Attachment 7

Erosion and Sediment Control
Plan prepared by Beca

Erosion and Sediment Control Plan

May Road Development

Prepared for May 1 Limited
Prepared by Beca Limited

28 June 2022

Creative people together transforming our world

Contents

Appendices

Revision History

Revision Nº	Prepared By	Description	Date
1	Alex McDonald	For Approval	4/02/2022
2	Alex McDonald	Updated with Client Feedback	14/04/2022
3	Alex McDonald	Updated for Design Changes	28/06/2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	Alex McDonald		27/06/2022
Reviewed by	Curtis Blyth		27/06/2022
Approved by	Dale Paice		28/06/2022
on behalf of	Beca Limited		

1 Introduction

1.1 Background

Beca Limited (Beca) has been commissioned by May 1 Limited to prepare and Erosion and Sediment Control Plan (ESCP) for resource consent to undertake future earthworks at their May Road properties in Mount Roskill (the Site). The Site is located on May Road in the suburb of Mount Roskill and encompasses the properties of 105, 105a-109a, and 119 May Road. The land at 54 Roma Road directly northwest of the Site will host a shaft for Watercare Services Limited (Watercare)'s Central Interceptor tunnel and a portion of 105 May Road is currently being leased to facilitate these construction activities. **Figure 1** shows the Site, Watercare's land and lease areas, and adjacent lots.

This report forms part of a suite of reports prepared to describe the future Site development and assess potential effects. The works are described in the Resource Consent drawings (June 2022) and the following reports:

- Geotechnical Factual Report.
- Geotechnical Interpretive Report.
- Ecology Assessment.
- Land Contamination Assessment.
- Civil and Stormwater Assessment.

Figure 1: Site Plan

1.2 Proposed Works

The proposed works comprise earthworks across the majority of the Site in order to form platforms suitable for future development, to realign and naturalise an existing stream channel and to recontour floodplain areas within the Site to suit future developments and manage potential flood hazard effects. In addition to earthworks, the proposed works include landscape planting within floodplains and riparian margins and some modifications to public stormwater pipework to suit the final form.

The proposed works are shown on the Beca Concept Design Drawing Set, with **Figure 2** below showing cut-fill depths of the proposed bulk earthworks within the Site. Note that the separated 119 May Road property only requires re-grading to form a level site and no bulk earthworks.

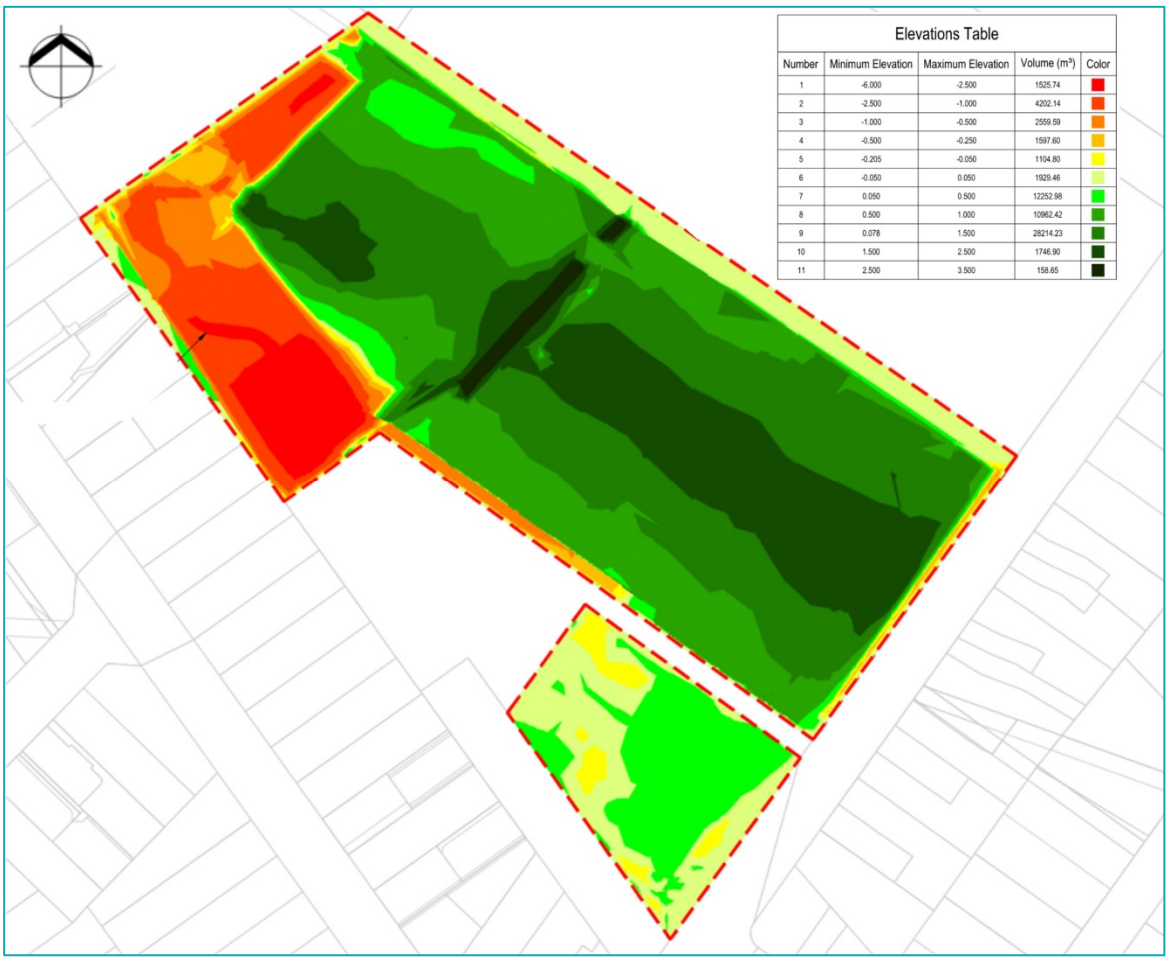


Figure 2: Earthworks Proposed Cut/Fill.

1.2.1 Interim works on 105 May Road

Watercare is currently leasing part of the 105 May Road Site until 2030 from May 1 Limited to facilitate construction of the Central Interceptor project. Watercare's contractors are currently in control of the area (see **Figure 1**). Prior to the establishment of the final proposed works, construction activities planned for the 105 May Road property include site offices, truck access, and earthworks to create working platforms and stormwater management areas. Watercare is responsible for any land distributing activities during the lease period including obtaining necessary consents and carrying out land contamination and geotechnical investigations.

Because of this, and because access is currently limited, no land contamination or geotechnical investigations for earthworks to on 105 May Road have been carried out specific to this application (although

Watercare has shared information that they have gathered to date). Any necessary investigations will be carried out at the end of the lease period when 105 May Road is returned.

1.2.2 Adjacent works on 54 Roma Road

Watercare holds a resource consent to form the permanent tunnel shaft access at 54 Roma Road northeast of the Site under an outline plan of works (OPW60341982). Construction is underway on this site with completion assumed to be before 2030 (that is, the end of the lease). The form of these earthworks is indicated on **Figure 3**. We assume that the finished works proposed at the Watercare site following the completion of the Central Interceptor construction will return the ground levels to predevelopment levels at the boundary of the Site.

Figure 3: Earthworks Proposed Cut/Fill at 54 Roma Road.

1.3 Purpose and Scope

The purpose of the ESCP is to outline how earthworks associated with the project can be managed to effectively mitigate any potential sediment discharge risk and avoid adverse impact on the environment from land disturbance activities during construction.

2 Site Description

2.1 Site Overview

The site is located on May Road, Mount Roskill, and includes the land parcels of 105, 105A-109A and 119 May Road (**Figure 4**). No bulk earthworks are proposed on the separated 119 May Road property. The primary area considered in this assessment ('the site') is therefore 105 and 105A-109A May Road.

Figure 4: Site layout and property titles (image source: Auckland Council GeoMaps).

2.2 Existing Land Use

105A-109A May Road contain multiple warehouses and shed structures, with various stockpiles of wood, household refuse (including plastic and tyres) and earth fill. 105 May Road is predominantly vacant with areas of overgrown vegetation and is currently leased to Watercare Services Limited (Watercare) as part of their Central Interceptor project for offices and equipment storage. To the north of the site is 54 Roma Road, which is owned by Watercare and will be a shaft site for the Central Interceptor tunnel. 119 May Road is a vacant grassed lot with its south-western corner being recently used as a laydown area for the installation of a wastewater pipeline.

2.3 Topography

The site is relatively flat, between 49m and 51mRL, rising gently to the west. There is a low-lying area in the north-western corner of the site. The topography of the site is shown in **Figure 5**.

Figure 5: Existing topography of the site and main drainage pathways (DWG 3126366-CA-1110).

2.4 Receiving Environment

There are three main drainage pathways from the site that are considered receiving environments for site stormwater discharges (**Figure 5**):

- A permanent watercourse (the Foodstuffs stream) that flows along the north-eastern boundary of the site.
- An intermittent watercourse that flows from a public stormwater outlet at 33 Marion Avenue.
- An intermittent watercourse that crosses the centre of the site from a public stormwater outfall and flows into the permanent watercourse at the north-eastern boundary (proposed to be realigned).

All of these drainage channels form upper tributaries of the Oakley Creek which discharges to the Waitematā Harbour approximately 5 km north-west of the site.

All receiving aquatic environments have the potential to be affected by sediment runoff during construction works. Sediment suspended in water can clog fish gills within the stream or limit light penetration, effecting various plant or algal species. Once settled, additional sediment loading can smother benthic organisms or coat plant leaves.

3 Principles of Erosion and Sediment Control

The key principles to be employed for an ESCP are to undertake land disturbing activities in a manner that reduces the potential for erosion of bare soils to occur (erosion control) and to employ treatment devices to treat all sediment laden water prior to discharging from the site (sediment control). The 10 basic principles of erosion and sediment control taken from Auckland Council's Guidance Document 005: Erosion and Sediment Control ('GD05', 2016) will be applied to each of the defined scenarios (as applicable) and are outlined for completeness as follows:

- Minimise Disturbance: Only work those areas required for construction to take place.
- Stage Construction: Carefully plan works to minimise the area of disturbance at any one time.
- Protect steep slopes: Where steep slopes exist within the works area, ensure that these are protected as steep slopes are prone to erosion.
- Protect Watercourses: Map all water bodies before works commence.
- Stabilise exposed areas rapidly with sewing new seed or mulch cover.
- Install perimeter controls: Divert clean water away from areas of disturbance and divert runoff from areas disturbed to sediment control measures.
- Employ detention devices: Treat runoff by methods that allow sediment to settle out.
- Make sure the ESCP evolves: As construction progresses and the nature of land disturbing activities change, the ESCP needs to be modified to reflect the changing conditions on the site.
- Assess and adjust: Inspect, monitor and maintain control measures.
- Use trained and experienced contractors

Any Site-Specific Erosion and Sediment Control Plan (SSESCP) prepared by the Contractor or their delegate as a requirement of any future conditions of consent will be developed and maintained in accordance with GD05.

4 Erosion Controls

4.1 Timing of Earthworks

The contractor shall endeavour to complete earthworks during the Auckland Council's earthwork season (1st October – 30th April). Should earthworks be required outside this period the contractor will apply to Auckland Council for permission to complete works outside this time period following the standard winter works approval process.

4.2 Site Access Points

A stabilised entranceway will be installed at the site entry on May Road and maintained in accordance with GD05 standards. There is an existing concrete entrance and surface to the site and it is anticipated that this can be maintained during the early stages of works before being replaced as necessary to allow works in this area of the site to proceed.

A secondary access is also available via Roma Road and an easement through the Watercare site to the north. If utilised, this access point will also be formed into a stabilised access in accordance with GD05. New stabilised accessways will be formed as the project evolves.

Any sediment tracked or deposited on paved areas from machinery and vehicles leaving the site will be removed at the end of each workday as required. Sediment is to be removed using dry methods only (such as brooms and shovels) to avoid sediment entering the stormwater network via catchpits.

4.3 Limiting Site Length

Disturbance of long slopes increases the potential for water travelling across the site to cause erosion and generate sediment. Limiting the length of exposed slopes is an effective way of reducing the volume of sediment created during works and minimising sediment loss. Given the flat nature of this site and staged filling anticipated, it is unlikely site length will result in increased erosion.

4.4 Minimise Exposed Areas

Where possible works are to be undertaken in a staged manner to minimise the area of disturbance at any one time. By progressively stabilising the site with aggregate, geotextile cloth or hay mulch and grass seed where appropriate, the erosion potential of the site is limited.

4.5 Stabilisation and Reinstatement

Prior to the removal of all erosion and sediment controls, all exposed areas are to be permanently stabilised. This can be achieved through the construction of finalised hardfill or impervious surfaces, or through topsoiling, planting and obtaining at least 80% grass strike. Prior to this, all controls are to remain in place and to be continually maintained.

4.6 Dust Control

Dust will be controlled by water spray as required. Water for dust control purposes will be sourced from public supply applied for at the time of construction, dependent on water availability and any restrictions on use at the time of works. Dust management will need to comply with permitted activity conditions of the Auckland Unitary Plan.

4.7 Stockpiling

All stockpiling of materials is to be carried out in a controlled manner within the catchment of a sediment retention device. If stockpiles are to remain on-site at the end of a workday outside of a control device catchment, temporary stabilisation with geotextile fabric, hay mulch or a similar control is to be implemented.

5 Sediment Controls

Limiting the generation of sediment on site through effective mitigation of erosion should be considered the primary approach on site as opposed to relying on sediment control devices. However, the following sediment control mechanisms will be implemented during works to provide treatment capacity for the volumes of sediment laden discharge that may be generated during earthworks.

5.1 Dirty Water Bunds

In order to convey water from within the active works area to treatment devices, earth bunds are to be constructed around the perimeter of fill areas. These bunds function by both retaining and conveying sediment-laden water within the works area and keeping clean water outside of the works area to reduce the load on treatment devices. These bunds are to be sized adequately to carry flow from a 5% AEP event plus a freeboard of 300 mm as per GD05 standards. Dirty water bunds are only to be decommissioned once all disturbed areas above the bund have been fully stabilised. A schematic showing the basic design criteria of a dirty water bund is shown in **Figure 6.**

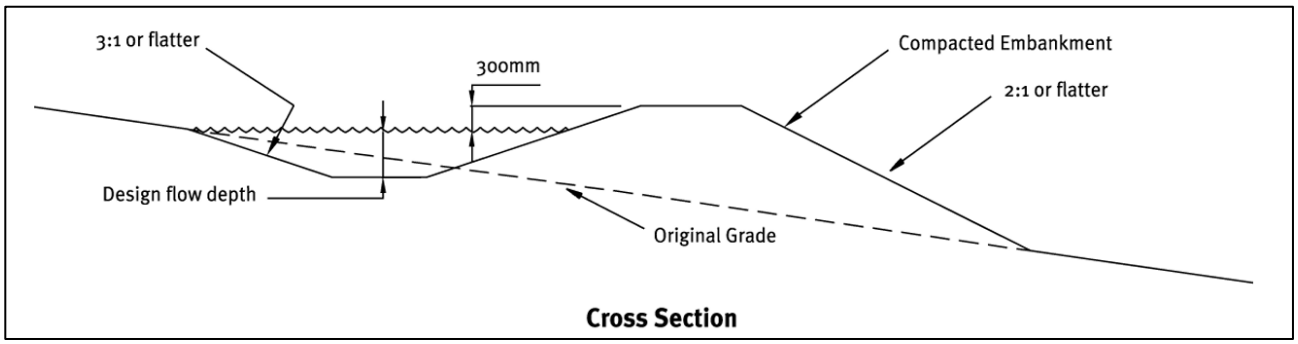


Figure 6: Cross section of a dirty water bund (Source: Auckland Council Guideline Document 2016/005).

5.2 Decanting Earth Bunds and Sediment Retention Ponds

Sediment retention ponds (SRPs) and decanting earth bunds (DEBs) may be implemented throughout the site during works to provide treatment of dirty water discharges. Should either retention device be proposed in the Contractor's SSESCP they will be designed in accordance with GD05 standards. This includes a minimum volume equivalent to 2% of the contributing catchment area, floating T Bar decants and stabilised emergency spillways and discharge points. All final design details are to be provided in the Contractor's SSESCP.

Further detail of a proposed SRP and DEB arrangement is provided in **Section 6** and **Appendix A**.

5.2.1 Flocculation

Chemical flocculation will be used in all SRPs and DEBs, if constructed, to improve their sediment removal efficiency. This flocculation will be with a rain activated dosing system. All flocculation methodology and dosing rates will be detailed in a Flocculation Management Plan (FMP), as required by condition of consent. This approach will allow the appointed contractor to size their flocculation devices specifically to their constructed devices, as detailed in their SSESCP. Provided appropriate levels of treatment are achieved within the SRP, treated water may be discharged to the permanent watercourse that runs along the northern boundary of the site.

5.3 Silt Fences and Super Silt Fences

Silt fences or super silt fences may be installed across the contour to slow sheet flow and impound sediment from small catchment areas. Heavy machinery operation and earthworks will not occur on the downhill side

of silt fences unless it is undertaken following a strict cut and cover methodology for small work areas only. Silt fences and super silt fences will be installed in accordance with GD05 and will remain in place until 80% stabilisation is achieved within their contributing catchment.

6 Staging of Works and Specific ESC Methodologies

It is expected that the fill works required to create the proposed final platform will be undertaken in a staged manner, reducing the area of exposed soils at one time. This will both limit the risk of a discharge of sediment-laden water from the site by reducing the potential for erosion, and increase the efficiency of sediment control devices by reducing the volumes of water requiring treatment at one time.

An indicative staged approach with ESC considerations is detailed below and in **Appendix A**. Further detail of both the approach taken to progressively stabilise fill areas and calculations to support any changes to the size of retention devices are to be outlined in a SSESCP prior to works starting.

6.1 Indicative Staging

6.1.1 Stage A: Bulk earthworks on 105 May Road and stockpiling on 105a May Road

Initial earthworks to reshape the floodplain on 105 May Road will be carried out by Watercare's Central Interceptor contractors. An ESCP has been prepared and submitted with a separate resource consent application (LUC60396321) covering these works.

Parts of 105a – 109a May Road will be cleared and a stockpiling area will be put in place (associated with this ESCP and application) in Stage A. A sediment retention pond (SRP) is proposed to manage runoff from the stockpile area and future Stage B fill area. Dirty water bunds can be constructed around the stockpile area initially to direct stormwater to this retention device.

This SRP detail is provided in **Appendix A**, sized to cater to a 1.86 ha active works area (Stage A and Stage B). The size of the pond may be adjusted through staging of works and progressive stabilisation. The details of any changes to the size or position of these SRPs, along with supporting calculations of retention capacity are to be outlined in a SSESCP prior to works starting. All SRPs are to be constructed in accordance with GD05 guidelines with a minimum volume equivalent to 2% of the contributing catchment area, and will include appropriately sized forebay and retention areas, a floating T-bar decant system and stabilised emergency spillways and discharge points. Further details of the design criteria of an SRP and T-bar system are included in **Appendix A**.

6.1.2 Stage B: Earthworks on 105a and 109a May Road

The SRP constructed for the stockpile in Stage A will remain for Stage B works. During this Stage the dirty water bunds will be extended around the wider 105a-109a May Road work area to accommodate all Stage B earthworks. The SRP will continue to discharge to the intermittent flow path running through the site up until this flow path is decommissioned.

During Stage B a portion of the intermittent flow path running through the site will be temporarily piped to allow filling in this area and the construction of a new stormwater outlet connected to the existing infrastructure. This new outfall daylights into the floodplain area that will form the new stream alignment, however will be temporarily blocked to prevent clean water entering the watercourse. A pump will be used temporarily to direct any stormwater from the existing manhole to the existing channel, allowing a dry works area for the decommissioning of the existing channel running through the site and construction/connection to the new outfall. This work is anticipated to take a maximum of 2 weeks and will be planned for a dry-weather window. As a contingency, a stabilised overland flow path will be constructed to allow stormwater to discharge north into the existing stormwater basin area should the pump fail. Stormwater will continue to discharge to this intermittent channel by the SRP until the new watercourse in Stage C is stabilised.

If the Stage A/B SRP cannot be decommissioned at the same time as the flow path then its outlet will need to be directed to the main stream channel running along the site's eastern boundary. The SRP will remain in place until the Stage A/B area is adequately stabilised.

6.1.3 Stage C: Stream rerouting and final development

Stage 3 involves the construction of the new naturalised flow path within the northwestern corner of the site and continued fill placement within the back half of the site (105 May Road). These two items will be treated as two separate areas to allow clear management of construction stormwater.

A new SRP will be constructed in the low point of this area, positioned outside the footprint of the new flow path construction area. Once constructed, dirty water bunds will be established around the new fill area, extending south towards the Stage B area that has now been stabilised. This process will create a new fill area that is contained, with all potential dirty water being directed to the new SRP. This SRP has the same specifications as the Stage B SRP, provided in **Appendix A**. This SRP will remain in place until the Stage C fill area is adequately stabilised, likely toward the end of the project lifespan.

The flow path construction area will commence with the construction of the new permanent culvert and headwalls associated with the future access point between the 105 May Road and 54 Roma Road properties. This infrastructure will be constructed offline with the use of bunds, isolating this small area. There is no clean water discharging into this area that requires diversion.

A bund will be left in position in the new flow path's work area to prevent dirty water discharging through the new culvert. Excavation will then continue upgradient, towards the new (blocked) outfall in the south, establishing a larger retention area within the flow path's cut channel. Once the flow path and surrounding area is stabilised, the final bund can be removed and this area stabilised and landscaped. At this time the new stormwater outfalls can be livened to allow discharge to the new naturalised flow path. The SRP near this bund will either outlet to the new culvert, or directly to the permanent watercourse running down the eastern boundary. As a contingency, the new flow path work area can have an overland flow path constructed to direct dirty water to the Stage C SRP in the event of a large rainfall event causing backup of stormwater behind the bund. This is considered unlikely given the short duration of works expected. Once livened, the existing intermittent flow path and connection to stormwater can be decommissioned.

The work area associated with the new flow path will largely be cut and constructed into a stormwater retention area associated with Watercare's work in this area. As such, it is anticipated only small volumes of earthworks will be required to achieve the final flow path design in this area, therefore limiting the works duration.

Provided appropriate precautions are taken during the removal of spoil and the permanent watercourse is adequately protected, this stage of works is considered to present a low risk of discharge as all works are within the catchment of adequately sized treatment devices.

6.2 Stream Protection

A key consideration for the management of works is the protection of the permanent watercourse that runs along the north-eastern boundary of the site. No works are to be undertaken within the watercourse, with the exception of stream restoration and riparian planting. The use of earth bunds along the perimeter of this watercourse will allow the staged increase in bund height during fill works to construct the proposed platform, and is outlined in **Appendix A**. The outside of the bund will be stabilised to prevent erosion.

6.3 119 May Road

119 May Road is separated from the remainder of the site by a neighbouring property and will be treated independently. This flat site does not require large volumes of earthworks and can be adequately protected with the use of a DEB constructed near the low point of the site, allowing discharge to an existing stormwater

manhole that will remain. A bund will be constructed surrounding the site to direct internal stormwater flow to this DEB. It is acknowledged that this DEB will be treating a larger than guideline recommended ~5000m^2 catchment, however will only be needed for a short duration and will be sized to the recommended 2% volume threshold. This DEB will remain in place until the 119 May Rd site is stabilised. Due to the flat nature of this site it may be likely that small sections of silt fence are also required should stormwater not be able to be directed to this DEB.

Design detail of this DEB are provided in **Appendix A**.

7 Other Site-Specific Considerations

7.1.1 Contamination

Soil and groundwater contamination has been identified on the site, detailed in the Land Contamination Assessment[1]. This contamination may pose a risk to construction workers on-site and may have implications for the disposal of spoil unsuitable for reuse and the discharge of water beyond the site. All works should be carried out in accordance with the recommendations of this assessment and the subsequent Contaminated Soils Management Plan[2] for the project.

7.1.2 Dewatering

Isolated dewatering may be required during works. Dewatering of stormwater can be undertaken by pumping water directly to a SRP to encourage sedimentation and passive discharge through this device. Alternatively the appointed contractor can dewater through an approved dewatering treatment device, such as a 'turkey's nest', dewatering bag, baffled bin or lamella clarifier. Monitoring of any dewatering will occur while in progress to ensure it does not result in sediment discharge to the receiving drain.

7.1.3 Works within a Flood Plain

Works are proposed within the flood plain. Carrying out works during a dry weather window and adopting a cut and cover methodology where possible the risk associated with working in this area can be minimised. Reducing the exposed areas within the flood plain is a key consideration for this part of the proposed works, along with effective contingency planning to enable the site to be temporarily stabilised quickly in the event of inclement weather.

[1] Land Contamination Assessment, Beca (2021).

[2] Contaminated Soils Management Plan – May Road Development, Beca (2022).

8 ESC Monitoring and Maintenance

The following monitoring and maintenance activities shown in **Table 1** are recommended as a minimum for the site. This table provides several aspects of ESC that the Site Manager will assess regularly to ensure ESC measures are optimised. Final maintenance and monitoring will be detailed in the Contractor's SSESCP.

Table 1: General Inspection and Maintenance Requirements.

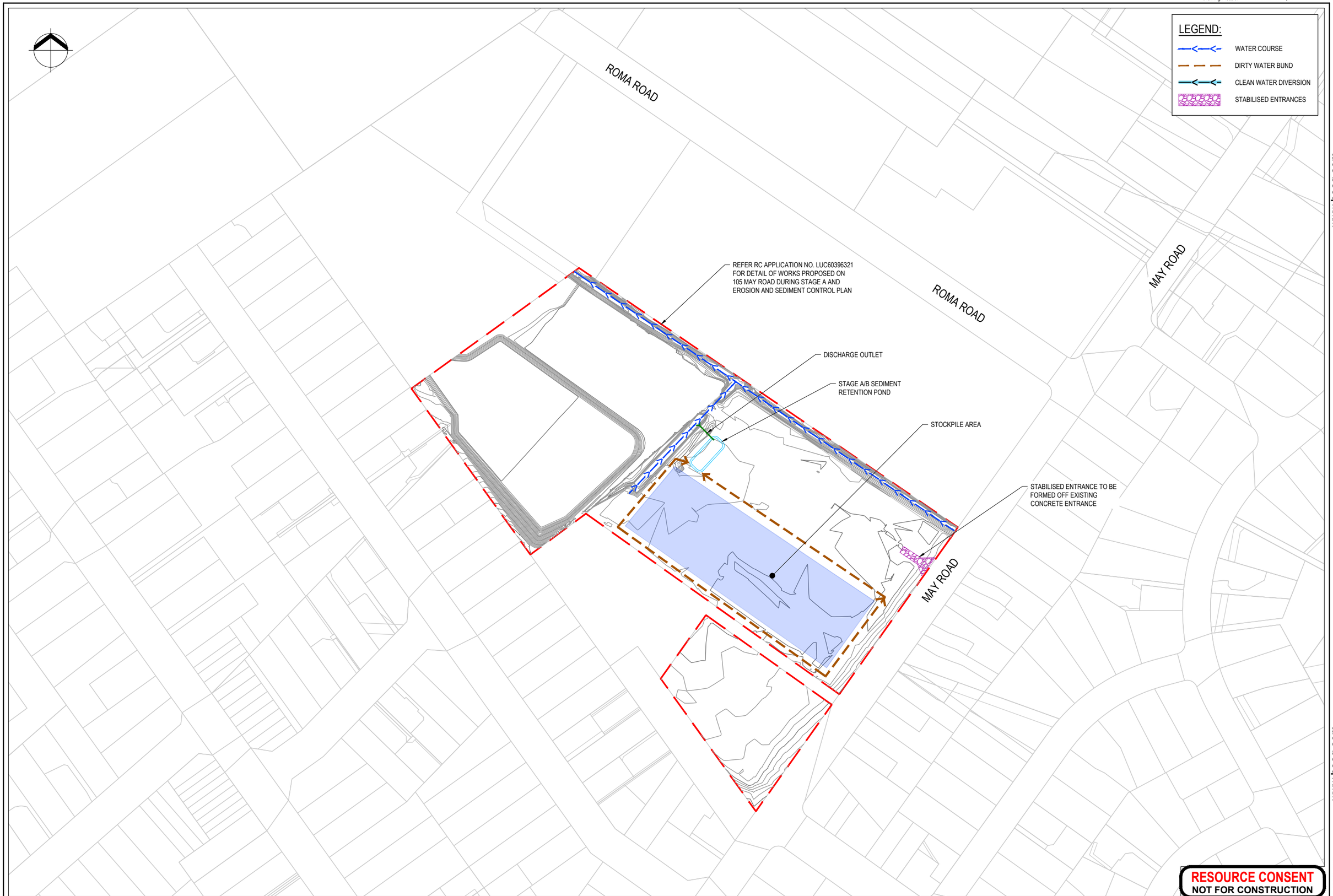
Control Type	Inspection and Maintenance Requirements	Frequency
Weather Forecast	▪ Check forecast provider for rainfall forecasts ▪ Undertake a pre-check of the site controls prior to any large rainfall events (>20mm/24hrs).	Daily during operations
Dirty water diversion bunds	▪ Inspect for scour and repair as required. ▪ Remove any accumulated sediment where there is a risk of overtopping. ▪ Check for damage from machinery and repair as necessary.	Weekly and following rainfall events
Silt fences	▪ Check that silt fences are toed in correctly. ▪ Check for tears and other damage – fix if required. ▪ Any areas of collapse, decomposition or ineffectiveness are to be replaced immediately. ▪ Remove silt build ups when bulges develop or when deposition reaches 20% of the silt fence height.	Weekly
Monitoring of Sediment Discharge	▪ Check whether erosion and sediment devices are operating as designed via checking water clarity in devices and receiving waterways. ▪ Inspect areas of earthworks and identify whether additional erosion and sediment control measures are necessary. ▪ Determine whether excessive sediment is discharging to roadways, land, or watercourses and remediate immediately.	Prior and during rainfall events and weekly
Sediment Retention Ponds and Decanting Earth Bunds	▪ Check clarity of discharge to ensure device is functioning efficiently. ▪ Check inlets and outlets for any signs of scour or erosion – repair or replace stabilising materials as required. ▪ Maintain volume capacity by removing accumulated sediment as required.	Weekly
Stabilised Entranceway	▪ Inspect the stabilised accessway and top up with clean aggregate if required. ▪ Inspect Elstree Avenue and ensure surfaces are not having sediment tracked onto them – sweep if required. ▪ Inspect any structure used to trap sediment from the stabilised entranceway.	Daily during operations
Stabilising Areas	▪ Check that all stabilised areas have at least 80% cover before removing control devices. ▪ Identify areas that require stabilisation and remedy.	Daily during operations.

Control Type	Inspection and Maintenance Requirements	Frequency
Flocculant	▪ Check flocculant device for damage and proper function – repair as required. Adjust levels of flocculant based on observations of discharging water as outlined in the Flocculant Management Plan.	Daily during operations.

A

Appendix A – ESC Schematics

Drawing Plotted: 28 Jun 2022 5:47 pm



RESOURCE CONSENT
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
A	RESOURCE CONSENT	EB	DSP	DSP	28.06.22

Drawing Originator: Beca

Original Scale (A1)	1:1000	Approved For Construction*	
Reduced Scale (A3)	1:2000		
Design	EB	30.05.22	
Drawn	EB	30.05.22	
Dsg Verifier	DSP	30.05.22	
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Client: MAY 1 LIMITED

Project: MAY ROAD DEVELOPMENT

Title: PROPOSED DEVELOPMENT EROSION & SEDIMENT CONTROL PLAN - STAGE A

Discipline: CIVIL

Drawing No.: 3126366-CA-3611

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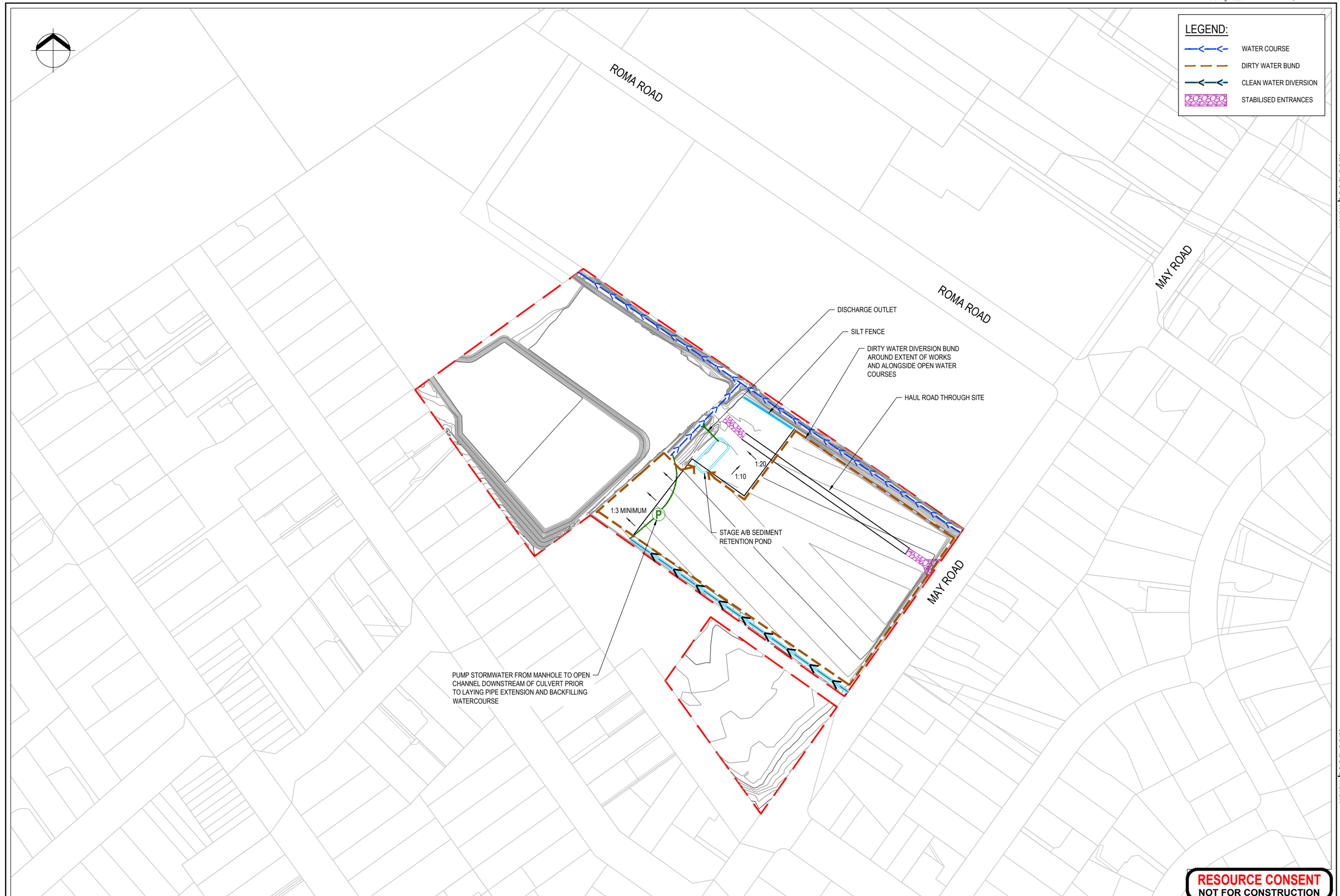

RESOURCE CONSENT
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E	RESOURCE CONSENT	EB	DSP	DSP	28.06.22
D	DRAWING NUMBER CHANGED FROM CA-0031 TO CA-3612	AF	EB	EB	30.05.22
C	RESOURCE CONSENT	EB	DSP	DSP	14.04.22
B	CONCEPT DESIGN - NOTE UPDATE	EKL	EKL	DSP	29.07.21

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Project: MAY ROAD DEVELOPMENT

Title: PROPOSED DEVELOPMENT EROSION & SEDIMENT CONTROL PLAN - STAGE B

Discipline: CIVIL

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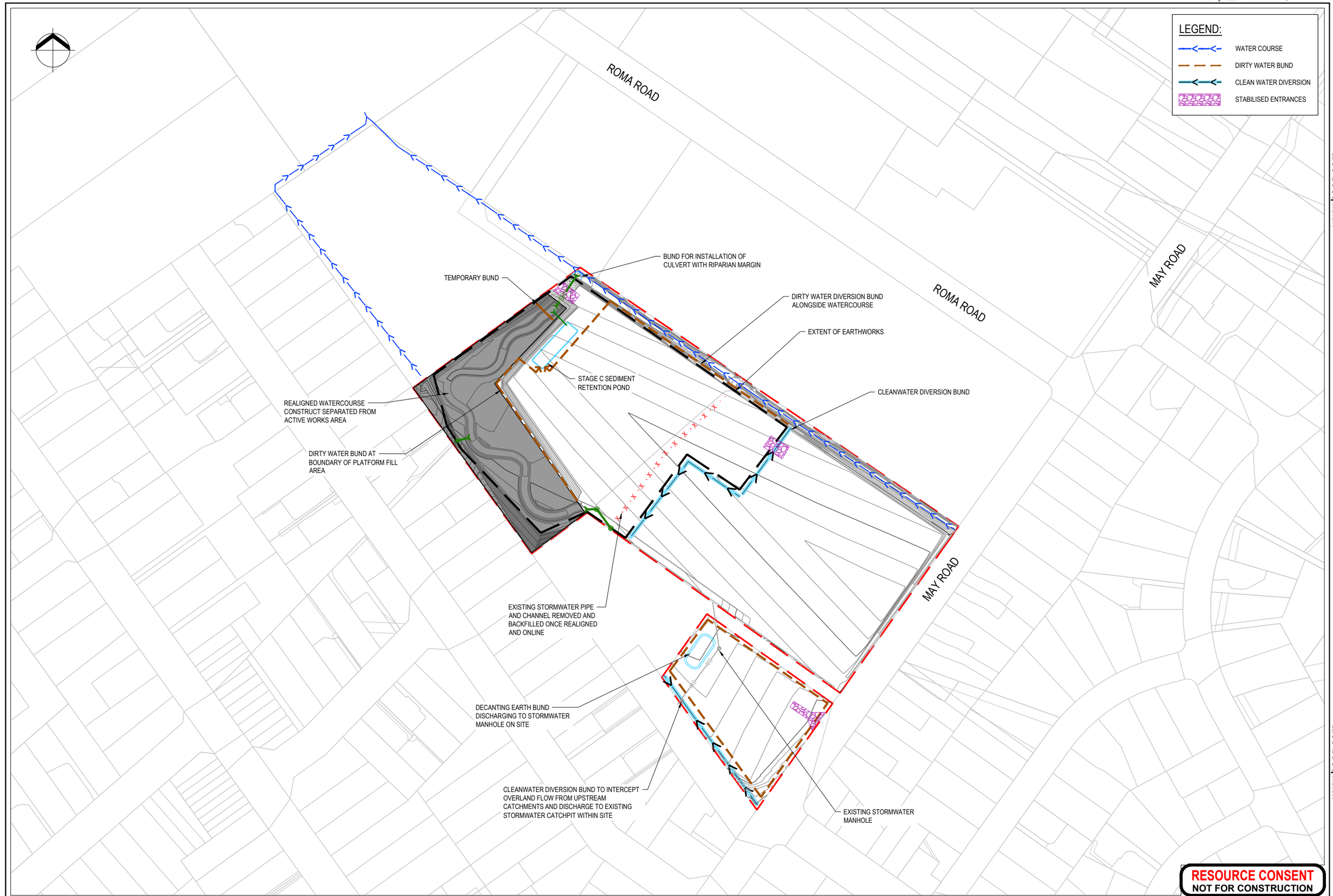

RESOURCE CONSENT
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E	RESOURCE CONSENT	EB	DSP	DSP	28.06.22
D	DRAWING NUMBER CHANGED FROM CA-0032 TO CA-3613	AF	EB	EB	30.05.22
C	RESOURCE CONSENT	EKL	EKL	DSP	03.02.22
B	CONCEPT DESIGN - NOTE UPDATE	EKL	EKL	DSP	29.07.21

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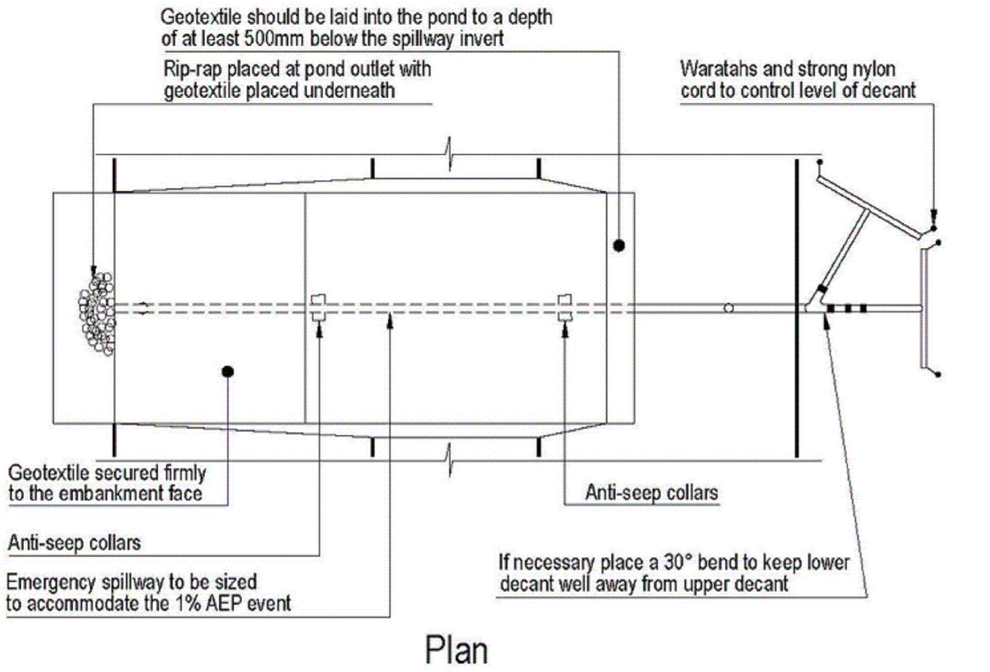

FIGURE 1 - SEDIMENT RETENTION POND FOR 1.5-3ha CATCHMENT PLAN (SOURCE: AUCKLAND COUNCIL 'GD05')

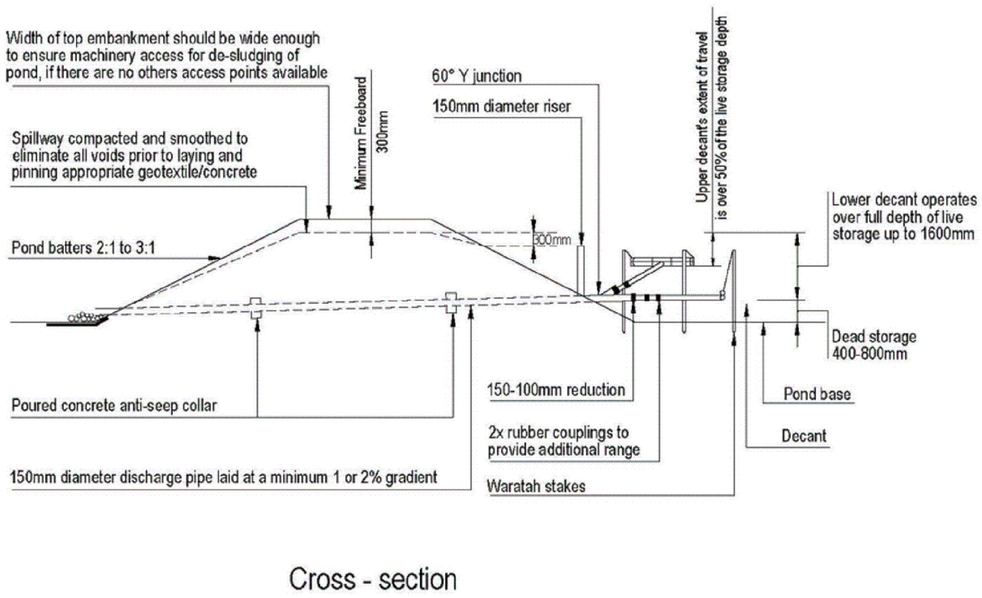

FIGURE 2 - SEDIMENT RETENTION POND FOR 1.5-3ha CATCHMENT CROSS SECTION (SOURCE: AUCKLAND COUNCIL 'GD05')

SEDIMENT RETENTION POND DETAIL	
CATCHMENT AREA (m²)	18,600
STORAGE VOLUME BASIS	2%
STORAGE VOLUME (m³)	372
NUMBER OF DECANTS	2
DECANT HOLES (Ø 10mm)	248
PRIMARY SPILLWAY DIAMETER (mm)	150
OUTLET PIPE DIAMETER (mm)	150
EMERGENCY SPILLWAY WIDTH (m)	3.81
EMERGENCY SPILLWAY DEPTH (mm)	300
SIZING RATIO BASIS	3:1
SRP APPROXIMATE LENGTH (m)	23.6
SRP APPROXIMATE WIDTH (m)	7.9
SRP APPROXIMATE DEPTH (m)	2
FOREBAY APPROXIMATE LENGTH (m)	7.9
FOREBAY APPROXIMATE WIDTH (m)	2.4
FOREBAY APPROXIMATE DEPTH (m)	2
NOTE: SRP AND FOREBAY DIMENSIONS ARE BASED ON 3:1 RATION @ 2m DEEP AND ARE PROVIDED AS APPROXIMATES ONLY WITH NO CONSIDERATION OF BATTER ANGLES. FINAL DIMENSIONS TO BE CONFIRMED ON SITE TO FIT SITE CHARACTERISTICS AND DESIRED DEPTH AND SIZE RATIO.	

DECANTING EARTH BUND DETAIL	
CATCHMENT AREA (m²)	5,000
STORAGE VOLUME BASIS	2%
STORAGE VOLUME (m³)	100
NUMBER OF DECANTS	1
DECANT HOLES (Ø 10mm)	67
PRIMARY SPILLWAY DIAMETER (mm)	150
OUTLET PIPE DIAMETER (mm)	150
EMERGENCY SPILLWAY WIDTH (m)	1.02
EMERGENCY SPILLWAY DEPTH (mm)	300
SIZING RATIO BASIS	NA, ADOPTED 3:1 FOR REFERENCE
DEB APPROXIMATE LENGTH (m)	12.2
DEB APPROXIMATE WIDTH (m)	4.1
DEB APPROXIMATE DEPTH (m)	2
NOTE: FINAL DIMENSIONS TO BE CONFIRMED ONSITE TO FIT SITE CHARACTERISTICS AND DESIRED DEPTH AND SIZE RATIO	

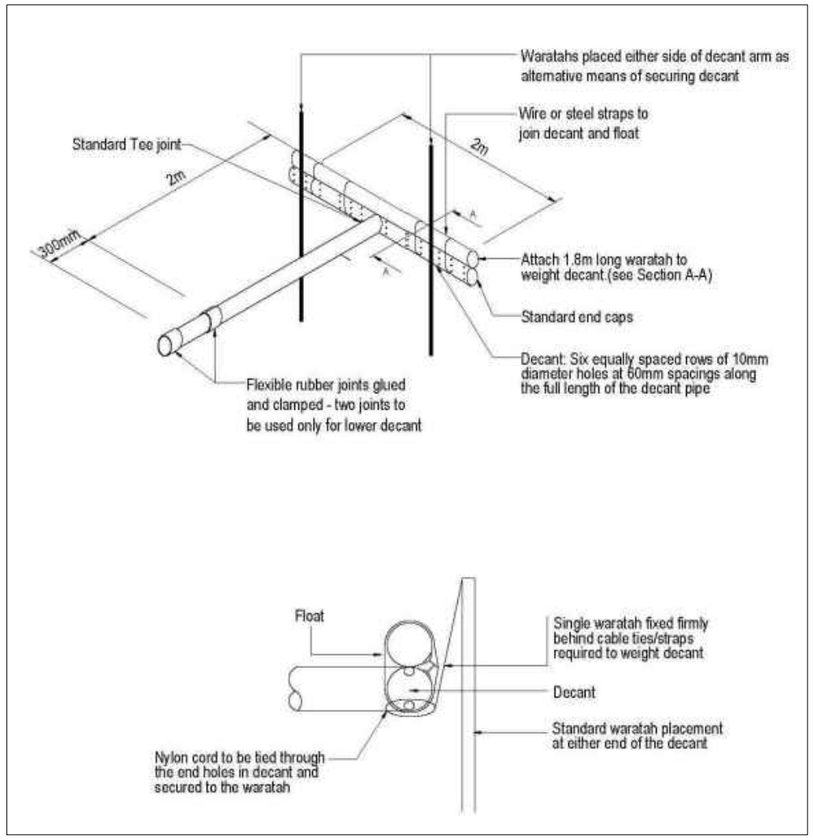

FIGURE 3 - SRP AND DEB T-BAR DESIGN (SOURCE: AUCKLAND COUNCIL 'GD05')

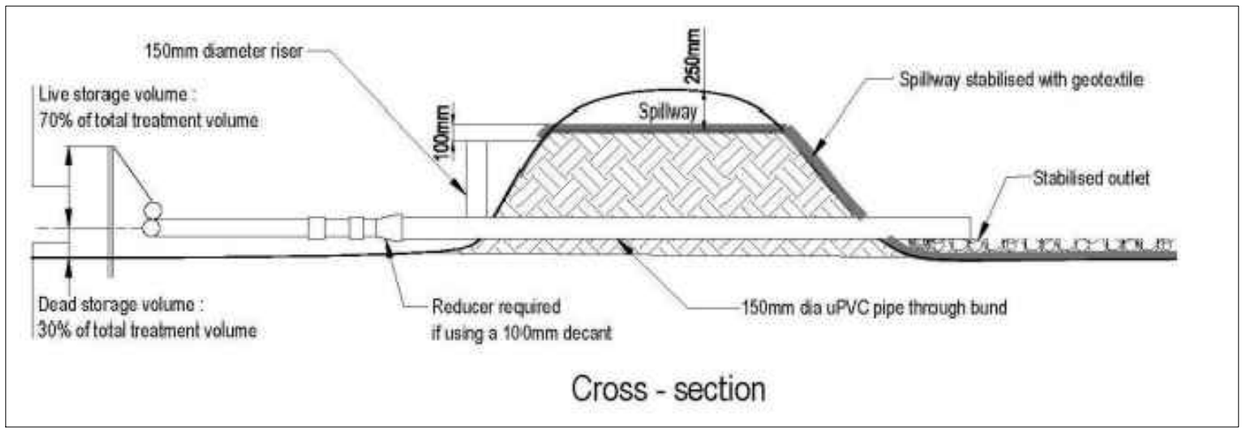

FIGURE 4 - DECANTING EARTH BUND DESIGN (SOURCE: AUCKLAND COUNCIL 'GD05')

RESOURCE CONSENT
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
E	RESOURCE CONSENT	EB	DSP	DSP	28.06.22
D	DRAWING NUMBER CHANGED FROM CA-0033 TO CA-3631	AF	EB	EB	30.05.22
C	RESOURCE CONSENT	EKL	EKL	DSP	03.02.22
B	CONCEPT DESIGN - NOTE UPDATE	EKL	EKL	DSP	29.07.21

Drawing Originator: Beca

Original Scale (A1) NTS	Design	EKL	04.12.20
	Drawn	EKL	04.12.20
Reduced Scale (A3) NTS	Dsg Verifier	DSP	04.12.20
	Dwg Check	SPS	04.12.20

Approved For Construction* Date
* Refer to Revision 1 for Original Signature

Client: MAY 1 LIMITED

Project: MAY ROAD DEVELOPMENT

Title: PROPOSED DEVELOPMENT EROSION & SEDIMENT CONTROL DETAILS

Discipline: CIVIL

Drawing No.: 3126366-CA-3631

Rev.: E