

# ASHBOURNE RETIREMENT VILLAGE DEVELOPMENT

EARTHWORKS MANAGEMENT PLAN

## PROJECT INFORMATION

CLIENT	Unity Developments Limited
PROJECT	J00606

## DOCUMENT CONTROL

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REVISION	A
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# 1. Introduction

## 1.1. Background

Maven Matamata Ltd have been engaged by Unity Developments Ltd to undertake Earthworks Design in support of Ashbourne Retirement Village Development at 247 Station Road, Matamata.

## 1.2. Purpose of this Report

The purpose of this report is to provide an Earthworks Management Plan (EMP) for Ashbourne Residential Development at 247 Station Road, Matamata. The information provided herein outlines the methodology associated with the proposed earthworks onsite. This report is to be read in conjunction with the engineering drawings and is to accompany the resource consent application for land use consent.

## 1.3. Site Description

The Ashbourne Retirement Village area is a circa 20ha block of land within the Matamata-Piako District. The current site access is through 247 Station Road in Matamata. The site adjoins with the new Highgrove Development to the east, and the remainder of the site is surrounded by agricultural land.

There is an existing stormwater swale that follows the northern and eastern boundary. The Waitoa River which runs south to north is approximately 500m to the west of the subject site.

Most of the site is low-lying flat farmland, that is interspersed with artificial farm drains.





## 2. Geotechnical Investigation

A site-specific Geotechnical investigation has been prepared for the development site by CMW. The report identifies the approximate distribution of prevailing landforms and geologies for the local area. The published geological maps for the area generally align with the geology encountered onsite as comprised of cross-bedded pumice sand, silt and gravel of the Hinuera Formation.

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

Unit	Depth to base (m)		Thickness (m)**	
	Min	Max	Min	Max
Topsoil/Fill	0.1	0.5	0.1	0.5
Stiff to Very Stiff Silt (Hinuera Formation)	1.0	1.1	0.5	1
Dense to Very Dense Sand with interbedded Silt (Hinuera Formation)	5.9	17.3	4.9	16.3
Very Stiff to Hard Silt/Clay (Walton Subgroup)	0.1	18.1	9*	18*
Very Dense Silty Sand (Walton Subgroup)	-	-	**	**
Notes: * Strata not encountered within all test locations. **Thickness only recorded where base of strata has been confirmed.				

Table 2: Summary of Strata Encountered

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

## 3. Earthworks and Sediment Control

Earthworks will be undertaken as required throughout the proposed development area in different development phases and will include re-contouring, excavations for drainage reticulation, formation of building platforms and roading networks and, where applicable, construction of retaining walls. Within each development stage, the site will be further divided into different sub-catchment areas where specific erosion and sediment control measures are to be adopted.

### 3.1. Design Standards

Proposed measures for erosion and sediment control have been designed in accordance with Waikato Regional Council's Guide for Soil Disturbing Activities 2009, best practice solutions and the Auckland Council GD 05 document as a further guide where necessary.

### 3.2. Earthworks Onsite Progress and Future Programme

Earthworks will be undertaken in stages and commence when all necessary consents are in place. Once consents are in place, then a start date will be determined in the next earthworks season. It is envisaged that all earthworks will be completed within three earthworks seasons. Applications for Winter Works will only be lodged if required.

It is proposed that the bulk earthworks operation will comprise of three separated work sections (Stages 1 to 3) that will be undertaken independent of each other as shown on the earthwork plans attached in Appendix A.

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

- Install silt control measures, as shown on Engineering Drawings or agreed plans provided at Preconstruction meeting.
- Install sediment controls ponds, clean and dirty water diversion bunds.
- Carry out Bulk Earthworks.
- Install drainage systems, outlets, and riprap.
- Form channel and building platform areas concurrently as site is stabilised.
- Stabilise Road corridors by placing the subgrade improvement layer of brown rock ready for civil construction to place.
- Retain and maintain silt control measures until completion.

### 3.3. Earthworks Summary

As mentioned in the above chapter, the bulk earthworks on site will be divided into three separated work sections. These are from Stage 1 to 3, including stormwater ponds, wastewater pumpstations, and wastewater treatment plant (WWTP). Please refer to the engineering drawings for detail and the extent of works attached in Appendix A.

- Stormwater Pond 1 will be constructed at Stage 1 Earthworks.
- Wastewater Pumpstation will be constructed at Stage 1 Earthworks.
- Wastewater Treatment Plant will be constructed at Stage 1 Earthworks.
- Stormwater Pond 2 will be constructed at Stage 1 Earthworks.

### 3.4. Total Earthworks

Bulk Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	214,800 m <sup>2</sup> (21.4ha)
Total volume of CUT	43,500 m <sup>3</sup>
Total volume of FILL	77,300 m <sup>3</sup>
Total Volume of Net FILL	33,800 m <sup>3</sup>
Maximum CUT and FILL depth	2.8m FILL / 3.4m CUT
Others	
Topsoil stripping (200 mm)	42,960 m <sup>3</sup>

*Table3: Summary of Bulk Earthworks*

#### 3.4.1. Stockpiling Details

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

Stabilisation of stockpiles using hydroseeding or mulch will occur within 7 days of stockpiling.

Stockpiles will be placed within the final Stage 10 footprint, ensuring minimal double handling, and avoiding contamination of clean catchments. Refinement to the filling strategy would see fill material being placed and engineered to avoid further handling or segregation.

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



### 3.5. Stockpile Locations

During the earthworks operations, all excavated materials generated in Stages 1 and 2, will be temporarily stockpiled in Stage 3. These stockpile locations will be strategically selected to ensure minimal disruption to ongoing works and to facilitate efficient rehandling during subsequent stages. The stored material will be reused as fill in future stages (stage 3), in accordance with the Earthworks Plans prepared by Maven Matamata Limited (Ref:C2400). Erosion and sediment control measures will be implemented around stockpiles to prevent environmental impacts and maintain site safety and accessibility.

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

## 4. Existing and Proposed Erosion Control

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

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

Silt control measures will need to be installed onsite, checked, and confirmed acceptable by the Engineer before works commence in the designated areas. During earthworks, the sediment control measures will be maintained such that they function as proposed.

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

### 4.1. Proposed Controls

The following system of silt and sediment control protection measures are proposed:

#### 4.1.1. Erosion Controls

A system of clean water diversions bunds will be placed on the high side of the works to direct run-off away from the earthworks area, thus minimising the overall volume of water requiring treatment.

#### 4.1.2. Sediment Controls

A system of dirty water diversion drains and bunds along the low side of the catchment areas will collect any peripheral runoff and direct it to temporary sedimentation ponds located in natural low-lying areas.

The temporary sedimentation ponds located within each sub-catchment will capture the dirty water. Each pond will be adequately sized spillway design as per WRC TR2009/02 guidelines.

Any areas from which runoff cannot be directed to the natural low-lying areas will have silt fences installed around the low side perimeter.

### 4.2. Potential Environmental Impacts

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

1. That a maximum earthworks area of 20ha shall be opened at any one time.
2. Earthworks shall be effectively stabilised using the following methods:
  - a. Topsoiling and grassing
  - b. Hydroseeding

- c. Using hay or straw mulching
- 3. An adequate supply of water for dust control and effective means of application is always available on-site during earthworks, until such time as the site is fully stabilised.
- 4. Sufficient water will be available for dust mitigation with water storage tanks retained on site until it is fully stabilised. The water tanks will be re-charged via truck and trailer water cart.
- 5. Sufficient water will be available on site with the consented bore providing water for dust suppression and conditioning. Additional water can be trucked in from offsite once the consented bore allocation of 12,500m<sup>3</sup> annually has been spent.
- 6. In the event dust control management is ineffective and if found necessary, the contractor shall employ the use of soil stabilisers (such as polymers or similar) or weatherproof cover where possible.

## 5. Additional Information

### 5.1. Fill Compaction

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

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

Table 4: Fill Compaction Requirements by Soil Types

### 5.2. Monitoring

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

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

A regular program of sediment, debris and trash removal will be undertaken to ensure sediment control measures do not become blocked and ensure they function as proposed. Any large floating matter



including any organic matter, i.e., fallen tree litter, reaching the pond or discharge structures is to be removed immediately.

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

#### 5.2.1. Decant Bund

- Inspect every day and before every forecasted rainfall event. Inspect for correct operation after every runoff event. Immediately repair any damage caused by erosion or construction equipment.
- Inspect Level Spreaders after every rainfall until vegetation is established and promptly undertake any necessary repairs. Ensure vegetation is kept in a healthy and vigorous condition.
- Clean out before the volume of accumulated sediment reaches 20% of the total volume. To assist in gauging sediment loads, clearly mark 20% volume height on the riser.
- Clean out with high-capacity sludge pumps, or with excavators (long reach excavators if needed) loading onto sealed tip trucks or to a secure area.
- Deposit the sediment in such a location so that it does not lead to a direct discharge to receiving environments. Stabilise all disposal sites as required.

#### 5.2.2. Retention Pond

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

#### 5.2.3. Diversion Drains / Clean Water Cut-off Bunds

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

#### 5.2.4. Silt Fence

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

#### 5.2.5. Silt Socks

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

#### 5.2.6. Stabilised Vehicle Entrance

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

### 5.3. Stabilisation

Stabilisation of earthworks areas shall be undertaken progressively as final ground levels are reached or where works are temporarily paused for more than 14 days.

The following stabilisation measures and timing are proposed in line with WRC guidelines:

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

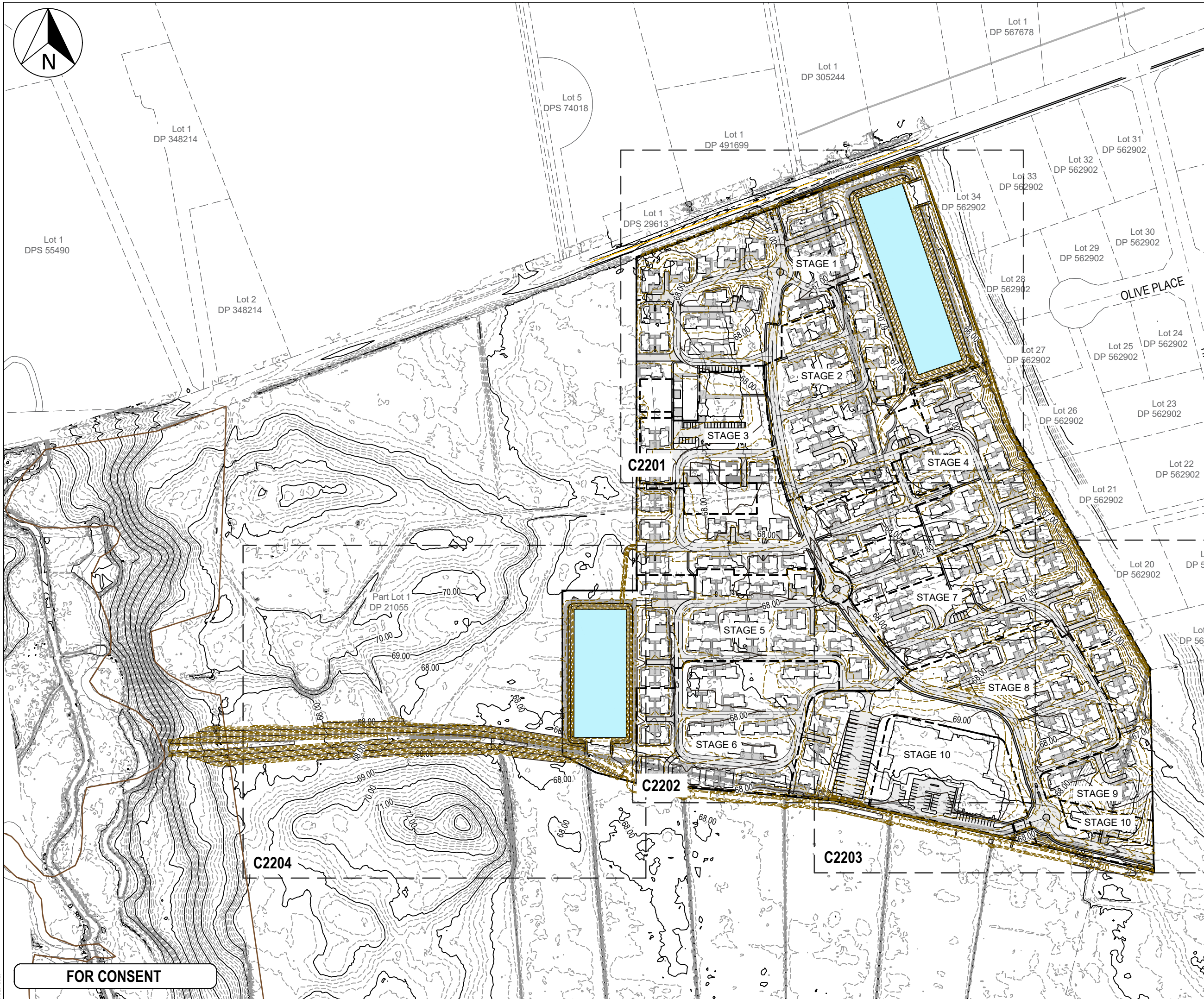
*Table 5: Stabilisation Measures and Timing in WRC Guidelines*

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



## Appendix A – Earthworks Drawings





**FOR CONSENT**

- Notes
1. All works to be in accordance with MPDC and RITS standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000.
3. Reduced Levels are in terms of NZVD 2016.
4. Contour interval Major 1m Minor 0.2m
5. It is the contractors responsibility to locate all services that may be affected by their operations.
6. The contractor shall comply with all relevant Health and Safety requirements.
7. The contractor shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Sediment control shall be installed and operational before earthworks start onsite in accordance with council standards.
9. Contractor shall provide asbuilt of working sediment control devices and confirmation of pond/decent volumes to engineer.
10. Sediment control to comply with Waikato Regional Council Erosion and Sediment Control:guidelines for soil disturbing activities TR2009/02.

LEGEND

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

B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	01/25
Rev	Description	By	Date
	By	Date	
Survey	MAVEN	10/2024	
Design	KQ	04/2025	
Drawn	DP	04/2025	
Checked	SB	04/2025	



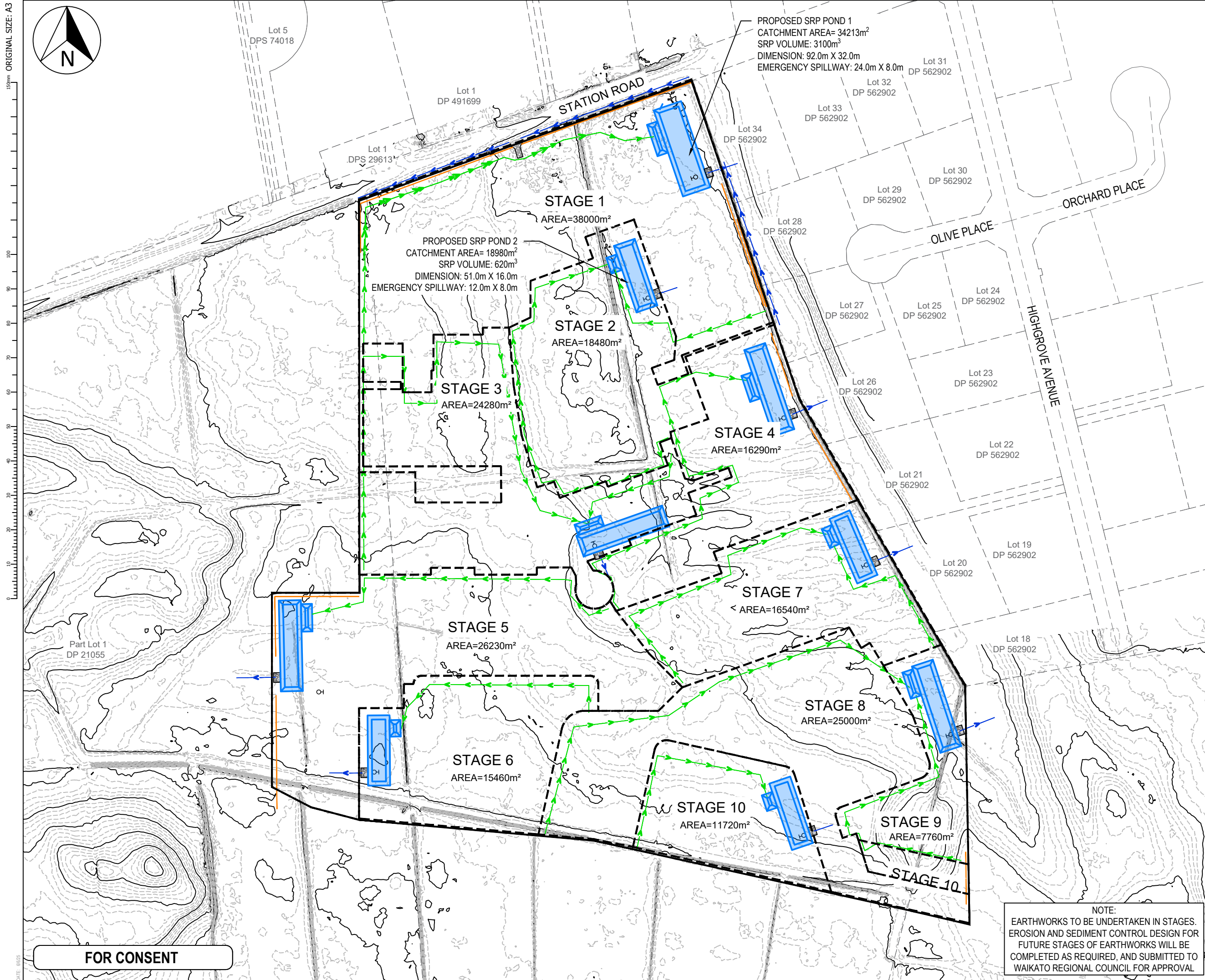
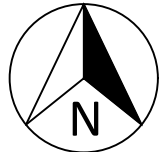
Project  
**ASHBOURNE  
RETIREMENT VILLAGE  
MATAMATA  
FOR  
UNITY DEVELOPMENT LTD**

Title

**PROPOSED OVERVIEW  
CONTOUR  
PLAN**

Project no.	J00606		
Scale	1:2500@A3		
Cad file	C2200 - PGL.DWG		
Drawing no.	C2200	Rev	<b>B</b>





- Notes
1. All works to be constructed in accordance with Waikato Regional Infrastructure Technical Specifications (RITS).
  2. Levels in terms of the NZVD16.
  3. All dust, sediment, erosion control and temporary stormwater discharge shall be undertaken in accordance with Environment Waikato Regional Council's "Erosion And Sediment Control Guidelines for Land Disturbing Activities".
  4. All erosion and sediment control measures should be in place before land-disturbing activities start and only removed when the site is stabilised.
  5. Always talk to your environment WRC representative to obtain accurate and up-to-date advice.
  6. It is contractor's responsibility to ensure that soil is kept on site and to ensure that the road is clean.
  7. The contractor shall comply with all relevant health and safety requirements.
  8. Use stabilised entrance in association with silt fences.

Legend

---	EX BDY
---	EX MAJOR CONTOUR
---	EX MINOR CONTOUR
---	PROP BDY
---	STAGING BDY
---	PROP CLEAN WATER
---	PROP DIRTY WATER
---	PROP SEDIMENT
---	RETENTION POND
---	PROP DECANT
---	PROP SILT FENCE

B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	01/25
Rev	Description	By	Date
Survey	MAVEN		10/2024
Design	KQ		04/2025
Drawn	KQ		04/2025
Checked	SB		04/2025



Project  
**ASHBOURNE  
RETIREMENT VILLAGE  
MATAMATA  
FOR  
UNITY DEVELOPMENT LTD**

Title  
**PROPOSED  
EROSION & SEDIMENT  
CONTROL PLAN**

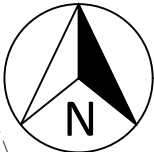
Project no.	J00606
Scale	1:2500@A3
Cad file	C2300 - ESC.DWG
Drawing no.	C2300
Rev	<b>B</b>

NOTE:  
EARTHWORKS TO BE UNDERTAKEN IN STAGES.  
EROSION AND SEDIMENT CONTROL DESIGN FOR  
FUTURE STAGES OF EARTHWORKS WILL BE  
COMPLETED AS REQUIRED, AND SUBMITTED TO  
WAIKATO REGIONAL COUNCIL FOR APPROVAL

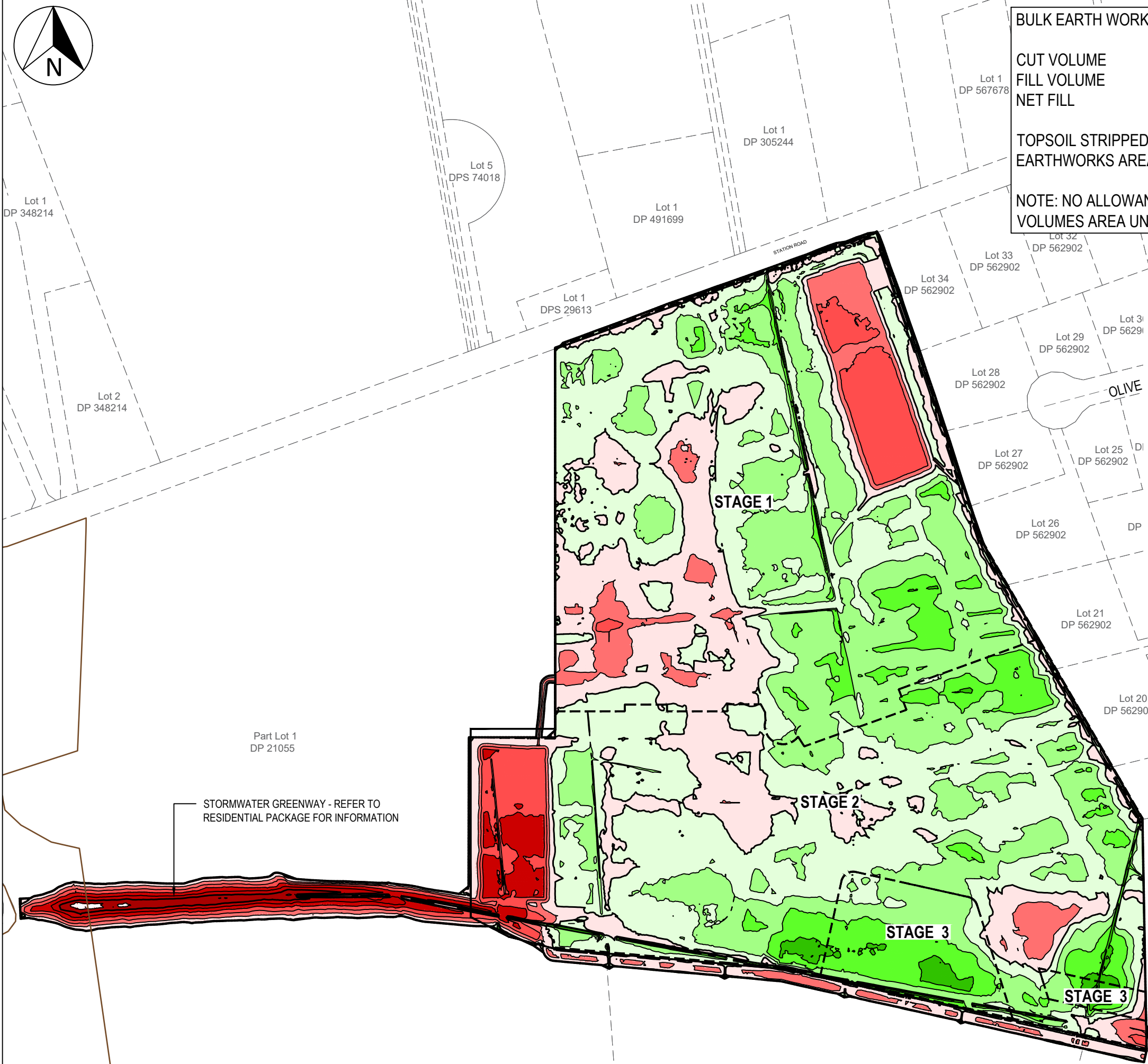
**FOR CONSENT**



ORIGINAL SIZE: A3



150m  
100  
80  
60  
40  
20  
0



BULK EARTH WORKS

CUT VOLUME 43500 m<sup>3</sup>  
FILL VOLUME 77300 m<sup>3</sup>  
NET FILL 33800 m<sup>3</sup>

TOPSOIL STRIPPED (200mm) = 42960 m<sup>3</sup>  
EARTHWORKS AREA = 214800 m<sup>2</sup>

NOTE: NO ALLOWANCE FOR SERVICES TRENCHES,  
VOLUMES AREA UNFACTORED AND IN SITU

Cut/Fill Table			
Number #	Minimum Elevation	Maximum Elevation	Color
1	-3.000	-2.500	
2	-2.500	-2.000	
3	-2.000	-1.500	
4	-1.500	-1.000	
5	-1.000	-0.500	
6	-0.500	0.000	
7	0.000	0.500	
8	0.500	1.000	
9	1.000	1.500	
10	1.500	2.000	
11	2.000	2.500	

- NOTES
1. Levels in terms of NZVD 2016.
  2. Contour interval 0.5m.
  3. All dust, sediment, erosion control and temporary stormwater discharge shall be undertaken in accordance with Waikato Regional Council's "Erosion and Sediment Control Guidelines for Land Disturbing Activities".
  4. Contractor to locate the existing services prior to construction.
  5. All excavation works are to be in accordance with work safe - "Excavation Safety Guidelines".
  6. The contractor shall obtain all necessary approvals from utility operators before commencing work in close proximity to their services.
  7. Permanent cut or fill batter to be formed maximum gradient of 1v:3h.

- LEGEND
- EX BDY
  - PROP BDY
  - EARTHWORKS
  - STAGING BDY

B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	12/24
Rev	Description	By	Date
Survey	MAVEN		10/2024
Design	KQ		04/2025
Drawn	DP		04/2025
Checked	SB		04/2025



Project  
**ASHBOURNE  
RETIREMENT VILLAGE  
MATAMATA  
FOR  
UNITY DEVELOPMENT LTD**

Title  
**PROPOSED  
CUT / FILL  
PLAN**

Project no.	J00606		
Scale	1:3000@A3		
Cad file	C2200 - PGL.DWG		
Drawing no.	C2400	Rev	<b>B</b>

FOR CONSENT

DATE: 05/25

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