only	**EMa**	NE Monofill	20,390	2.0	2,033
	EMb	SW Monofill (monofill inner)	41,500	4.2	4,138
	EMc	SW Monofill (monofill buttress)	18,700	1.9	1,864
		Monofill Totals	**80,590**	**8.1**	**8,035**

6. Description of the Works

Earthworks operations have been strategically staged into Stages 1, 2, 3 and monofill development, with each stage divided into separate operational catchments (Figure 7.2). The proposed operational plan, albeit at a provisional level, is provided in Table 4 below, detailing proposed catchment areas that are opened for earthworks operations, areas to be stabilised following earthworks, and areas where earthworks construction is still to be carried out. Each stage is broadly described as follows:

Stage 1

The northern portion of the building platform and proposed stormwater pond are to be constructed (areas E1a and E1b), and the SW Monofill (EMb) is to be opened for access to suitable soil material for engineered fill. A linking haul road is to be constructed from the monofill to the northern construction areas and earthworks area, thus extending to the western boundary (E1c). Stage 1's total earthworks area is 18.9*ha*.

Stage 2

The southern portion of the building platform is to be constructed, necessitating the deep cuts around the southern perimeter *horseshoe*. Stage 2 area comprises E2a, E2b and E2c (Figure 7.2), and the total earthworks area is 15.4*ha*. Ahead of opening up areas for Stage 2, all of Stage 1 areas can be expected to be effectively stabilised (Table 4); thus, the total net open area under earthworks construction is 17.0*ha*.

Stage 3

Stage 3 entails the construction of the peripheral platforms which are largely cut-to-fill individual platforms (Figure 7.2). Stage 3 area comprises E3a and E3b, and the total earthworks area is 9.9*ha*. Similarly, before opening up areas for Stage 3, all of Stage 1 and Stage 2 areas can be expected to be effectively stabilised (Table 4); thus, the total net open area under earthworks construction is 16.7*ha*. The remaining area of 2.0*ha* is the NE Monofill.

Monofill Works

The monofill areas comprise EMa for the NE Monofill and EMb and EMc for the NE Monofill. The proposed monofill sites can be constructed independently with self-containing catchment areas (Figure 7.2). The SW Monofill earthworks are to commence during Stages 1, extending across Stages 2 and 3. Following Stage 1 earthworks, the major portion (2.9*ha*) of the SW monofill is to be stabilised, leaving some 1.6*ha* open for earthworks for the development of the monofill operation. Individual *cells* of the monofill will be capped and stabilised as monofilling progresses.

Table 4: Stormwater and Erosion Sediment Control Earthworks Catchments and Stabilised Areas

Stage	Catchment Area Name	Catchment Area Description	Earthworks Catchment Area (m^2)	Catchment Area (ha)	Total Operational Area Opened for Earthworks (ha)	Stabilised Earthworks Catchment Area Name	Total Area Stabilsed following Earthworks (ha)	Total Open Earthworks Area (ha)	Total Area where Earthworks still Reqd (ha)
1	**E1a**	Lower Fill	60,300	6.0	6.0	-	-	-	-
	E1b	Lower Fill and Cut	61,500	6.2	6.2	-	-	-	-
	E1c	Mid Fill and Cut	66,700	6.7	6.7	-	-	-	-
	EMb	SW Monofill (inner)	41,500	4.2	4.2	-	-	-	-
		Stage 1 Totals	**230,000**	**23.0**	**23.0**	-	**0.0**	**23.0**	**21.0**
2	**E2a**	Lower Fill	61,600	6.2	6.2	E1a	6.0	-	-
	E2b	Lower Fill and Cut	55,200	5.5	5.5	E1b	6.2	-	-
	EMb (portion)	SW Monofill (inner)	15,900	1.6	1.6	E1c (portion)	2.7	-	-
						EMb (portion)	2.6	-	-
		Stage 2 Totals	**132,700**	**13.3**	**13.3**	-	**17.5**	**18.8**	**7.7**
3	**E3a**	Peripheral Platform	33,100	3.3	3.3	E1a	6.0	-	-
	E3b	Peripheral Platform	20,600	2.1	2.1	E1b	6.2	-	-
	EMb (portion)	SW Monofill (inner)	15,900	1.6	1.6	E1c	2.7	-	-
			-	-	-	E2a	6.2	-	-
			-	-	-	E2b (portion)	2.8	-	-
			-	-	-	EMb (portion)	2.6	-	-
		Stage 3 Totals	**69,600**	**7.0**	**7.0**	-	**26.4**	**13.7**	**2.0**

7. Stormwater Design and Management

7.1 Term Stormwater Management

The total proposed development is primarily within a single catchment area, as an inner *horseshoe-like* shaped area situated on the northern side of a peripheral ridgeline, and stormwater flows can be suitably channelled around the site by strategically located contour drains (Figure 6.1). The final disposal and discharge of stormwater into and from the property will be determined at the detailed design stage. Attenuation ponds are likely to be required to reduce the impact of peak flows off roofs and paved areas.

7.2 Construction Management

Implementation of the silt retention and control devices, shown in the details in Figure 8.1, will be required to suitably minimise sediment loss from the site.

7.3 Stormwater Flows

The total catchment area is 48.7*ha*. The total area of earthworks catchments is 45.0*ha;* thus, several stormwater retention ponds (SRPs) for up to approximately 5*ha* of individual catchment areas are to be provided (refer to Table 3 and Figure 7.2), and/or other appropriate stormwater treatment systems for sediment drop-out and retention. It is noted that the monofill sites (SW and NE monofill areas) are independent catchments (E5a and E5b) of a combined area of 8.2*ha*. Therefore, the total earthworks area for the main building platform is 36.8*ha*.

Systems or devices can include stormwater buffering storage ponds, and stormwater containment bunds with release points, presented in Section 9. Existing farm drains can also be appropriately utilised for stormwater flow velocity management and sediment controls. Proposed provisional stormwater and sediment controls are indicatively shown in Figure 6.1, and details are shown in Figure 8.1. A proposed stormwater catchment (buffering) storage pond is to be provisionally located in a lower-lying area in the southwestern portion of the site (Figure 6.1).

Useful mention is provided for earthworks sediment control planning in the Waikato Stormwater Runoff Modelling Guideline (WRC, 2020), e.g. earthworks construction approach to soil conditioning.

Applicable rainfall intensity and depth values are provided by the National Institute for Water and Atmospheric Research (NIWA) High-Intensity Rainfall Design System (HIRDS) [use: HIRDS V4 (Oct. 2023), https://hirds.niwa.co.nz/]. The nearest rainfall gauging station is located at Meremere, which provides rainfall data dating back to the 1960s. Design rainfall is as follows:

- Allow: *Ten minutes duration rainfall intensity (in mm/hr) for New Zealand shall be determined for ARIs of 10 years (10% AEP) and 50 years (2% AEP) using rainfall frequency duration information available from HIRDS* V4 (HIRDS, Nov. 2024).
- Design rainstorm event (50 years): 24 hours 10% AEP storm = 99.7*mm*, i.e. **100*mm*** (depth in 24 hours).
- However, if allowance is required for climatic change of ≥2 degrees increase in global temperature effects threshold, then we would recommend that the RCP6.0 values be applied as follows:
    - 24 hours 10% AEP storm = 108*mm* (depth in 24 hours)
- Design rainfall depths for considered Annual Exceedance Probabilities (AEPs) are provided in Table 5 below.

Table 5: Design Rainfall Depths vs Annual Exceedance Probability (AEP)

AEP Storm %	Return Period (1:years)	>50-year Design Life (2081 to 2100)	Allow 2.3° Climatic Temp Increase, i.e. HIRDS V4 RCP6.0 (2081-2100)
20%	5	84.2*mm*	90.7*mm*
10%	10	99.7*mm*	108*mm*
2%	50	140*mm*	151*mm*
1%	100	159*mm*	172*mm*

7.4 Flood Hazard

Information from the Waikato District Council (WDC) shows that the 1% AEP (1 in 100-year ARI) flood hazard level will extend over the northern portion of the site and along the western boundary, as shown in Figure E below. The flood level rises to approximately the RL5.0*m* elevation contour. Whilst such a storm event is possible during the construction season, it would only cause the temporary inundation of the proposed stormwater ponds located in this portion of the site. In such an event, earthworks would not be in operation, rainwater flood levels would recede, and operations would resume once site conditions are suitably dry and safe. All permanent ponds and the majority of temporary ponds will be above the RL5.0*m* flood level.

Additional flood management requirements are as follows:

- The runoff volume that is released for the 10% AEP event shall have an extended detention time of 72 hours so as not to overload the receiving drainage channel.

- Attenuation system options that offer effective storage and flow reduction (i.e. rate of change of storage effects) include:
    - Large storage lagoons (e.g. located in the southwestern corner area of the site).
    - Stormwater control or containment ponds (SPs) – with decanting earth bunds.

- Stormwater retention ponds (SRP) – designed to specific catchment sizing, with entrant forebays with overflow weir into a secondary settlement pond (bay) with decanting overflow weir arrangement.
- Earth retention and decanting bunds.
- Farm drains and drainage channels with 'check dams', i.e. mounded rock sections to reduce fluid flow and drop out sediment.

Other criteria related to water quality treatment shall still be required, i.e. erosion prevention and silt control measures (provided in this ESCP).

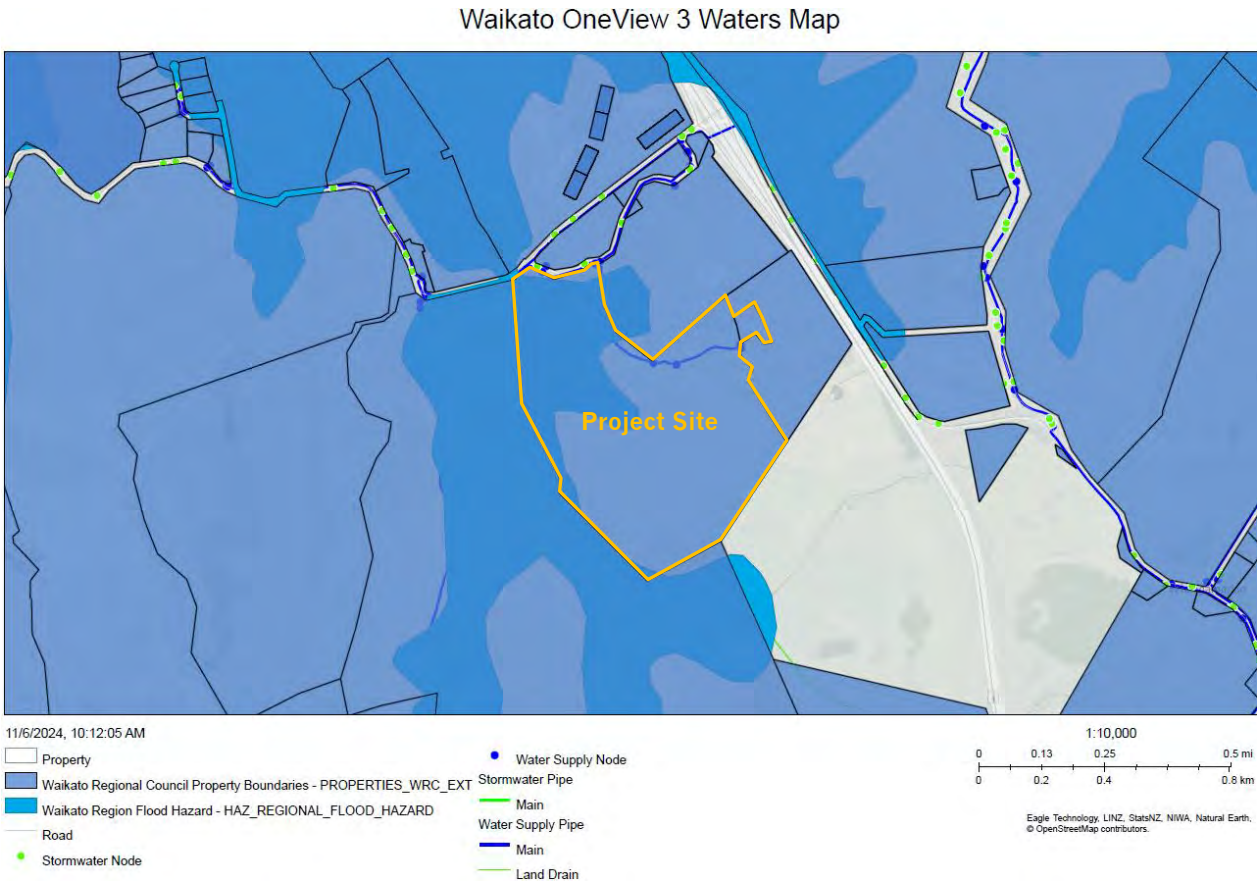


Figure E: Waikato Regional Flood Hazard Plan showing the location of the proposed project site.
(Sourced from Waikato OneView 3 Waters Map dated 11 June 2024)

7.4.1. Earthworks Construction Period

Earthworks construction is divided into three (3) stages and is expected to extend into two earthworks seasons. Other design criteria relating to devices and AEP events are noted as follows:

- Where catchments are ≥3*ha* and long-term stability of any sediment retention pond emergency spillway is required, then consideration must be given to incorporating a concrete manhole riser and larger diameter outlet pipe as a primary spillway. Design

capacity is to be sufficient to accommodate the 5% AEP rainfall event, as shown in the proposed design details in Figures G and H below.

- Emergency spillways must be capable of accommodating the 1% AEP event without eroding.

8. Groundwater Regime

Groundwater seepages have been mapped across the site (Figure 2.1) and should be considered with the planning of earthworks. Several groundwater seepages were identified to emanate between approximately RL25*m* and RL35*m* inside the *horseshoe* area of the site.

Consideration would include the construction of temporary subsoil drains to collect and divert groundwater seepages from excavations suitably. For proposed fill areas, installation of subsoil drainage ahead of earthworks proceeding would be recommended.

For further information on groundwater, refer to the Preliminary Geotechnical Report (Earthtech, 2024).

9. Erosion and Sediment Controls

9.1 Estimate of Sediment Loss

Earthworks will require careful engineering and management with the provision of strategically positioned stormwater retention and settlement/stilling pond(s) to minimise sediment loss from the earthworks catchment areas and the site overall. As shown in Figures 7.1 through 7.7, erosion and sediment control measures will be staged as the construction of the main platform progresses in the cut-and-fill earthworks areas. Synchronisation of the earthworks cut and fill construction areas will be crucial, entailing strategic timing of soil volumes placed for preloads, temporary stockpiles, landscaping embankments and engineered fill for the platforms. Figure 6.1 provides preliminary details for the enabling works that must be in place at 'Day 1', showing the arrangement of erosion and silt control infrastructure (or devices), for example, diversion drains, decanting earth bunds, and stormwater sediment retention ponds (SRPs).

Stormwater management and silt control planning has been undertaken in accordance with the Waikato Regional Council Guidelines (Waikato Regional Council Technical Report 2020/07: Waikato Stormwater Management Guideline, updated version May 2020 and Erosion and Sediment Control Guidelines for Soil Disturbing Activities (TR2009/02)), as well as with any site-specific silt control report prepared for each stage.

The total proposed development, as previously mentioned, is situated largely within a single rainfall catchment, as an inner *horseshoe* like shaped area on the northern side of a peripheral ridgeline. Stormwater flows can be suitably channelled around the site by strategically located contour drains. With appropriate erosion and sediment control device implementation within planned catchment

areas, sediment loss estimates can be expected to be very low to minor. The entire earthworks development area is to be bunded to divert *clean water* and *dirty water* flows, thus providing appropriate separation and containment of dirty water.

There are several models that can be used to determine sediment loss, which typically apply rainfall, slope, ground cover type, catchment area, etc., as input values, for example:

- the Revised Universal Soil Loss Equation (RUSLE)
- the Groundwater Loading Effects of Agricultural Management Systems (GLEAMS) model
- the CLUES model (Catchment Land Use for Environmental Sustainability), and
- the SEDNET model, which displays capacity to construct sediment and nutrient budgets for Regional-scale river networks.

Adopting the RUSLE approach (i.e. an updated version of the USLE), one can estimate sediment loss as follows:

$$A = R \times K \times LS \times C \times P$$

where:

- **A** is the estimated average annual soil loss (tonnes per hectare per year, i.e. *t/ha.yr*).
- **R** is the rainfall-runoff erosivity factor, representing the effect of rainfall intensity and volume.
- **K** is the soil erodibility factor, indicating the susceptibility of soil particles to detachment and transport by rainfall and runoff.
- **LS** is the topographic factor, combining the effects of slope length (L) and slope steepness (S).
- **C** is the cover-management factor, reflecting the effect of cropping and management practices on erosion rates.
- P is the support practice factor.

Assuming no erosion and sediment controls were implemented, an estimated sediment loss could be as high as 210*t/ha* across the site.

The major controls to prevent sediment losses are achieved by undertaking the works in dry weather and low flow conditions and stabilising ground immediately upon completion. Ground stabilisation methods include hay mulching, grass hydroseeding, use of geotextiles (e.g. silt-cloth, nets, etc.) suitably secured with staples or rock/stone cover.

9.2 Principles to Minimise Sediment Loss from the Site

This plan follows the several guiding non-structural approaches of Erosion and Sediment Control. These have been considered based on the following fundamental principles of ESC (also commonly referred to as the 'Ten Commandments' (Environment Waikato / WRC, 2009)) outlining the critical features of an earthworks operation, as follows:

9.2.1. Minimise Disturbance

Earthworks should be minimised to the greatest extent practicable. As the entire development area is generally located within a single encompassing catchment (and floodplain) area, the approach taken is to minimise the area of disturbance at all times and to undertake the work during favourable weather and river flow conditions.

A good knowledge of the nature of the underlying soils will be essential to balancing earthworks within designated catchment areas, allowing for stabilising areas prior to moving into other areas.

9.2.2. Stage Construction

Construction catchment areas are detailed in the attached drawings (Figures 7.1 to 7.7). Each stage should be opened up and completed as soon as practical to minimise the area of exposed soils.

9.2.3. Protect Slopes

There are large areas of slopes on the property, which are to be cut to moderate grades. Top-of-slope diversion drainage and cutting of contour drains along the slopes will be essential on this site, combined with the strategic location of down chutes or flumes (refer to detail in Figure 8.1 page 2) to protect slopes. On embankment slopes, the existing vegetation will be retained wherever possible, and final cut areas soon protected or stabilised by topsoiling or hay mulching and hydroseeded as the work progresses. Geotextiles (geojute, purpose-manufactured drain liner geo-cloths, polyester meshes, etc.) are to be used where necessary to protect slopes.

9.2.4. Protect Watercourses

The purpose of the works is to protect and enhance the existing floodplain and watercourse downstream of the site, flowing northwards under Hampton Downs Road at the northwestern corner of the property. Works within watercourses are not envisaged on this site.

9.2.5. Stabilise Rapidly

All exposed areas will be stabilised very soon after completion of earthworks, as shown in Figures 7.4 and 7.5.

9.2.6. Timing of Earthworks

It will be crucial to undertake earthworks during a period of forecast fine conditions, notwithstanding the season of the year. Attention to a weekly and longer-range weather forecast will be required in scheduling works and preparing sites in advance of forecast rainfall events.

9.2.7. Install Perimeter Controls

The site topography varies and comprises flat and lower-lying areas, undulating ground, and moderate to steep (outer ridgeline) slopes. Perimeter water diversion controls (bunding and drainage channels) are crucially required. Sufficient cohesive soils will be obtainable on site to construct suitable earth bunds around proposed earthworks areas.

9.2.8. Detention Devices

These are detailed in the attached drawings, and Figure 6.1 provides preliminary details for the enabling works that must be in place at 'Day 1', showing the arrangement of erosion and silt control infrastructure (or devices), for example, diversion drains, decanting earth bunds, and stormwater sediment retention ponds (SRPs).

9.2.9. Experience and Training

Suitably qualified and experienced earthworks professionals and operators will conduct the earthworks operations. Where possible, GPS equipment will be employed on machines to enhance operational accuracy.

9.2.10. Plan and Evolve the Plan

Contractors will be required to prepare a detailed schedule of all earthworks activities. This will be checked prior to works commencing.

Weather conditions and up-catchment rainfall are the key controls to effective sediment control during the planned earthworks activities. Natural groundwater source points will be identified and works planned accordingly.

9.2.11. Assess and Adjust

All exposed areas and control devices will require regular inspections with immediate inspections after any significant rainfall event (20*mm*+).

10. Design of Erosion and Sediment Control Requirements

10.1 Clean and Dirty Water Diversions

All earth-washed areas will be self-contained by earth diversion and containment bunds. Clean water will be diverted and conveyed around the site along lined contour drains and down chutes or flumes where required. Exposed earth areas will be suitably stabilised by way of hay mulching and hydroseeding, or topsoil and planting or regrassing immediately, and placement of erosion protection (rip-rap on geofabric) where required immediately after excavation.

Clean water earth diversion bunds are to be constructed around the earthworks area and will be constructed from available stripped topsoil and available shallow-depth clayey-silt soils within the site. A cross-section detail of a clean water diversion earth bund and channel is provided in Figure G below. The internal and external side slopes of the bund are to be 1v:3h and 1v:2h, respectively. Diversion channels are to be monitored for erosion, and it is likely that erosion control will be needed where the gradients are greater than 2% (1v:50h) or where the design velocities exceed 1.0*m/s*. Erosion protection of the channel can comprise a geotextile lining with rock rip-rap (refer to inset detail in Figure 6.1), or, in some cases, a suitable geotextile only with pegs and/or other appropriate ground securing restraints.

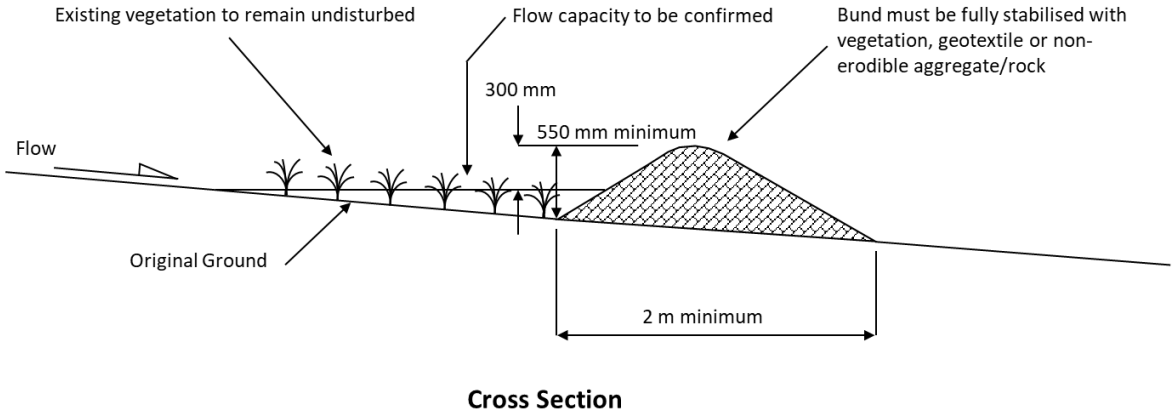


Figure G: Cross-section detail of a clean water diversion earth bund and channel (source: Auckland Council Guideline Document 2016/005)

Dirty water diversion bunds and channels are to be constructed around the planned earthworks areas to appropriately convey sediment-laden *dirty* waters to stormwater treatment devices prior to discharging to the environment. The enabling works Day 1 Plan (Figure 6.1) shows the construction of a large stormwater pond in the northern part of the site, and a stormwater retention pond (SRP-EW) as required treatment devices. Dirty water diversions are to be sized to provide diversion capacity up to the 5% Annual Exceedance Probability (AEP), with a 300*mm* minimum freeboard, as shown in Figure H below. We recommend a minimum design depth of 300*mm* for the dirty water channels in Stage 1 and 400*mm* for Stage 2 (as shown). Thus, total channel depth (including freeboard, measured to the top of the bund) will be 600*mm* for Stages 1 and 3 and 700*mm* for Stage 2 dirty water diversion bunds and channels.

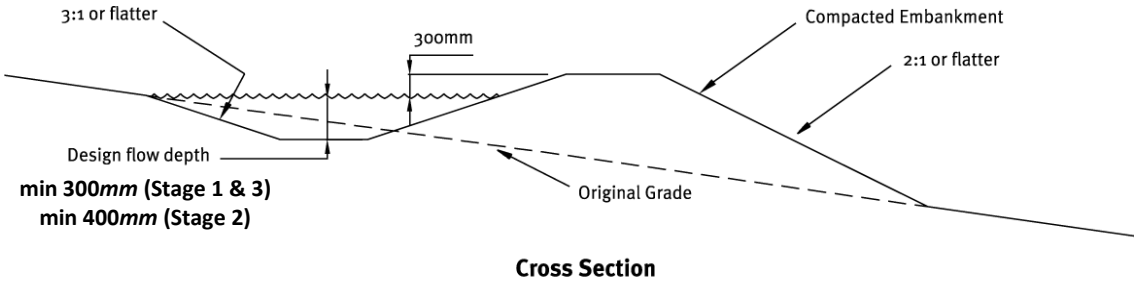


Figure H: Cross-section detail of a dirty water diversion earth bund and channel (Source: Auckland Council Guideline Document 2016/005)

10.2 Sediment retention ponds (SRPs)

Several sediment retention ponds (SRPs) are to be implemented within the designated catchment areas for this project, as shown in Figures 6.1 and 7.3 to 7.7. Additional erosion and sediment control devices include decanting earth bunds, clean water and dirty water diversion bunds and drains (refer to section 10.1), and silt control fences.

10.3 Site Access

A single site access is proposed during the earthworks, to be through an access point off Hampton Downs (via the Harness Road link road). Exiting the site for earthmoving machinery is not permitted unless the tyres have been suitably cleaned and inspected by the assigned Construction Supervisor.

11. Assessment of Effects and Mitigation

While appropriate planning and management of the proposed earthworks operations can minimise the risks of potential environmental harm, a preliminary assessment of environmental effects and mitigation measures is necessary for this plan.

Environmental effects of the proposed earthworks, comprising the construction of the embankments and platforms for the Green Steel Project involving the handling of over 2.5 million m^3, are considered to be minor on the following basis:

Environmental Effect	Mitigation Action
i. Effects on Surface Water Quality: Largescale bulk earthworks entailing cutting and filling of large volumes of soil material exposed to the weather over extended time periods. Sediments will wash from the denuded areas with stormwater flows.	An integrated Earthworks Management and Erosion and Sediment Control Plan provides practicable measures for controlling rainfall runoff by diversion/separation of clean water and containment of dirty water areas. Sediment containing dirty waters are to be conveyed to dedicated ponds for stilling and settlement prior to release. The plan provides details of dedicated catchment areas that will minimise exposed surface area for maximising earthworks material gain. Effects on surface water are considered to be minor.
ii. Protecting and enhancing any existing sensitive areas, such as existing watercourses, as part of the development. Therefore, risk of dirty discharge stormwater flowing into watercourses.	All surface water discharging from the earthworks areas is to be physically separated by control bunds, and all dirty water is to be treated by the several sediment control devices or systems. Peak runoff flows will be controlled. The only watercourse on site is the Waipapa Stream, which runs along the western boundary of the property (see site plan). This stream is currently protected by fenced riparian planting and then outside this area by a stop bank which runs along a

Environmental Effect	Mitigation Action
	large section of the property. This bank will operate as a bund during the earthworks phase. The stopbank will be retained with no earthworks occurring on it, and where there is no stop bank (to the southwest section of the property), no earthworks will occur within 10*m* of the riparian fenced area. Bunds will ensure no sediment is discharged towards the riparian areas of the Waipapa Stream.
iii. Effects on groundwater	Operations are to be conducted on the surface only, i.e. no drilling or deep-ground intrusions. Groundwater flow emanating from the side slopes is to be drained by subsoil drainage systems and conveyed to clean water discharge. Subsoil drainage is to be constructed in synchronisation with the earthworks. Effects on groundwater and any groundwater supply bores are considered to be less than minor.
iv. The effects of dust emissions discharge to air.	Regular dust suppression of haul roads is to be carried out by water tanker vehicles. Excavation of elevated exposed areas during high wind speed events will be avoided and restricted to sheltered zones. Exposed areas will be rapidly stabilised with hay mulch, or geotextile or topsoil layers and hydroseeded following earthworks. Effects on air quality is considered to be less than minor.
v. The risk of containment system failure, e.g. SRP weir collapse, earthbund or drain failure.	SRP are designed as throughflow systems with decanting devices that are robust to blockage. Overflow weirs allow for safe spill-over from the ponds when full, and back-up retention ponds are provided. Containment is for low water level containment; thus, of low potential pressure force on any earth bund structure. All weirs and drainage channels are to be lined with geotextile and rock rip-rap where required to prevent scour. Effects on runoff / stormwater containment devices and systems is considered to be less than minor.

Other site-wide effects that can be monitored and, effectively managed and mitigated are listed as follows:

- Noise.
- Vibration.
- Dewatering of stored water from SRPs and/or SPs.

Effects should be minor to less than minor if the site is operated in accordance with the Management Plan.

12. Timetable and Construction Programme

Earthworks are to be staged, with possibly several earthworks teams carrying out cut and fill operations. Proposed staging of the project, as mentioned in section 1 of this report, is planned to be carried out in three principal Stages as follows:

- **Stage 1: Northern Main Platform, SW Monofill and EAF Building Platform**
  - Excavation of the SW Monofill and fill to the northern main platform portion
  - Construction of the northern stormwater containment/storage pond
  - Excavation of the cuts around the southern horseshoe in the southern and southwestern portions of the site and construction of the EAF and Steel Melt Shop building platform

- **Stage 2: Southern Cuts and Construction of the Southern and Central Main Platform**
  - Excavation of the cuts around the southern *horseshoe* in the southeastern, southern and southwestern portions of the site, including RL19*m* MRSS platform

- **Stage 3: Construction of the Peripheral Platforms**
  - Cut to fill of the peripheral platforms around the outer *horseshoe,* i.e. RL35*m* (NE); RL19 (E), RL35*m* (SE); RL35*m* (SW) and RL14 (SW).

Staging details are provided in Figures 7.2 to 7.5 and 7.7. Details for the preparation of the site ahead of earthworks, i.e. the *Enabling Works* and *Day 1 Plan*, are provided in Figure 6.1. Completion of earthworks for Stages 1 and 2 could be within one earthworks season, with Stage 3 following in another season. Development of the SW Monofill is planned to be part of Stage 1, or could be carried out independently. Construction of the main building platform (RL14*m*) will be the priority for the earthworks construction.

Detailed method analysis and construction programmes are to be prepared by the contractor(s) and agreed upon with conformance to the EMP and ESCP provided in this report, before the works proceed.

13. Maintenance, Monitoring and Reporting Procedures

The earthworks operations are to be inspected at least weekly and checked after significant rainfall events (defined for this work as 20*mm* or more). All work should cease immediately if heavy rain is forecast or if the watercourse outlet levels cause inundation of the northern ESC devices, i.e. water is ponded over the entire SRP and decanting earth bund (refer to Figure 7.3).

Weekly reports are to be provided by Earthtech Consulting Limited (ECL).

14. Heavy Rainfall Response and Contingency Measures

It is important to note that high-intensity rainfall events in the area can occur (e.g. early 2023), and earth bunding heights should be increased down gradient at points of maximum flow. Convergence points, for example, for Catchment E2 (Figure 7.4), should be considered for high runoff for extreme rainfall events.

Diversion of high flows to the stormwater retention ponds located in the southwestern and northern portions (Figures 6.1, 7.3 and 7.4) of the property offers good buffering of increased stormwater flows.

Temporary accesses through diversion and containment bunds must be rapidly reinstated, and sustained awareness of changing site conditions maintained. Periodic ESCP adjustments aligning to current earthworks operations underway will be key to subduing heavy rainfall response and requirement for contingency measures.

Three and five-day forecasts should be closely monitored, and no new areas should be opened up if more than 20*mm* is forecasted.

15. ESCP Review Procedures

The Erosion and Sediment Control Plan should be reviewed at the start of each earthworks stage or sub-stage and at no less than fortnightly intervals.

16. Specific Site Responsibilities

The following site responsibilities are recommended for Green Steel's Contract Manager with support from Earthtech's Senior Engineer (joint responsibility):

i. Monitor rainfall forecasts on a daily basis.
ii. Undertake weekly inspections.
iii. Undertake inspection within 24 hours of 20*mm* rainfall event (e.g. integrity of earth bunds checked that all intact and access gaps suitably closed off).
iv. Report to Waikato Regional Council on a monthly basis.

17. Conclusions

17.1 This combined Earthworks Management and Erosion and Sediment Control Plan (ESCP) has been prepared to support a Resource Consent application for the proposed Green Steel Project development at 61 Hampton Downs Road, Hampton Downs, Waikato. The ESCP has been prepared in general accordance with the Waikato Regional Council Technical Report No. 2009/02 *Erosion and Sediment Control Guidelines for Soil Disturbing Activities, January 2009* (TR2009/02) and associated factsheets. Other documents relied upon in the preparation of this ESCP are referenced in this plan.

17.2 National Green Steel Limited proposes to develop an integrated metals resource recovery and steel manufacturing plant on the site. The plant will extend over a large portion of the 53*ha* property, requiring bulk earthworks comprising approximately 1.1 million m^3 of cut, 0.9 million m^3 of fill for the main building platform, and total estimated cut and fill earthworks volumes of some 1.3 million m^3 and 1.1 million m^3 respectively (excluding the monofill).

17.3 Stormwater and sediment can be appropriately managed on this site with the application of the controls detailed in this ESCP. Sediment control measures will require the strategic placement of

stormwater retention ponds (SRPs) and silt/sediment control fences during the development phase of the proposed project.

17.4 Total estimated earthworks volumes covering soil types are provided in this combined EMP and ESCP.

Good knowledge of the nature of the underlying soils was gained from recently (April 2025) conducted test pits (TPs) – excavated up to 4*m* to 6*m* depths. Inspection of soil materials from the test pits provided a general understanding that a high proportion of soils (to the depth range of 0.2*m* to ~4.5*m* to 6*m*) within the required cut areas across the site are suitable for engineered fill material. Additionally, most soils appeared to require drying conditioning of only (say) one to two days, whilst a high proportion was found to be close to optimum moisture content, i.e. suitable for direct use as cut-to-fill.

17.5 Sediment loss from the site can be expected to be minimal through adherence to the EMP and ESCP within the catchment areas. The designated boundaries may be adjusted to suit actual conditions encountered on site but are provided in this plan to be followed from *Day 1* of earthworks development.

17.6 The site has been divided into catchment areas to maximise earthworks volumes with manageable and minimal ground disturbance. The major controls to prevent sediment losses are achieved by undertaking the works in dry weather and low flow conditions and stabilising immediately upon completion. The entire site is essentially located within a single rainfall catchment area and is to be bunded by the proposed diversion and containment bunds – managing anticipated clean water and dirty water flows. Additional bunds can be formed to isolate each stage of work within the designated catchment.

Principles of minimising sediment loss are effectively outlined in this ESCP, as are maintenance, monitoring and rainfall response procedures.

17.7 Groundwater seepages encountered across the site can be suitably diverted and conveyed to discharge areas as cleanwater flows within the property boundary.

17.8 With the application of this EMP and ESCP, supported by strategic planning of the earthworks operations, there is adequate available land to develop the proposed steel manufacturing project on this site and to suitably manage the diversions and discharges of stormwater and groundwater within the property boundary.

17.9 Areas of the site are mapped showing to potentially comprise acid sulphate soils, as shown in the plan attached in Appendix C. No acid sulphate soils have been encountered during site investigations conducted to date, but cannot be ruled out. The major portion of earthworks cuts are within areas mapped as *Negligible Probability*. This report provides a plan approach to suitably manage acid sulphate soils if or where encountered. Incidence of acid sulphate soils on the Green Steel site can thus be expected to be of low concern.

18. Recommendations

The following recommendations are made for the effective implementation of this combined Earthworks Management Plan and Erosion and Sediment Control Plan (ESCP):

18.1 A *Day 1 Plan* (Figure 6.1) is attached to this plan which provides recommended works that must be carried out and sediment control devices installed ahead of any earthworks progressing.

18.2 Proposed earthworks areas are shown in Figure 7.2. The site has been divided into catchment areas to maximise earthworks volumes with manageable and minimal ground disturbance. It is recommended that the assigned Contractor, or Contractors, provide a *Method Statement* describing the sequencing of works to be performed, detailing which areas are to be worked within, earthworks quantities based on current engineering plans (issued for construction), and estimated timelines.

Furthermore, it is recommended that the required controls and devices to prevent sediment losses are achieved by undertaking the works in dry (or drier) weather and low flow conditions, and stabilising areas immediately upon completion. Additional earth bunds are recommended to appropriately isolate works stages (within the designated catchment) where necessary, for example, after compacted engineered fill layers are placed.

In the case of imminent storm events during the course of works, smaller diversion bunds are recommended within a given catchment area to suitably direct stormwater flows to conveyance channels, as well as to dissipate energy.

18.3 Stormwater bunds should be checked regularly for any openings (typically left open for temporary access) and immediately reinstated ahead of any pending storm event.

18.4 Earthworks areas that are to be left open for extended time periods (≥3 months) should be stabilised by hay mulching and geofabric material placed (with ground pegs) in flow channels. Placement of rock rip-rap "check dams" (Figure 7.3) on geotextile is recommended at 50*m* spacings to provide silt traps along the channel. Proposed stabilisation of previously worked areas is shown in Figures 7.4 and 7.5.

18.5 Placement of erosion protection matting (coir or geojute type) should be placed on all slopes of a grade steeper than 1v:3h (>18.4 degrees) as an immediate temporary measure, and grass growth established.

18.6 Recommended construction details for Erosion and Sediment Control devices are provided in Figure 8.1. It is recommended that this EMP and ESCP only be used together with the attached drawings listed under the figures. Additional details on stormwater treatment devices, site preparation and construction certification can be obtained from the guidelines, factsheets and as-built certification sheets available on Waikato Regional Council's website (https://www.waikatoregion.govt.nz/).

18.7 Where, or if, acid sulphate soils are encountered on the site, the following management approach is recommended:

- identify the extent of the acid sulphate soils and record where encountered
- where found within the bulk fill area – leave undisturbed in place, and place compacted fill material over the top (entombing the acid sulphate soils).
- where found within a cut, or required undercut area, or within 1*m* of final fill level – excavate (remove) all acid sulphate soils and place in the deepest available area of the fill. Cover with compacted fill material, thus entombing the acid sulphate soils.

18.8 Earthworks operations for the Green Steel Project are to be staged, with possibly several earthworks teams carrying out cut and fill operations. Proposed staging of the project, described in sections 1 and 12 of this report, is planned to be carried out in three principal stages, i.e. Stages 1, 2, 3 and monofill development, with each stage divided into separate operational catchments (Figure 7.2).

Details of proposed catchment areas that are to be opened for earthworks operations, and areas to be stabilised following earthworks, are provided in Table 4 of this report.

19. Drawings Disclaimer

The are several drawings attached to this report, numbered as Figure 1.1 through 8.1, which are referred to in the technical content of this Earthworks Management and Erosion and Sediment Control Plan. Certain details may differ slightly from similar drawings (Figures) appearing in other technical reports we have authored for the Green Steel project. This is primarily due to revision updates which are specific to the report. The Green Steel Project Development Drawings (PDDs), numbered PD1 through PD5.2, are consistent throughout our reports and are current with the revision and date shown.

20. References

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FOR INFORMATION

Note: All drawings are to be approved (initialled) before final issue.

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61 HAMPTON DOWNS ROAD

National Green Steel Limited

Site Location Plan

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	12-01-24	FOR PRELIMINARY GEOTECHNICAL ASSESSMENT	L.S	A.N	S.SW	
B	15-04-24	CHANGE SCALE	L.S	A.N	S.SW	

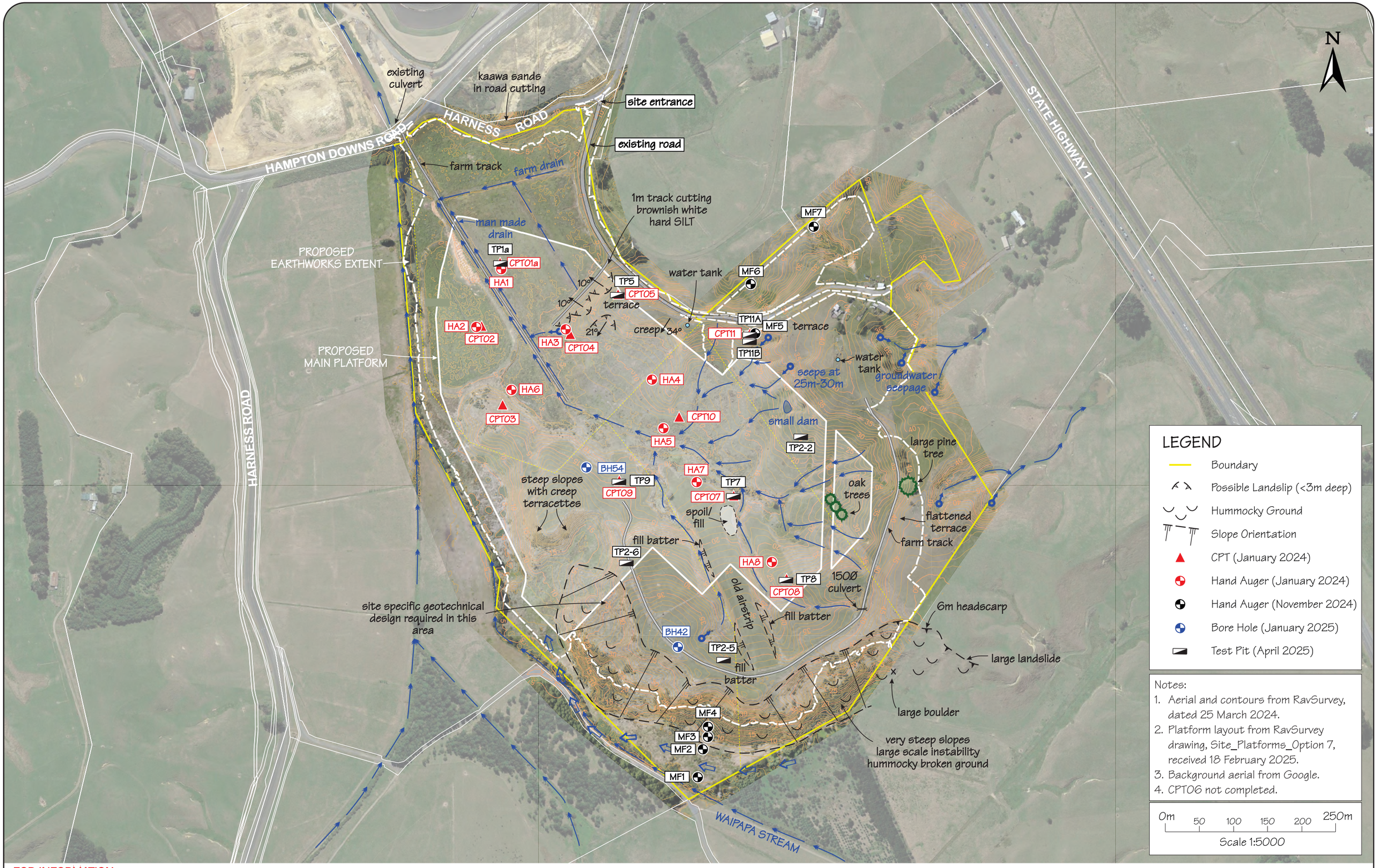
DRAWING NO.: FIG. 1.1

REF: 4392

SCALE: 1:15000

CRS: NZTM

DATUM: Moturiki 1953



LEGEND

- Boundary
- Possible Landslip (<3m deep)
- Hummocky Ground
- Slope Orientation
- CPT (January 2024)
- Hand Auger (January 2024)
- Hand Auger (November 2024)
- Bore Hole (January 2025)
- Test Pit (April 2025)

Notes:

1. Aerial and contours from RavSurvey, dated 25 March 2024.
2. Platform layout from RavSurvey drawing, Site_Platforms_Option 7, received 18 February 2025.
3. Background aerial from Google.
4. CPT06 not completed.

0m 50 100 150 200 250m

Scale 1:5000

FOR INFORMATION

Note: All drawings are to be approved (initialled) before final issue.

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61 HAMPTON DOWNS ROAD

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Site Investigation and Mapping Plan

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	23-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	03-03-25	UPDATE PLATFORM	L.S	A.N	S.SW	
D	28-04-25	ADD TEST PITS	L.S	A.N	S.SW	
E	20-05-25	UPDATE EARTHWORKS EXTENT	L.S	A.N	S.SW	

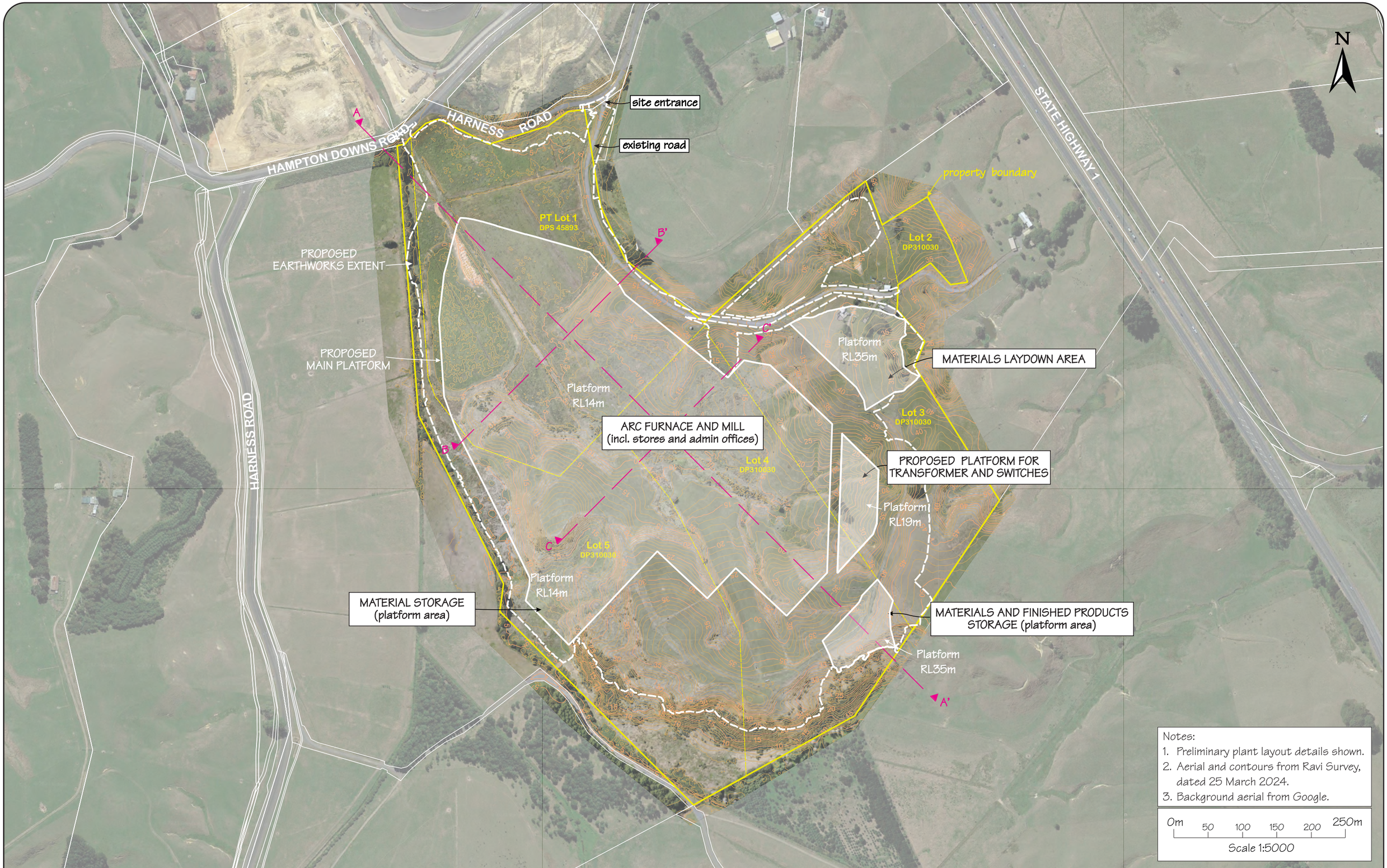
DRAWING NO.: FIG. 2.1

REF: 4392-R2

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



Notes:
1. Preliminary plant layout details shown.
2. Aerial and contours from Ravi Survey, dated 25 March 2024.
3. Background aerial from Google.

0m 50 100 150 200 250m

Scale 1:5000

FOR INFORMATION

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National Green Steel Limited

Site Layout Plan

DRAWING NO.: FIG. 2.2

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	23-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	03-03-25	UPDATE PLATFORMS	L.S	A.N	S.SW	
D	20-05-25	UPDATE PLATFORMS	L.S	A.N	S.SW	

REF: 4392-R2

SCALE: 1:5000

CRS: NZTM

DATUM: Moturiki 1953

427400 427600 427800 428000 428200 428400 428600

746600 746400 746200 746000

N

StormWater Pond

Access Road

Main Entry Gate

Access Road

Truck Park

Mono Fill North East

Easement

Site Boundary

Main Entry Gate

Rolling Mill

EAF Stack

Proposed Treated
Waste Water Diposal Area
Located on Natural Ground

Overhead
Water Tank

Platform RL14

Material
Storage Area

EAF

MRSS

Platform RL18m

Selt Melt
Building

Shredder Plant

Stack

Proposed Treated
Waste Water Diposal Area
Located on Natural Ground

Mono Fill South West

427400 427600 427800 428000 428200 428400 428600

FIGURE 2.3-REV F

Site Layout and Final Contours

Ref: R4392-3 dated 20/05/25

Project:

61 HAMPTON DOWNS ROAD

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100 0 50 100 150 200 250

Metres

NOTE:
- Coordinates are in terms of Geodectic Datum Mt.E den Circuit 2000
- Elevation are in terms of New Zealand Vertical Da tum Auckland 1946
- Survey Origin Linz Code AG88
- Contours shown are 1m Interval
- Contours shown are Top of Vegetation
- SW Pond and Access Road Lineworks adopted from Airey Consultant Ltd DWG File

RAVSURVEY LTD
Ph : 021 190 1114 Email : ravi@ravsurvey.co.nz

Title

61 HAMPTON DOWNS SITE

EARTHWORKS PLATFORM - OPTION 8 V3

Date : 20-May-2025	Drawn By : RP
Scale 1:4000 @ A3	Checked By : RP
Drawing No. DRSL560	
Survey Date : 10-Mar24	Rev_B

427600 427800 428000 428200 428400 428600 428800

746600 746400 746200 746000

N

ACCESS ROADS & SW POND

NE_MONOFILL

NORTH EAST PLATFORM RL35

SITE PLATFORM OPTION 8

EAST PLATFORM RL45

SOUTH WEST RL14

SW MONOFILL

SOUTH PLATFORM RL35

MonoFill	BaseGrade Cut Volume (m3)	BaseGrade Fill Volume (m3)	Net Volume (m3)
NE MonoFill	60,600	-	60,600
SW MonoFill	443,500	-	443,500
	504,100	**-**	**504,100**

Platform	Cut Volume (m3)	Fill Volume (m3)	Net Volume (m3)
Site Option 8	1,033,800	878,700	155,100
North East RL35	111,800	23,400	88,400
East RL45	11,800	8,300	3,500
South RL35	97,400	4,900	92,500
South West RL14	31,900	77,900	- 46,000
Access Road & SW Ponds	1,200	101,300	- 100,100
	1,287,900	**1,094,500**	**193,400**

CONTOUR : 5M_ISOPACH

Cut	-30.00	-25.00
	-25.00	-20.00
	-20.00	-15.00
	-15.00	-10.00
	-10.00	-5.00
Cut	-5.00	0.00
Fill	0.00	3.00
	3.00	6.00
	6.00	9.00
	9.00	12.00
Fill	12.00	15.00

FIGURE 2.4-Rev E

Proposed Cut/Fill Plan

Ref: R4392-3 dated 19/05/25

Project:

61 HAMPTON DOWNS ROAD

National Green Steel Limited

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100 0 50 100 150 200 250

Metres

NOTE:
- Coordinates are in terms of Geodectic Datum Mt.E den Circuit 2000
- Elevation are in terms of New Zealand Vertical Da tum Auckland 1946
- Survey Origin Linz Code AG88
- Contours shown are 1m Interval
- Contours shown are Top of Vegetation
- SW Pond and Access Road Lineworks adopted from Airey Consultant Ltd DWG File

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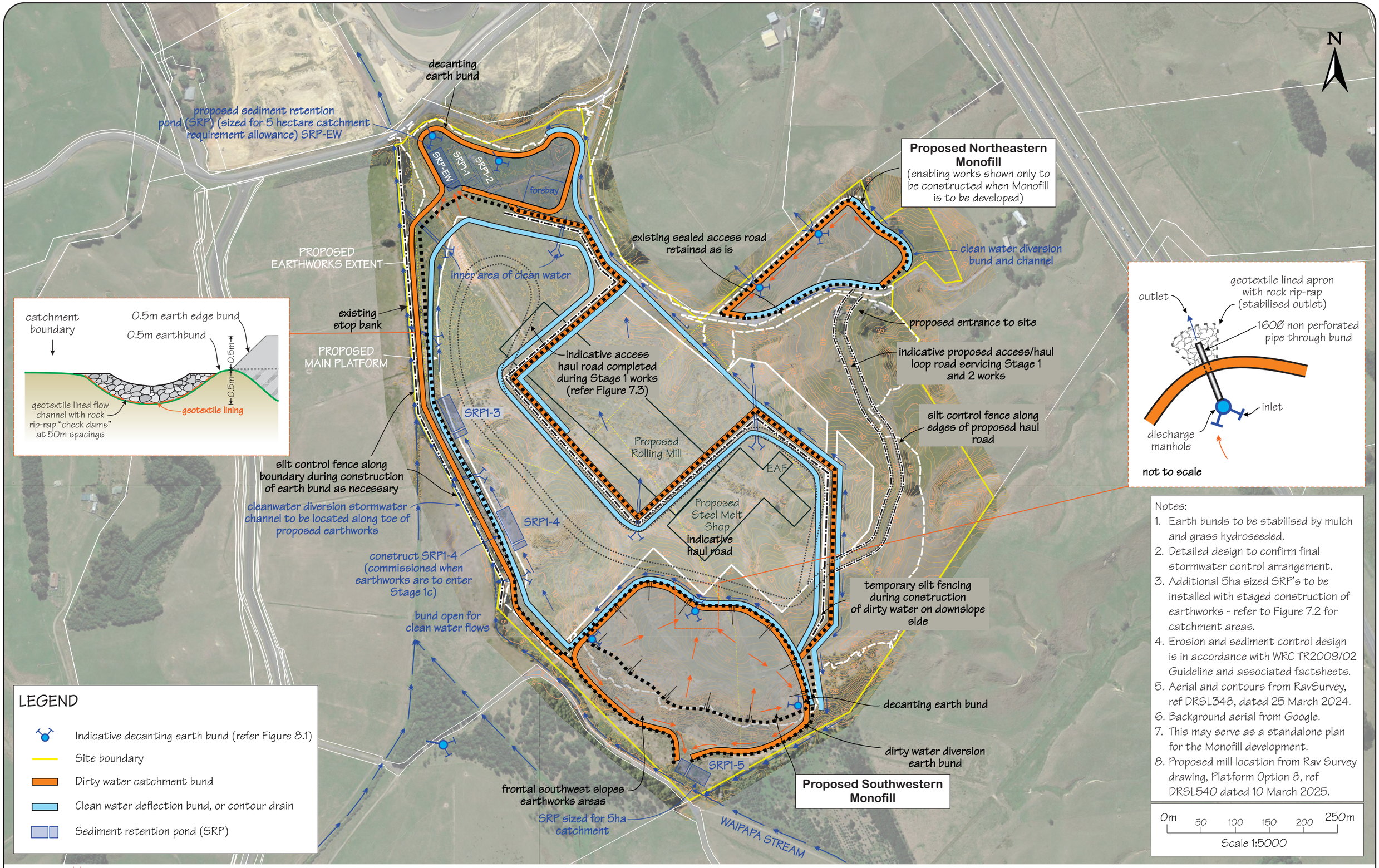
Title

61 HAMPTON DOWNS SITE

OPTION 8 V2 - PROPOSED CUT & FILL PLAN

Date : 14-May-2025 | Drawn By : RP
Scale 1:4000 @ A3 | Checked By : RP
Drawing No. DRSL558
Survey Date : 10-Mar24 | Rev_B



FOR INFORMATION

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Conceptual Stormwater Control Plan (Day 1 Plan)

DRAWING NO.: FIG. 6.1

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	28-11-24	DRAFT FOR REPORT R4392-3	L.S	A.N	S.SW	
D	03-03-25	DRAFT FOR REPORT	L.S	A.N	S.SW	
E	30-04-25	UPDATE EARTHWORKS	L.S	A.N	S.SW	
F	23-05-25	UPDATE EARTHWORKS AND STAGING	L.S	A.N	S.SW	

REF: 4392
SCALE: 1:5000
CRS: Mt Eden 2000
DATUM: AVD46

FIGURE 7.1-Rev D

Earthworks Management Plan
Use of Excess Cut Material

Ref: R4392-3 dated 01/05/25

Project:
61 HAMPTON DOWNS ROAD
National Green Steel Limited

FOR INFORMATION

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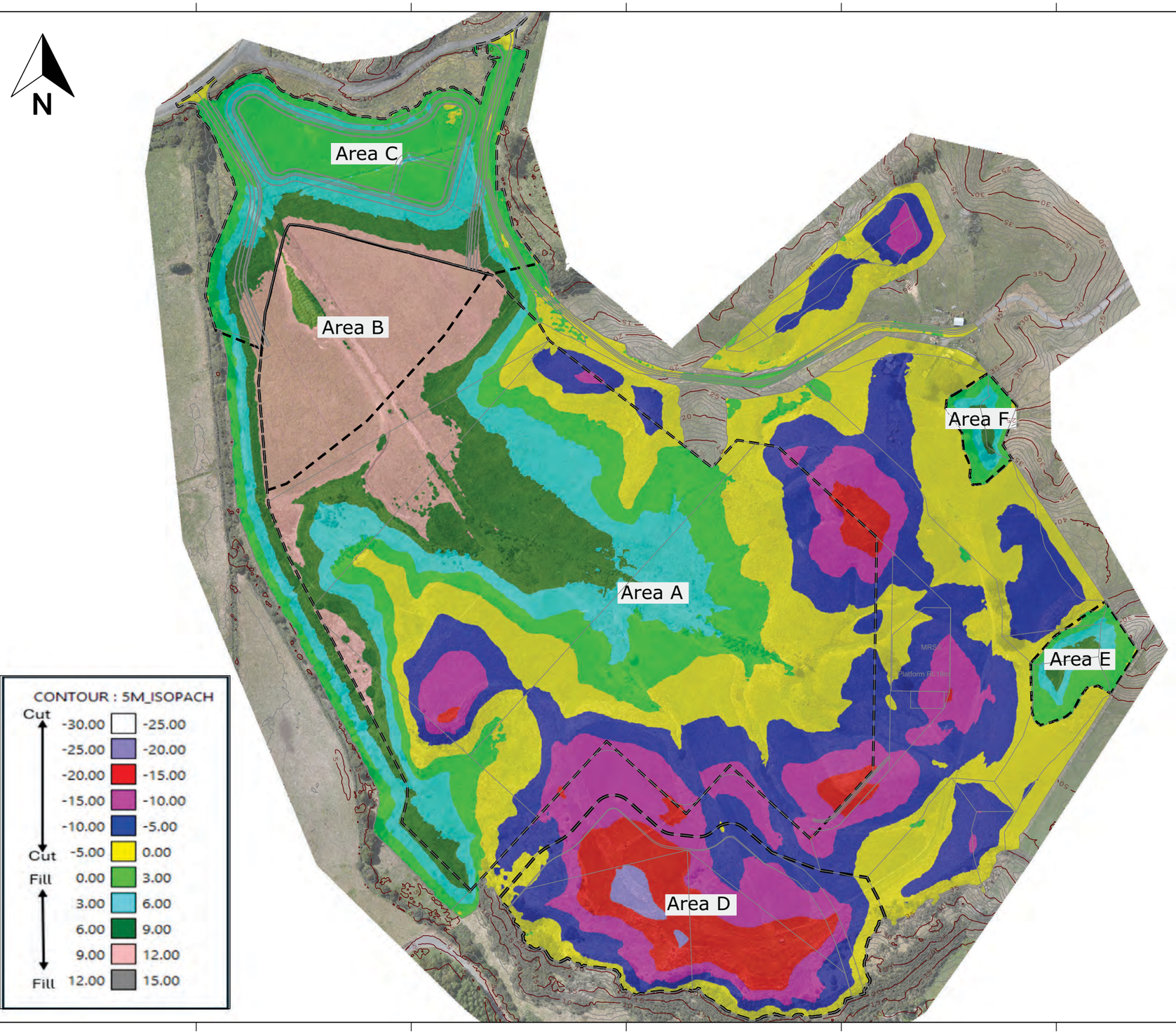

Use of Excess Cut Material

Area	Description	Fill Volume (m3)
Area A	Raise Main Platform by 1m throughout and optimise cut/fill of peripheral platforms	212,000
Area B	Peat Settlement - Assumption of 2m Settlement throughout	141,400
Area C	~~Stormwater~~ Pond and Access Road	120,000
Area D	SW Buttress Fill	101,900
Area E	Eastern Gully	21,600
Area F	NE Gully	16,700
Engineered Fill Area	Allow for Compaction Volume reduction of cut to engineered Fill (Est. 10%)	101,020
UnderCut Areas	Adjusted for Undercuts	126,000
		840,620

100 0 50 100 150 200 250
Metres

NOTE:
- Coordinates are in terms of Geodectic Datum Mt.E den Circuit 2000
- Elevation are in terms of New Zealand Vertical Da tum Auckland 1946
- Survey Origin Linz Code AG88
- Contours shown are 1m Interval
- Contours shown are T op of Vegetation

RAVSURVEY LTD
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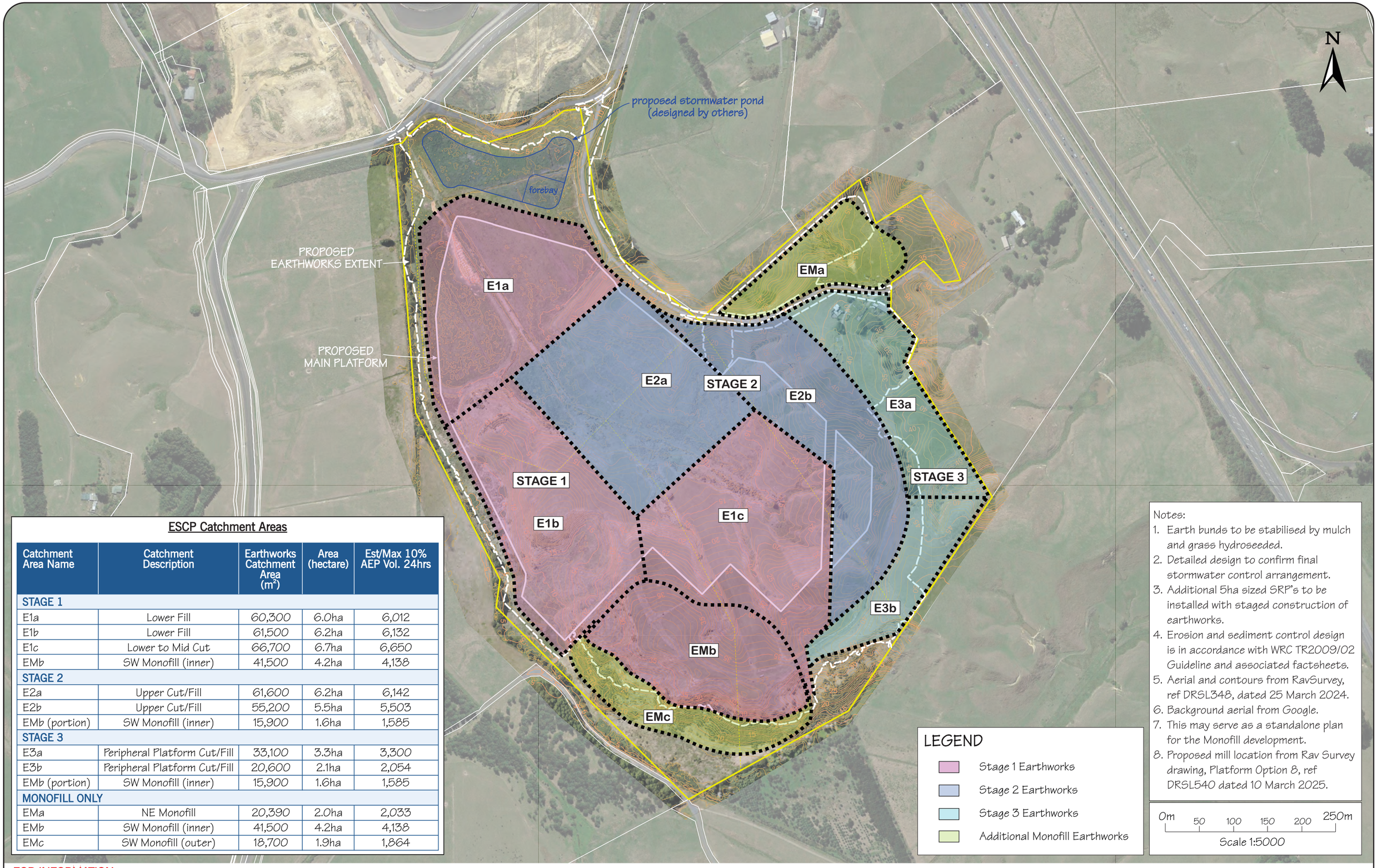
Title
61 HAMPTON DOWNS SITE
OPTION 8 - V2 USE OF EXCESS CUT MATERIAL

Date : 30-Apr-2025	Drawn By : RP
Scale 1:4000 @ A3	Checked By : RP
Drawing No. DRSL559	
Survey Date : 10-Mar24	Rev_A



ESCP Catchment Areas

Catchment Area Name	Catchment Description	Earthworks Catchment Area (m^2)	Area (hectare)	Est/Max 10% AEP Vol. 24hrs
STAGE 1				
E1a	Lower Fill	60,300	6.0ha	6,012
E1b	Lower Fill	61,500	6.2ha	6,132
E1c	Lower to Mid Cut	66,700	6.7ha	6,650
EMb	SW Monofill (inner)	41,500	4.2ha	4,138
STAGE 2				
E2a	Upper Cut/Fill	61,600	6.2ha	6,142
E2b	Upper Cut/Fill	55,200	5.5ha	5,503
EMb (portion)	SW Monofill (inner)	15,900	1.6ha	1,585
STAGE 3				
E3a	Peripheral Platform Cut/Fill	33,100	3.3ha	3,300
E3b	Peripheral Platform Cut/Fill	20,600	2.1ha	2,054
EMb (portion)	SW Monofill (inner)	15,900	1.6ha	1,585
MONOFILL ONLY				
EMa	NE Monofill	20,390	2.0ha	2,033
EMb	SW Monofill (inner)	41,500	4.2ha	4,138
EMc	SW Monofill (outer)	18,700	1.9ha	1,864

LEGEND

- Stage 1 Earthworks
- Stage 2 Earthworks
- Stage 3 Earthworks
- Additional Monofill Earthworks

Notes:

1. Earth bunds to be stabilised by mulch and grass hydroseeded.
2. Detailed design to confirm final stormwater control arrangement.
3. Additional 5ha sized SRP's to be installed with staged construction of earthworks.
4. Erosion and sediment control design is in accordance with WRC TR2009/02 Guideline and associated factsheets.
5. Aerial and contours from RavSurvey, ref DRSL348, dated 25 March 2024.
6. Background aerial from Google.
7. This may serve as a standalone plan for the Monofill development.
8. Proposed mill location from Rav Survey drawing, Platform Option 8, ref DRSL540 dated 10 March 2025.

0m 50 100 150 200 250m

Scale 1:5000

FOR INFORMATION

Note: All drawings are to be approved (initialled) before final issue.

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61 HAMPTON DOWNS ROAD

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Erosion and Sediment Control Plan - Catchment Layout

DRAWING NO.: FIG. 7.2

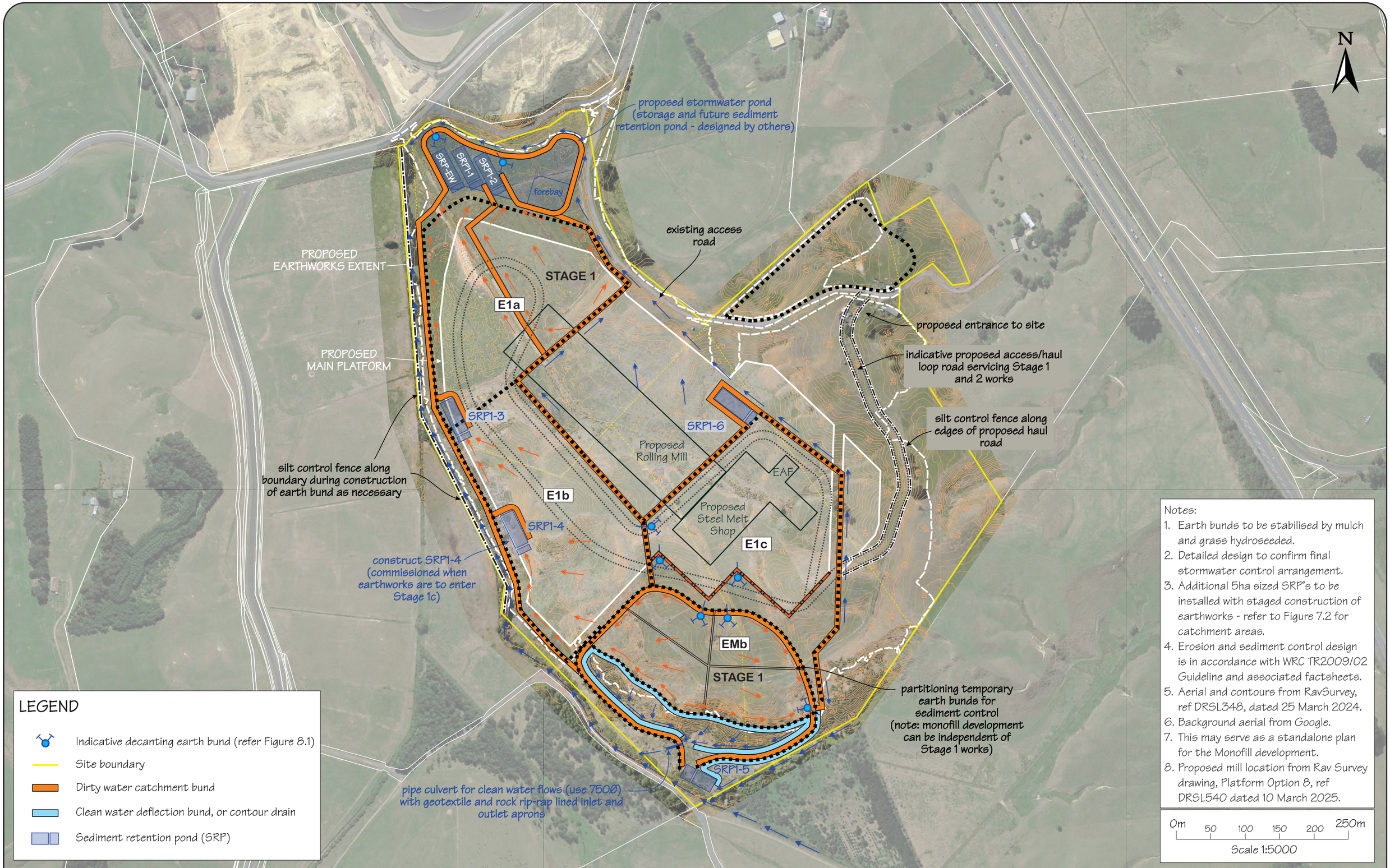
REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	28-11-24	DRAFT FOR COMMENT	L.S	A.N	S.SW	
B	29-04-25	UPDATE CATCHMENT AREAS	L.S	A.N	S.SW	
C	30-04-25	ADD AREA E1c	L.S	A.N	S.SW	
D	19-05-25	UPDATE AREAS	L.S	A.N	S.SW	

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



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Erosion and Sediment Control Plan - Stage 1 Earthworks

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	18-11-24	DRAFT FOR COMMENT	L.S	A.N	S.SW	
B	28-04-25	UPDATE STAGE 1 AREA	L.S	A.N	S.SW	
C	30-04-25	ADD AREA E1c	L.S	A.N	S.SW	
D	23-05-25	UPDATE STAGING AREA	L.S	A.N	S.SW	

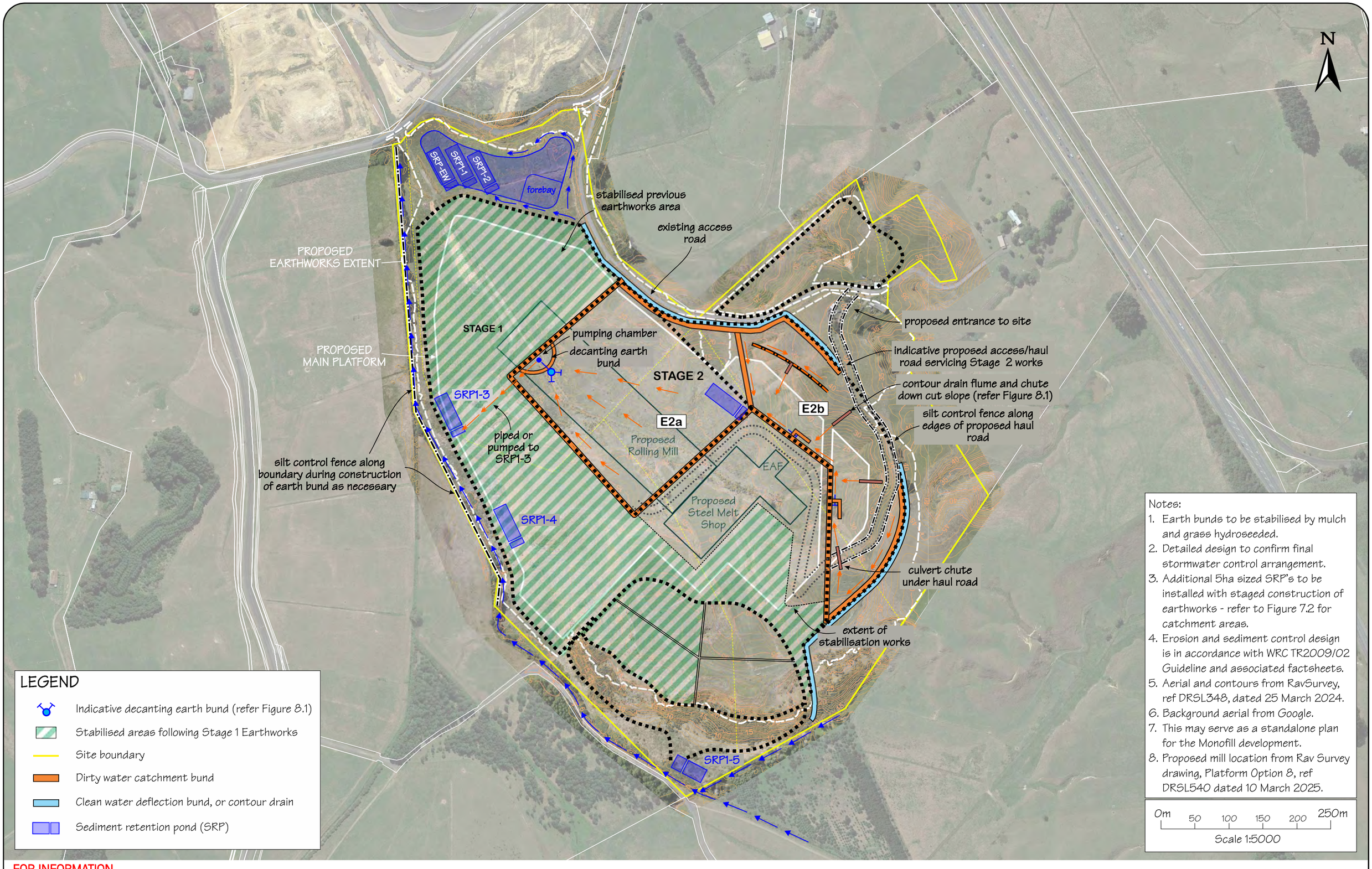
DRAWING NO.: FIG. 7.3

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



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Erosion and Sediment Control Plan - Stage 2 Earthworks

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	28-11-24	DRAFT FOR COMMENT	L.S	A.N	S.SW	
B	29-04-25	UPDATE STAGE 2 AREA	L.S	A.N	S.SW	
C	30-04-25	UPDATE STAGE 2 AREAS	L.S	A.N	S.SW	
D	22-05-25	UPDATE STAGE 2 AREAS	L.S	A.N	S.SW	

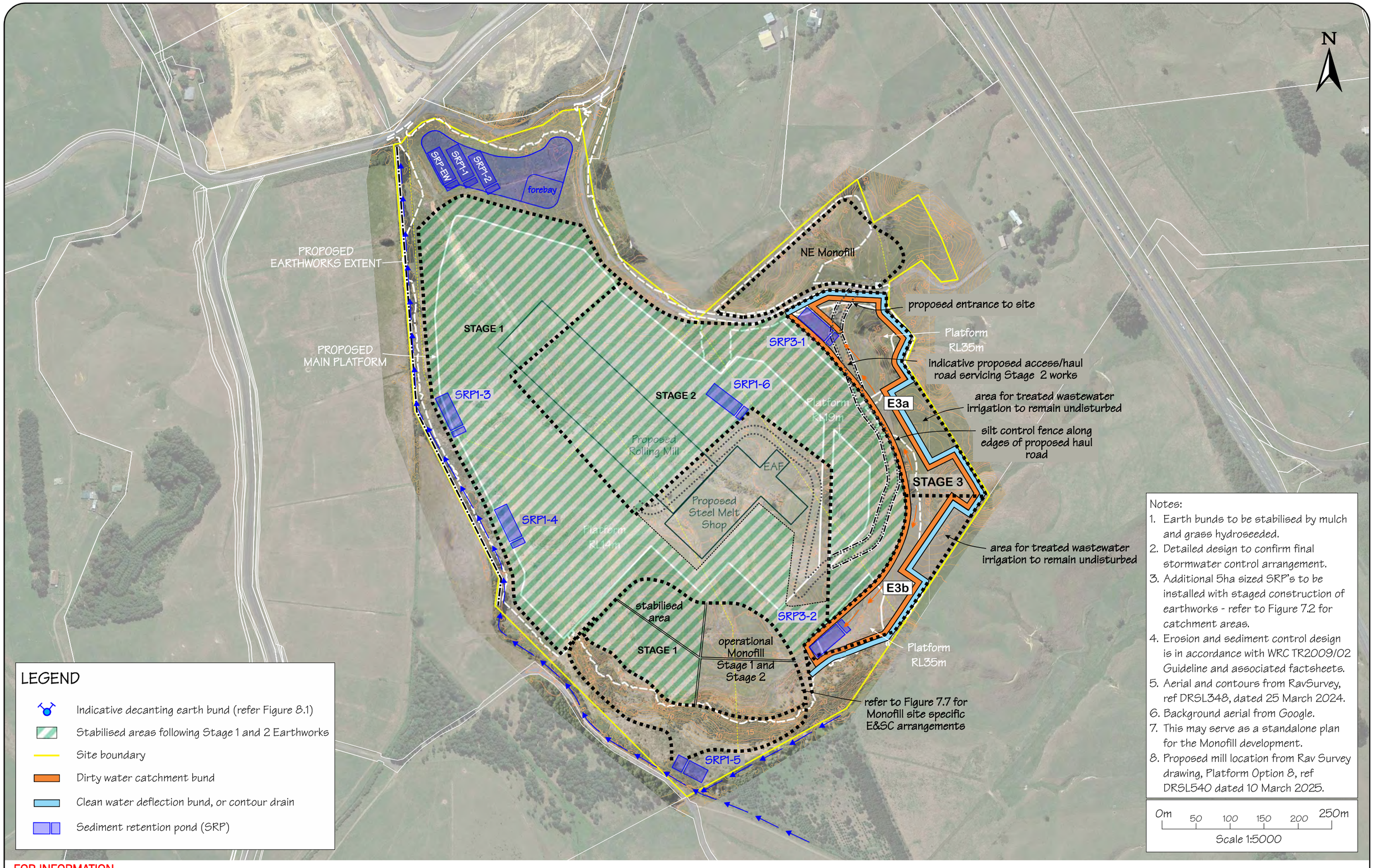
DRAWING NO.: FIG. 7.4

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



Notes:

1. Earth bunds to be stabilised by mulch and grass hydroseeded.
2. Detailed design to confirm final stormwater control arrangement.
3. Additional 5ha sized SRP's to be installed with staged construction of earthworks - refer to Figure 7.2 for catchment areas.
4. Erosion and sediment control design is in accordance with WRC TR2009/02 Guideline and associated factsheets.
5. Aerial and contours from RavSurvey, ref DRSL348, dated 25 March 2024.
6. Background aerial from Google.
7. This may serve as a standalone plan for the Monofill development.
8. Proposed mill location from Rav Survey drawing, Platform Option 8, ref DRSL540 dated 10 March 2025.

0m 50 100 150 200 250m

Scale 1:5000

FOR INFORMATION

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Erosion and Sediment Control Plan - Stage 3 Earthworks

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	28-11-24	DRAFT FOR COMMENT	L.S	A.N	S.SW	
B	30-04-25	UPDATE CATCHMENT AREA	L.S	A.N	S.SW	
C	22-05-25	UPDATE STAGING AREA	L.S	A.N	S.SW	

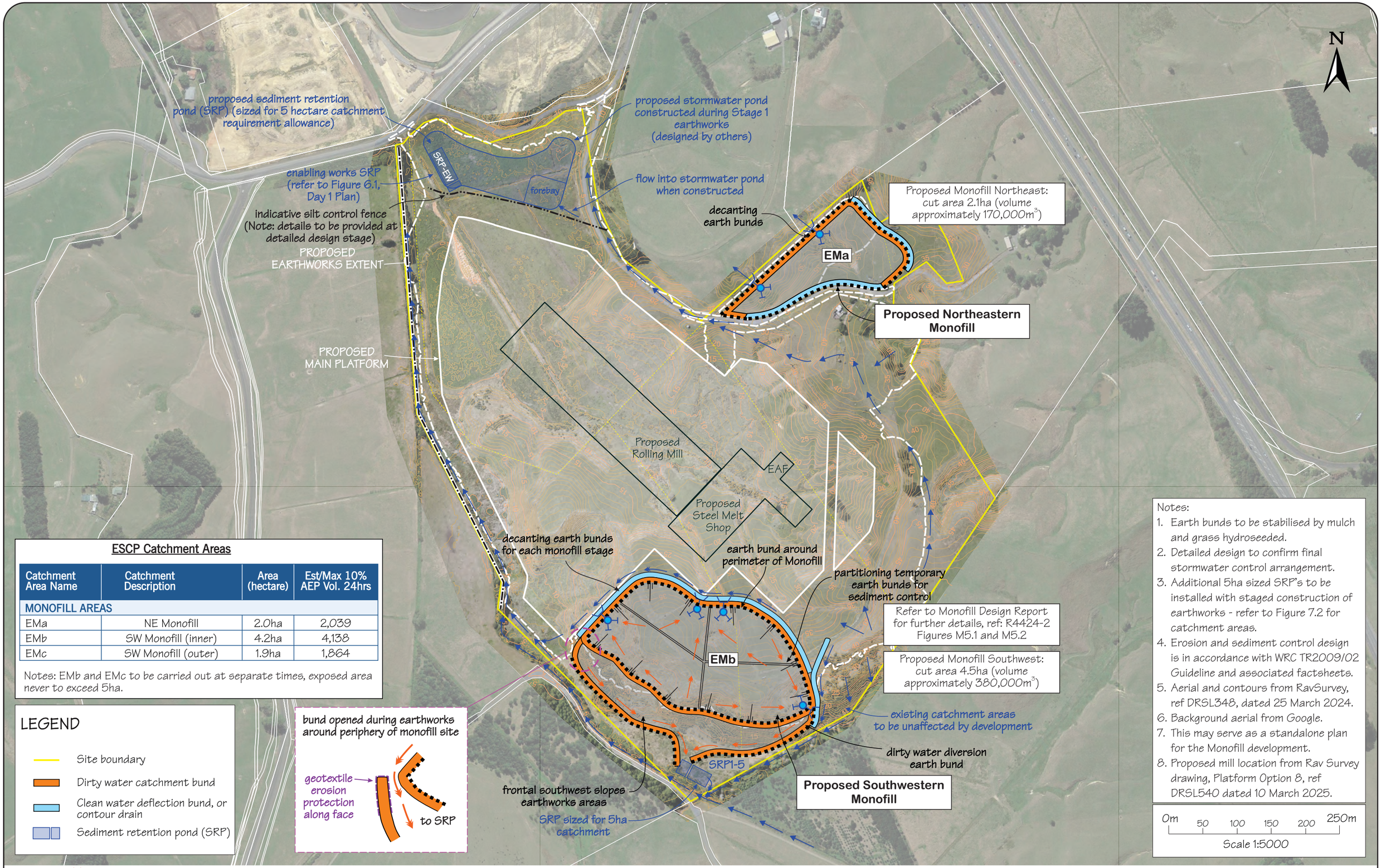
DRAWING NO.: FIG. 7.5

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



ESCP Catchment Areas

Catchment Area Name	Catchment Description	Area (hectare)	Est/Max 10% AEP Vol. 24hrs
MONOFILL AREAS			
EMa	NE Monofill	2.0ha	2,039
EMb	SW Monofill (inner)	4.2ha	4,138
EMc	SW Monofill (outer)	1.9ha	1,864

Notes: EMb and EMc to be carried out at separate times, exposed area never to exceed 5ha.

LEGEND

- Site boundary
- Dirty water catchment bund
- Clean water deflection bund, or contour drain
- Sediment retention pond (SRP)

Notes:

1. Earth bunds to be stabilised by mulch and grass hydroseeded.
2. Detailed design to confirm final stormwater control arrangement.
3. Additional 5ha sized SRP's to be installed with staged construction of earthworks - refer to Figure 7.2 for catchment areas.
4. Erosion and sediment control design is in accordance with WRC TR2009/02 Guideline and associated factsheets.
5. Aerial and contours from RavSurvey, ref DRSL348, dated 25 March 2024.
6. Background aerial from Google.
7. This may serve as a standalone plan for the Monofill development.
8. Proposed mill location from Rav Survey drawing, Platform Option 8, ref DRSL540 dated 10 March 2025.

0m 50 100 150 200 250m

Scale 1:5000

FOR INFORMATION

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61 HAMPTON DOWNS ROAD

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Erosion and Sediment Control Plan - Monofill Catchments

DRAWING NO.: FIG. 7.7

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	28-11-24	DRAFT FOR COMMENT	L.S	A.N	S.SW	
B	30-04-25	DRAFT FOR COMMENT	L.S	A.N	S.SW	
C	23-05-25	FINAL	L.S	A.N	S.SW	

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46

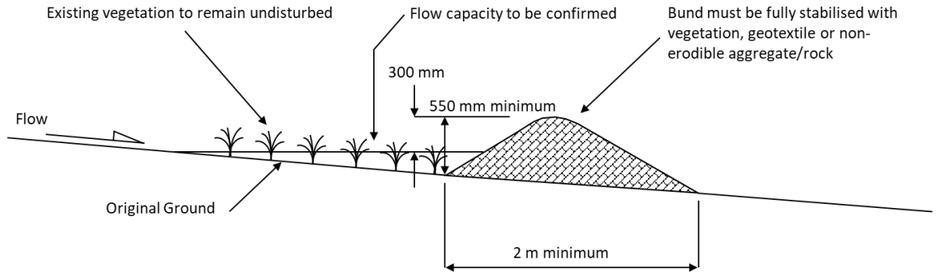

Figure 8.1a: Cross-Section of clean water diversion bund
(AC GD05 (2016): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. GD05, dated June 2016)

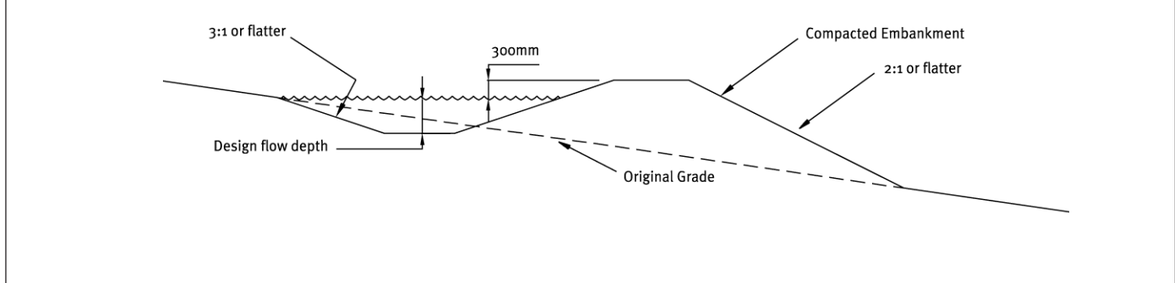

Figure 8.1b: Cross-Section of dirty water diversion
(AC GD05 (2016): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. GD05, dated June 2016)

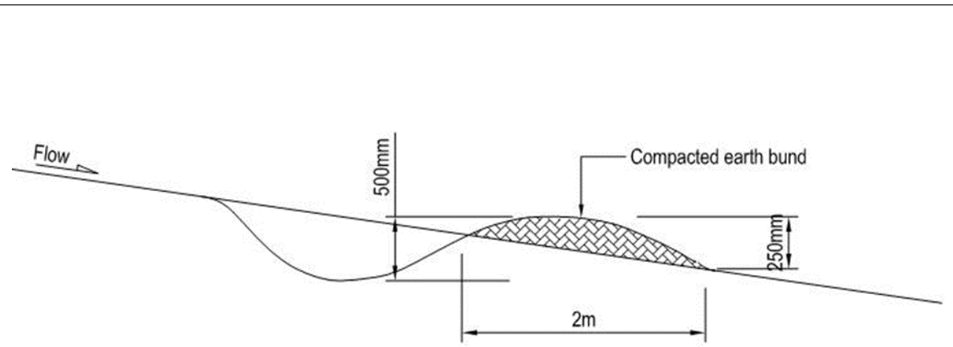

Figure 8.1c: Contour drain cross-section
(AC GD05 (2016): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. GD05, dated June 2016)

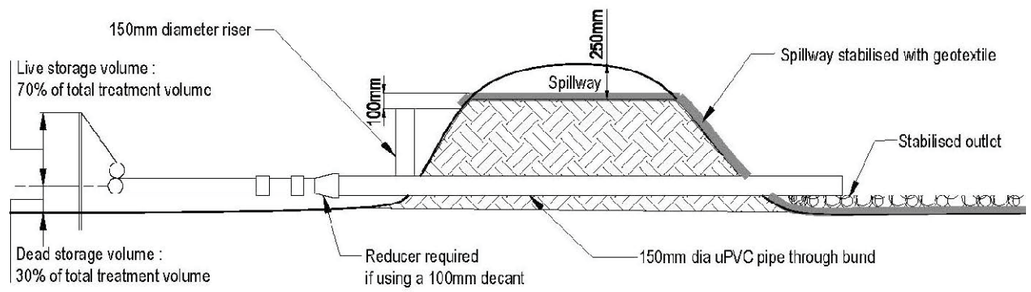

Figure 8.1d: Decanting earth bund
(AC GD05 (2016): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. GD05, dated June 2016)

Notes:
1. Figures from Auckland Council GD05, Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, dated June 2016.
2. Refer to the details provided in the Waikato Regional Council Earthworks Series - Erosion and Sediment Control Factsheets, Series 2, September 2014 (www.waikatoregion.govt.nz/earthworks)

FOR INFORMATION

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Erosion Sediment Control Devices - General Details - Page 1 of 3

DRAWING NO.: FIG. 8.1

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	18-11-24	FOR REPORT R4392-3	L.S	A.N	S.SW	
B	30-04-25	FOR REPORT R4392-3	L.S	A.N	S.SW	

REF: 4392
SCALE: nts
CRS:
DATUM:

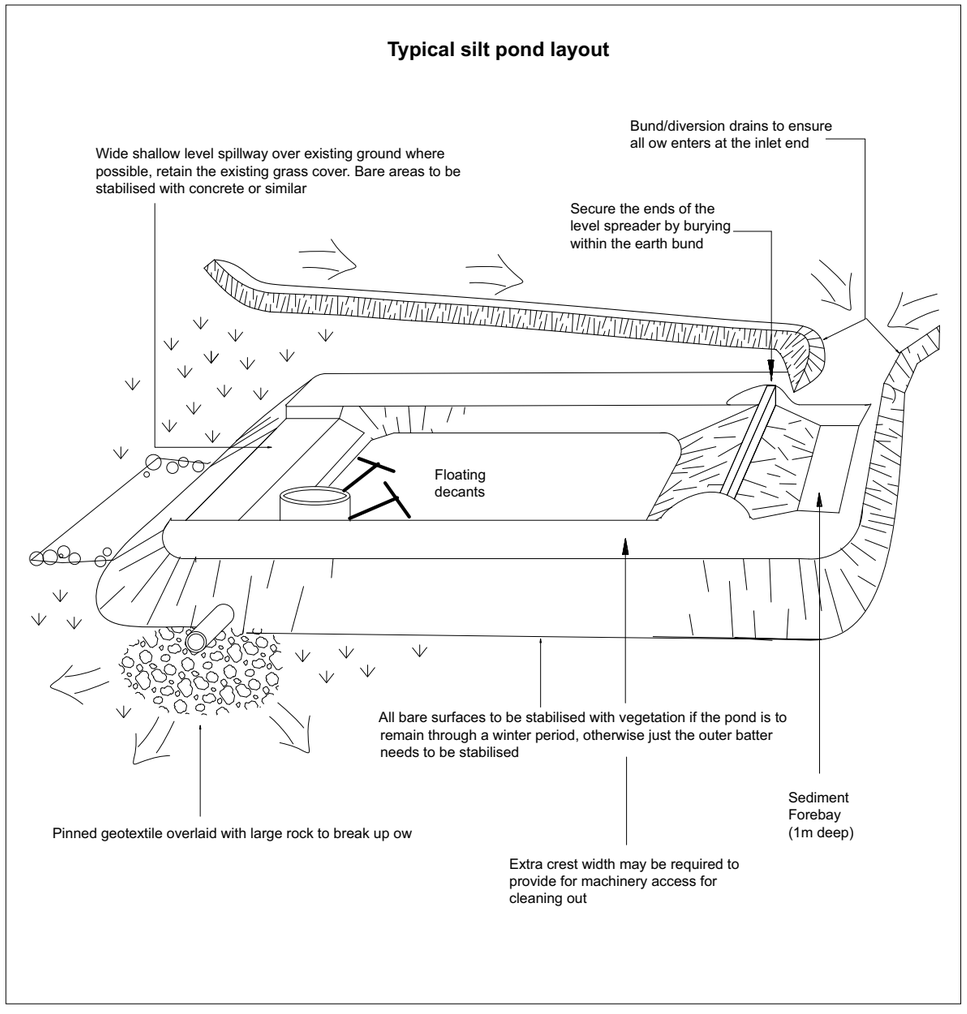

Figure 8.1e: Schematic of a sediment retention pond (SRP)
(Details provided in Waikato Regional Council Earthworks Series - Erosion and Sediment Control Factsheets, Series 2, September 2014)

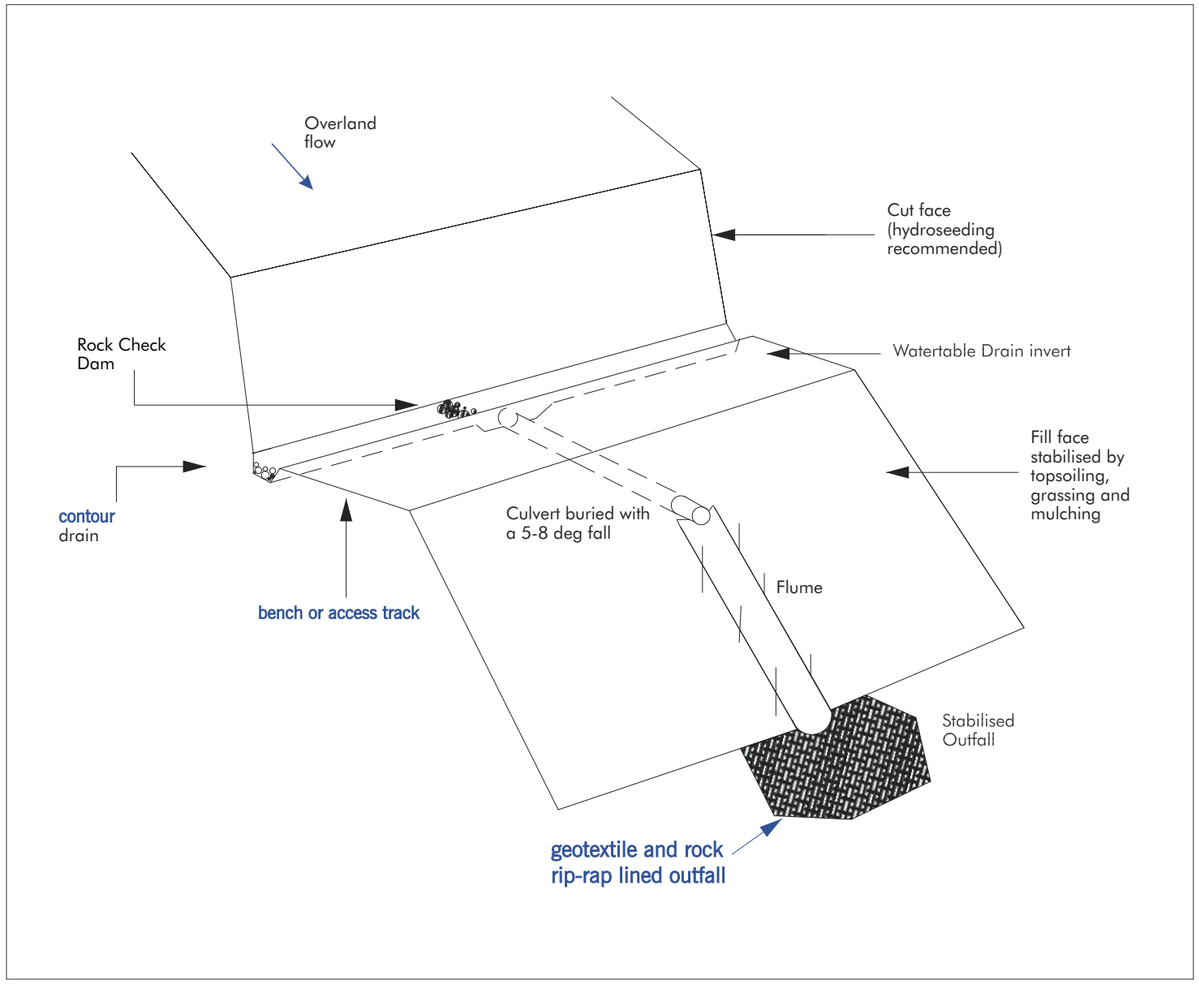

Figure 8.1f: Contour drain to chute/flume detail
(EC TR0902 (2009): Erosion and Sediment Control, Guidelines for Soil Disturbing Activities. TR0902, dated January 2009)

Notes:
1. Figures 8.1e from Waikato Regional Council Earthworks Series - Erosion and Sediment Control Factsheets, Series 2, September 2014.
2. Figure 8.1f from Environment Waikato TR0902, Erosion and Sediment Control, Guidelines for Soil Disturbing Activities, dated January 2009.

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National Green Steel Limited

Erosion Sediment Control Devices - General Details - Page 2 of 3

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	18-11-24	FOR REPORT R4392-3	L.S	A.N	S.SW	
B	30-04-25	FOR REPORT R4392-3	L.S	A.N	S.SW	

DRAWING NO.: FIG. 8.1
REF: 4392
SCALE: nts
CRS:
DATUM:

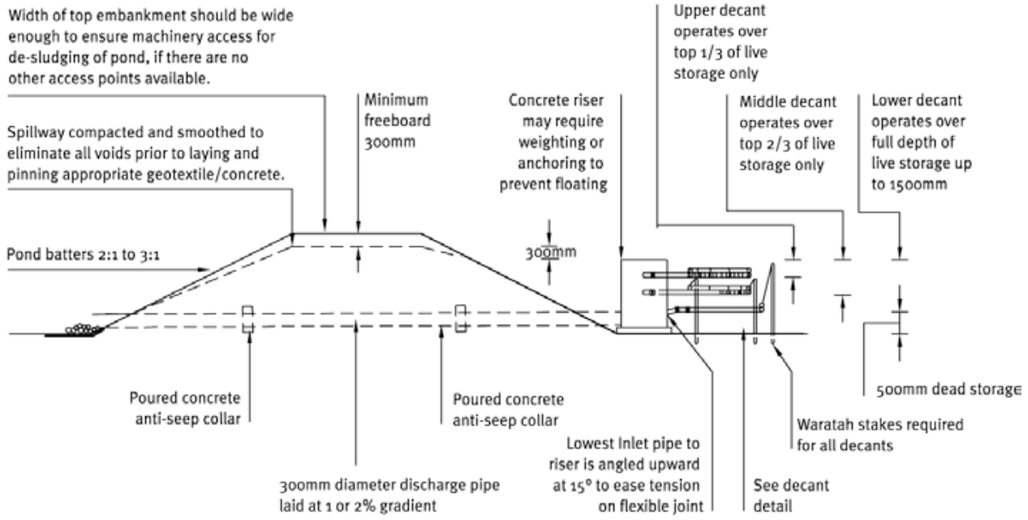
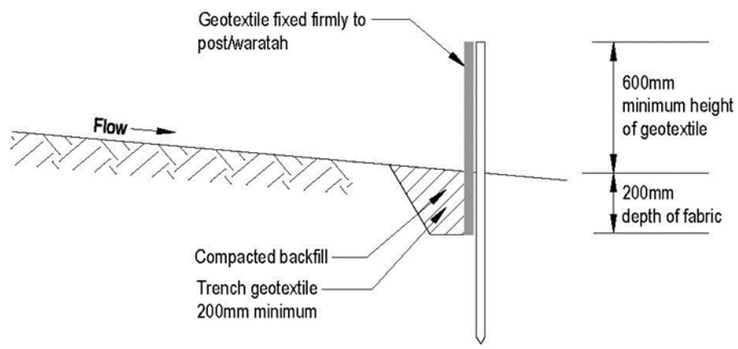
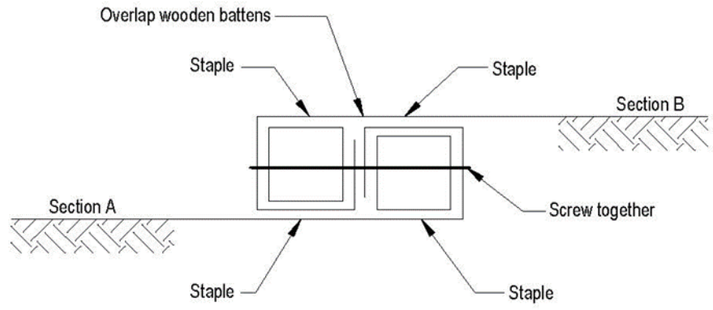


Figure 8.1g: Schematic of a Sediment retention pond - Cross Section of plan SRP emergency spillway
(Details provided in Waikato Regional Council Earthworks Series - Erosion and Sediment Control Factsheets, Series 2, September 2014)



Cross-Section



Standard Fabric Joint

Figure 8.1h: Silt fence cross-section
(AC GD05 (2016): Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. GD05, dated June 2016)

Notes:
1. Figures 8.1g from Waikato Regional Council Earthworks Series - Erosion and Sediment Control Factsheets, Series 2, September 2014.
2. Figure 8.1h from Auckland Council GD05, Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, dated June 2016.

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Erosion Sediment Control Devices - General Details - Page 3 of 3

DRAWING NO.: FIG. 8.1

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	18-11-24	FOR REPORT R4392-3	L.S	A.N	S.SW	
B	30-04-25	FOR REPORT R4392-3	L.S	A.N	S.SW	

REF: 4392
SCALE: nts
CRS:
DATUM:

Earthworks Management and Erosion and Sediment Control Plan

Green Steel Monofill

61 Hampton Downs Road, Hampton Downs, Waikato

Appendix A

Project Drawings

Green Steel Project Development Drawings:

- PD1 (Rev B, 15-04-24) Site Location Plan
- PD2 (Rev E, 20-05-25) Site Plan with Existing Contours
- PD3 (Rev D, 20-05-25) Site Plan
- PD4 (Rev A, 04-12-24) Aerial View
- PD5.1 (Rev C, 30-04-25) Long-Section A-A (3 pages)
- PD5.2 (Rev C, 05-02-25) Cross-Section B-B and C-C

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Site Location Plan

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	12-01-24	FOR PRELIMINARY GEOTECHNICAL ASSESSMENT	L.S	A.N	S.SW	
B	15-04-24	CHANGE SCALE	L.S	A.N	S.SW	

DRAWING NO.: FIG. PD1

REF: 4392

SCALE: 1:15000

CRS: NZTM

DATUM: Moturiki 1953

Notes:
1. Preliminary plant layout details shown.
2. Aerial and contours from Ravi Survey, dated 25 March 2024.
3. Background aerial from Google.

0m 50 100 150 200 250m

Scale 1:5000

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Site Plan with Existing Contours

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	23-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	19-02-25	UPDATE PLATFORMS	L.S	A.N	S.SW	
D	02-05-25	FOR REPORT R4392-3	L.S	A.N	S.SW	
E	20-05-25	UPDATE PLATFORMS	L.S	A.N	S.SW	

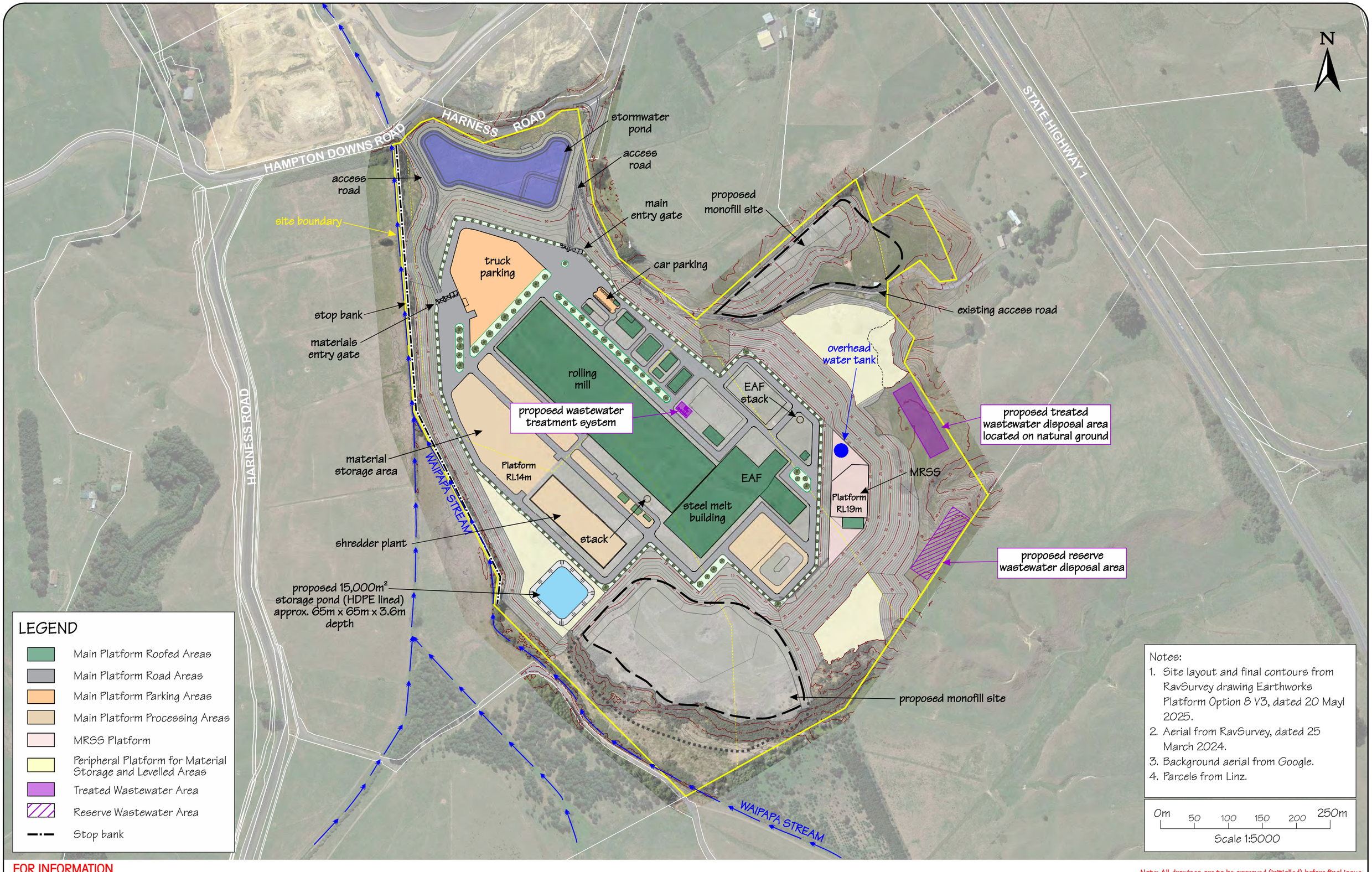
DRAWING NO.: FIG. PD2

REF: 4392

SCALE: 1:5000

CRS: NZTM

DATUM: Moturiki 1953



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Site Plan

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	05-12-24	DRAFT FOR DISCUSSION	L.S	A.N	S.SW	
B	18-02-25	UPDATE PLATFORMS AND CONTOURS	L.S	A.N	S.SW	
C	16-04-25	UPDATE STORMWATER POND	L.S	A.N	S.SW	
D	20-05-25	UPDATE WASTEWATER AREA	L.S	A.N	S.SW	

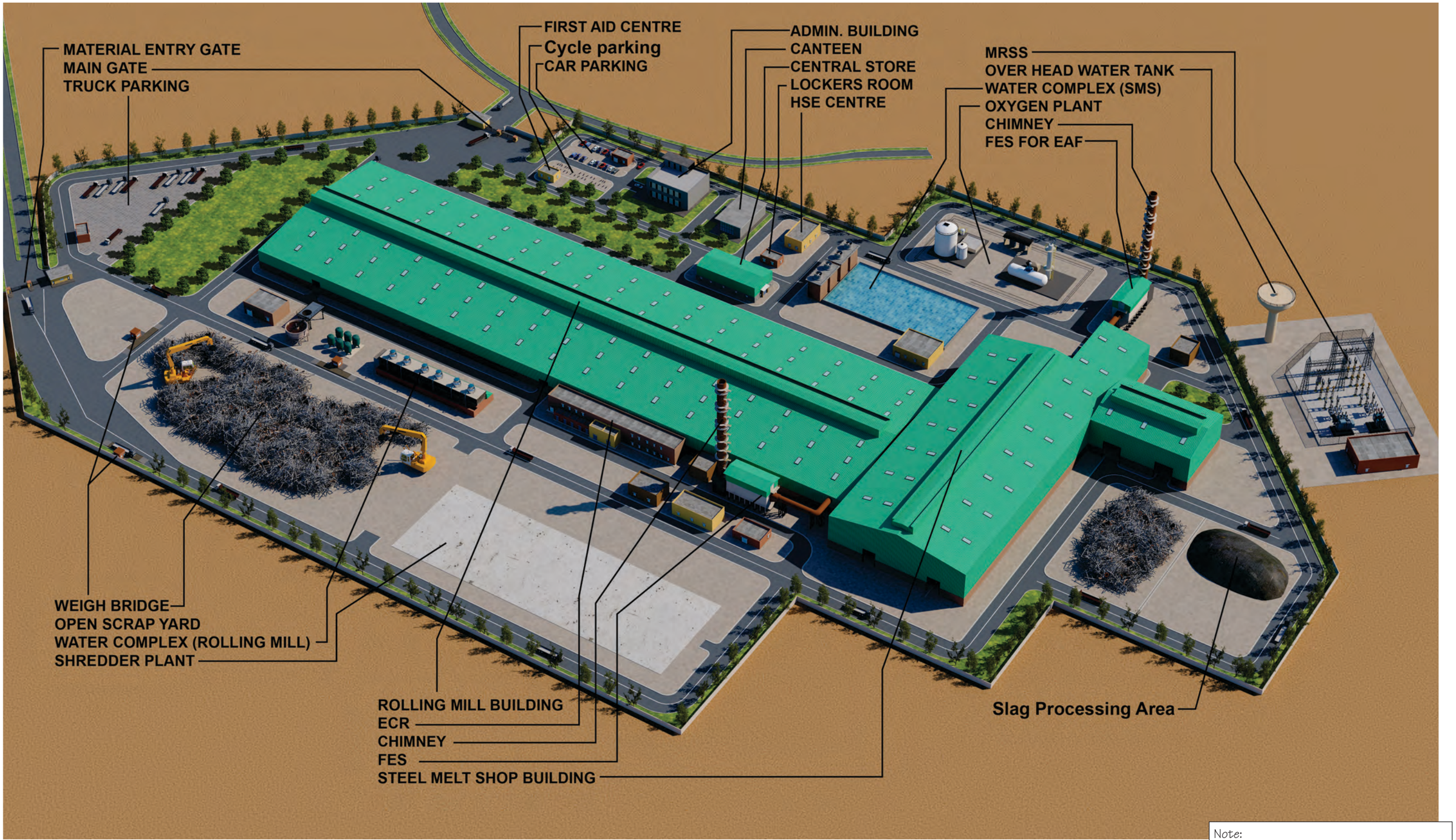
DRAWING NO.: FIG. PD3

REF: 4392

SCALE: 1:5000

CRS: Mt Eden 2000

DATUM: AVD46



Note:
1. Layout drawing received from R. Singh & Associates Pvt. Limited. Ref 2320-002sh1r7y24. Received 29 August 2024.

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Aerial View

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	04-12-24	DRAFT FOR DISCUSSION	L.S	A.N	S.SW	

DRAWING NO.: FIG. PD4

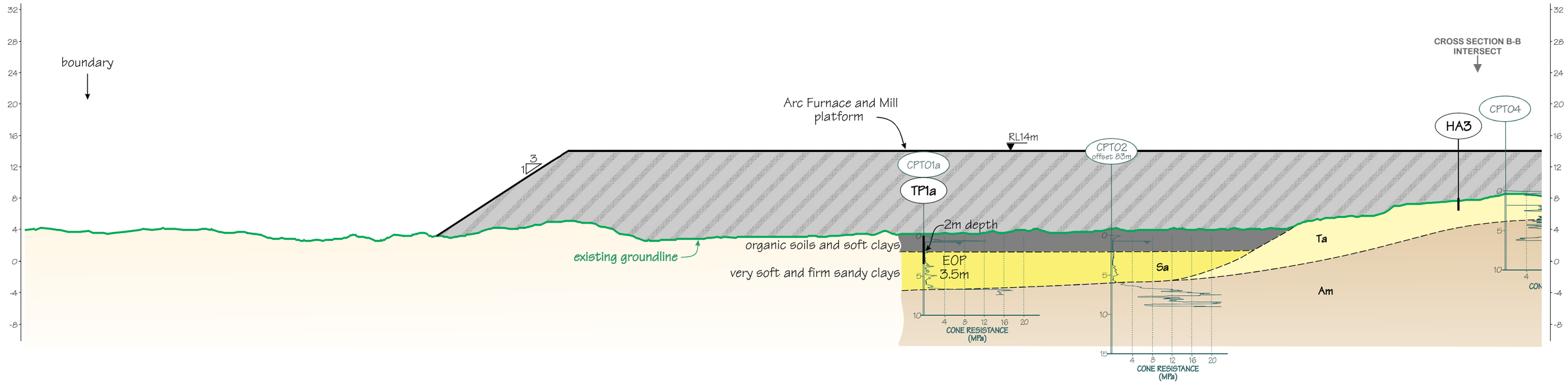
REF: 4392

SCALE: nts

CRS:

DATUM:

JOIN LINE



LEGEND

	Organic soils and clays
Sa	Stream Alluvium
Ta	Terrace Alluvium
HK-A	H-K Ash
Am	Amokura Formation

Note:
1. Geology shown is as mapped by GNS and needs to be proven by site investigations, which include test pits and deep boreholes.
2. Groundline and design line from RavSurvey drawing DRSL371 Rev B, Long Section Line A, dated 10 March 24.

0m 10 20 30 40 50m

Scale 1:1000

FOR INFORMATION

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Long Section A-A - Page 1 of 3

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	26-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	30-04-25	ADD TEST PITS	L.S	A.N	C.F	

DRAWING NO.: FIG. PD5.1/1

REF: 4392

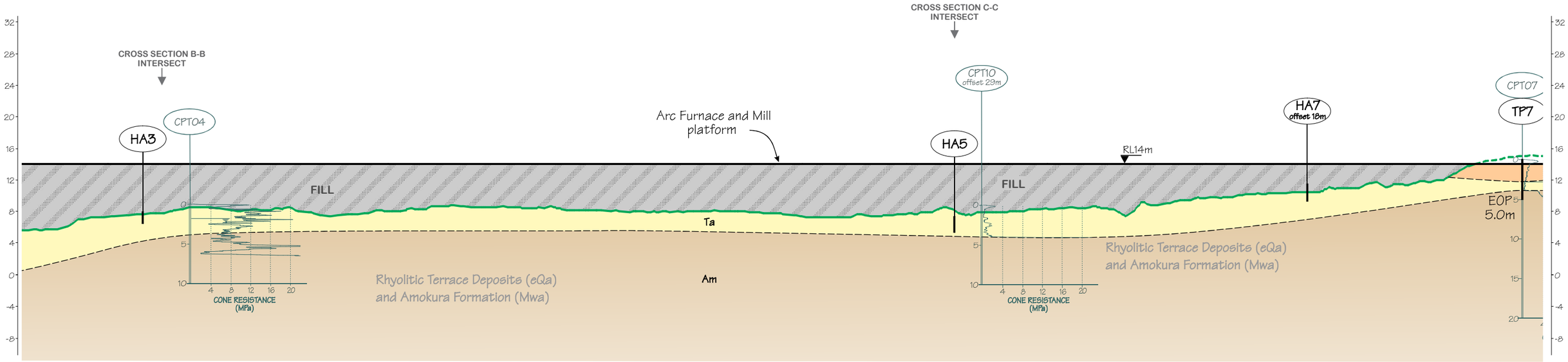
SCALE: 1:1000(h) 1:500(v)

CRS: Mt Eden 2000

DATUM: AVD46

JOIN LINE

JOIN LINE



LEGEND

	Organic soils and clays
Sa	Stream Alluvium
Ta	Terrace Alluvium
HK-A	H-K Ash
Am	Amokura Formation

Note:

1. Geology shown is as mapped by GNS and needs to be proven by site investigations, which include test pits and deep boreholes.
2. Groundline and design line from RavSurvey drawing DRSL371 Rev B, Long Section Line A, dated 10 March 24.

0m 10 20 30 40 50m

Scale 1:1000

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National Green SteelLimited

Long Section A-A - Page 2 of 3

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	26-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	30-04-25	ADD TEST PITS	L.S	A.N	C.F	

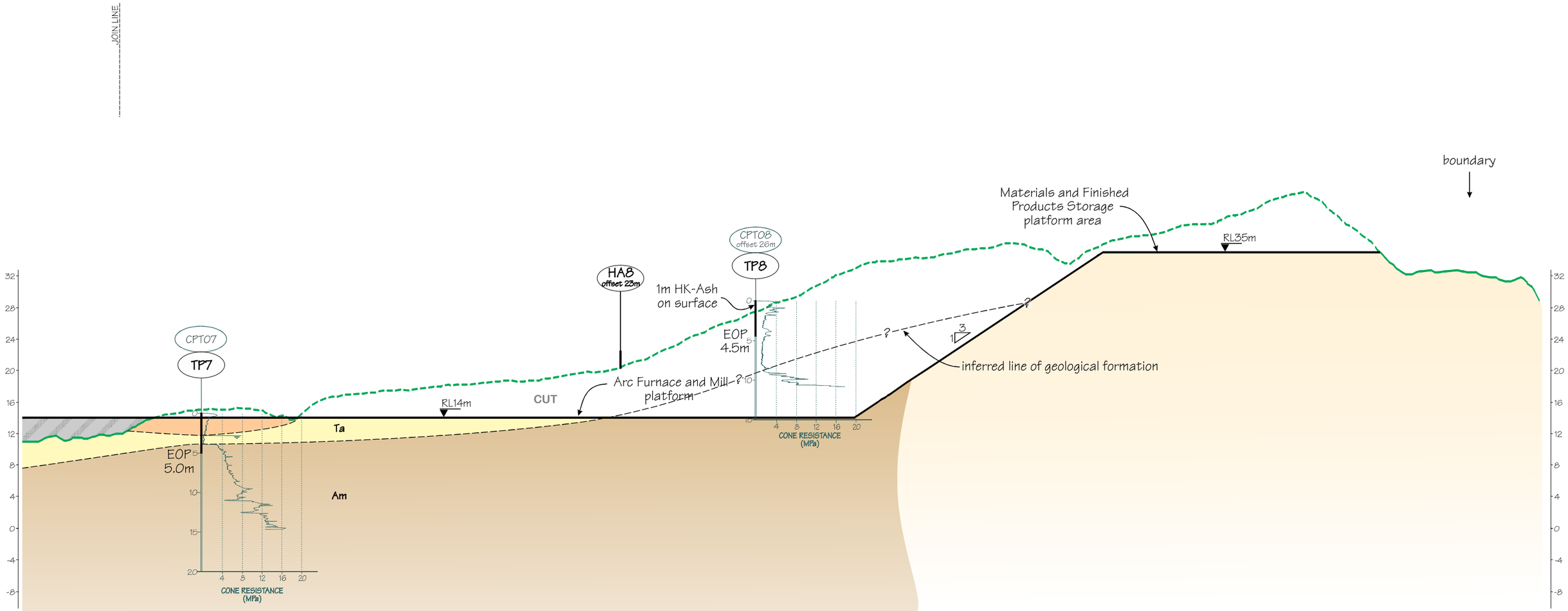
DRAWING NO.: FIG. PD5.1/2

REF: 4392

SCALE: 1:1000(h) 1:500(v)

CRS: Mt Eden 2000

DATUM: AVD46



LEGEND

	Organic soils and clays
Sa	Stream Alluvium
Ta	Terrace Alluvium
HK-A	H-K Ash
Am	Amokura Formation

Note:
1. Geology shown is as mapped by GNS and needs to be proven by site investigations, which include test pits and deep boreholes.
2. Groundline and design line from RavSurvey drawing DRSL371 Rev B, Long Section Line A, dated 10 March 24.

0m 10 20 30 40 50m
Scale 1:1000

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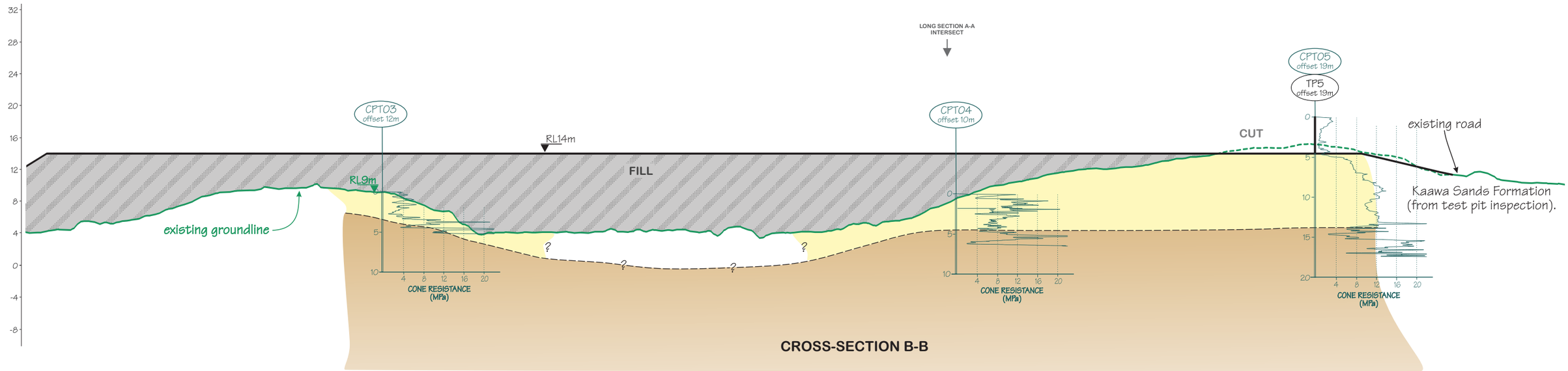
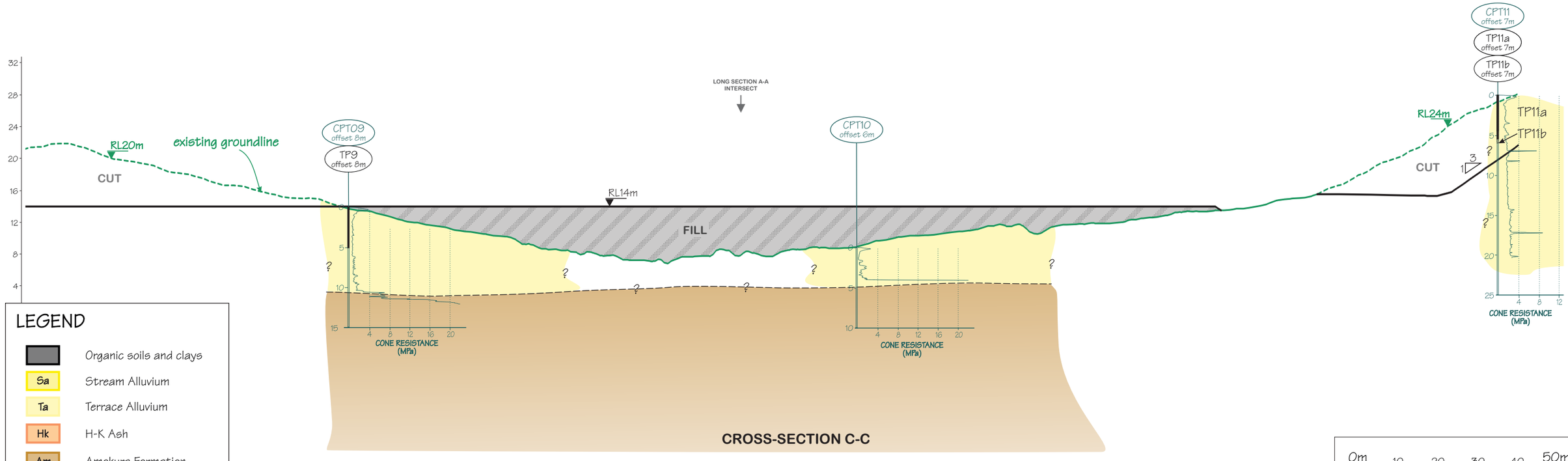
Long Section A-A - Page 3 of 3

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	26-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	AD
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	AD
C	30-04-25	ADD TEST PITS	L.S	A.N	C.F	AD

DRAWING NO.: FIG. PD5.1/3
REF: 4392
SCALE: 1:1000(h) 1:500(v)
CRS: Mt Eden 2000
DATUM: AVD46





LEGEND

	Organic soils and clays
Sa	Stream Alluvium
Ta	Terrace Alluvium
Hk	H-K Ash
Am	Amokura Formation

0m 10 20 30 40 50m
Scale 1:1000 (h)

FOR INFORMATION Notes: Groundline and design line from Ravsurvey Drawing DRSL372 Rev B, Long Section Line B-C, dated 10 Mar 24.

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Cross-Section B-B and C-C

REV	DATE	AMENDMENT/ISSUE	DRAWN BY	CHECKED	TRACED BY	APPROVED BY
A	24-04-24	FOR REPORT R4392-2 REV A	L.S	A.N	S.SW	
B	29-04-24	FOR REPORT R4392-2 REV B	L.S	A.N	S.SW	
C	02-05-25	ADD TEST PITS	L.S	A.N	C.F	

DRAWING NO.: FIG. PD5.2
REF: 4392
SCALE: 1:1000(h) 1:500(v)
CRS: Mt Eden 2000
DATUM: AVD46

Earthworks Management and Erosion and Sediment Control Plan

Green Steel Monofill

61 Hampton Downs Road, Hampton Downs, Waikato

Appendix B

Concept Plant Layout

Please Do Not Scale. If in Doubt, ASK.

713100

EXISTING ROAD FOR PLANT ENTRANCE

RL 4.5 M

10 M WIDE ROAD

SPACE FOR OXYGEN PLANT

Car Parking

Cycle Parking

First Aid Centre

Main Gate

Time & Security Office

Admin. Building

Canteen

HSE Centre

Lockers Room

Cooled Store

WATER COMPLEX (SMS) (60 M x 40 M)

FIRE STATION

Trunk Parking

MILL BAY

BAR MILL

SECTION MILL

Area for Roll Storage & Work shop

RL 14 M

Air Compressor

Pressure Filter

Water Complex (MS)

PLANT Engineers/ STAFF OFFICE

LABORATORY

Refractory Store

OPEN SCRAP YARD

SHREDDER PLANT

Weigh Bridge

SCRAP PIT

SLAG PROCESSING AREA

SPACE FOR SCRAP STORAGE

STEEL MELT SHOP

BILLET BAY

INTERMEDIATE BAY

MELTING & CASTING BAY

405300

Plant Boundary

Land Boundary

NOTES:

This layout has been slightly amended to suit existing available footprint - refer to Figure 2.3 showing site layout.

Ref: 4392 dated 28/04/25

UPDATING

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Rev. No.	Date	Revision Description	Design	Drawn	Chkd.	Appd.
06	30.04.24	updated as per client's email dtd. 22.04.24	S.D	S.D	J.N.S	S.K.G
05	26.03.24	updated as per client's email dtd. 20.03.24	S.D	S.D	J.N.S	S.K.G
04	01.03.24	updated as per client's email dtd. 27.02.24	S.D	S.D	J.N.S	S.K.G
03	15.02.24	updated as per client's email dtd. 14.02.24	S.D	S.D	J.N.S	S.K.G
02	13.02.24	updated as per client's email dtd. 09.02.24	S.D	S.D	J.N.S	S.K.G
01	08.02.24	Additional required land area marked.	S.D	S.D	J.N.S	S.K.G

STEEL MELT SHOP AND MEDIUM SECTION CUM REBAR MILL

CONCEPT PLANT LAYOUT

Scale 1:1200 | Design S.D | Drawn S.D | Chkd. J.N.S | Appd. S.K.G | Date 02.02.24

Size A1 | 2320-002 | Sh. 1 | Next — | Rev. 06

RSA R. Singh & Associates Pvt. Ltd.

2320-002 | Sh. 1 | Next — | Rev. 06

Earthworks Management and Erosion and Sediment Control Plan

Green Steel Monofill

61 Hampton Downs Road, Hampton Downs, Waikato

Appendix C

Mapped Acid Sulphate Soils – Waikato Regional Council Plan

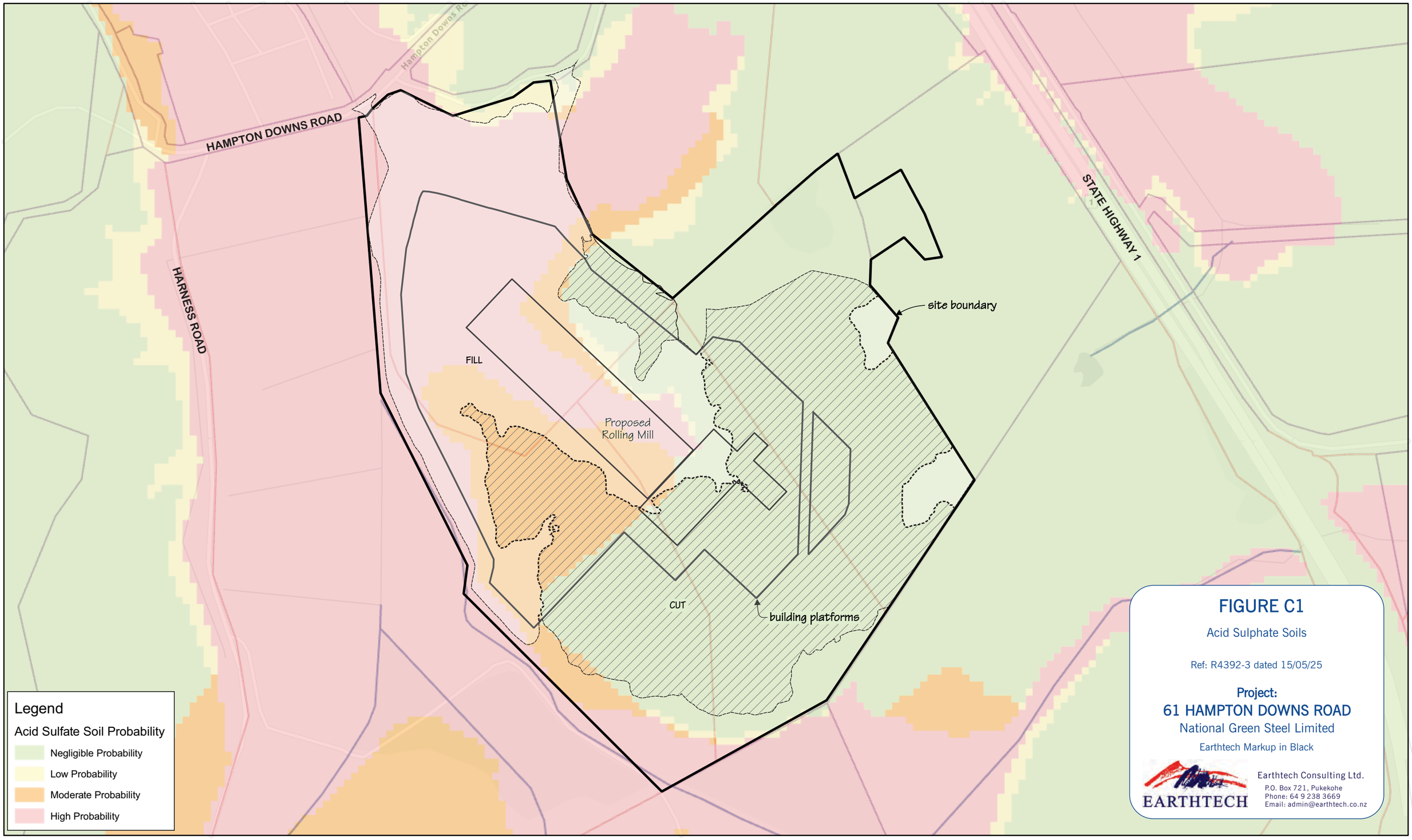

FIGURE C1

Acid Sulphate Soils

Ref: R4392-3 dated 15/05/25

Project:

61 HAMPTON DOWNS ROAD

National Green Steel Limited

Earthtech Markup in Black

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Mapped Acid Sulphate Soils

0 0.05 0.1 0.2 0.3 0.4 0.5 km

Scale: 1:5,000
1 cm = 0.05 km when printed at A3
NZGD 2000 New Zealand Transverse Mercator

Created at: 13/05/2025 3:44 PM
Layout: A3 Landscape

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Te Kaunihera ā Rohe o Waikato