

# ASHBOURNE RETIREMENT VILLAGE

## Construction Management Plan

## PROJECT INFORMATION

CLIENT	Unity Developments Limited
PROJECT	J00606

## DOCUMENT CONTROL

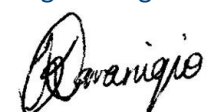
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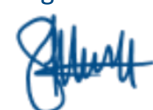
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## 1. Introduction

### 1.1. Background

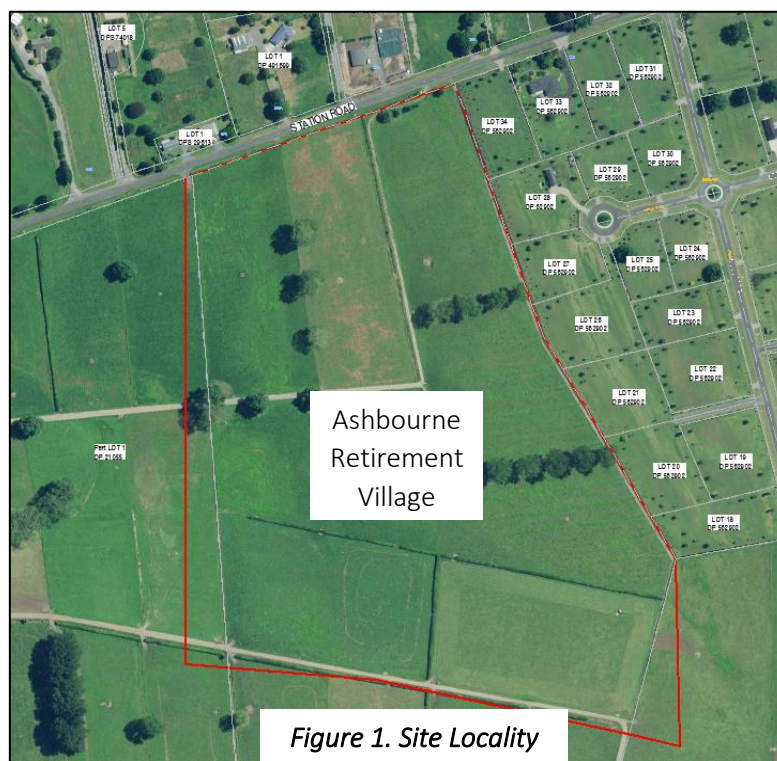
Maven Matamata Ltd have been engaged by Unity Developments Ltd to undertake Construction Management Plan in support of Ashbourne Retirement Village Development at 247 Station Road, Matamata.

### 1.2. 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. Proposed Earthworks

Earthworks will include re-contouring, excavations for drainage reticulation, formation of building platforms, and roading. The site will contain specific erosion and sediment control measures suitable to control the Earthworks area.

### 2.1. 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 1 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)	-	-	**	**
<b>Notes:</b> * Strata not encountered within all test locations. **Thickness only recorded where base of strata has been confirmed.				

*Table 1: Summary of Strata Encountered*

Ground water level adopted for the design is RL 64.35, Northeast of the development and RL 65.31 South West.

Adopted Soakage rate results of 206.5mm/hr and 100mm/h design soakage rate with a 0.5 factor conservatism.

A subgrade CBR of 6 was adopted based on Geotech result Hand Auger Borehole logs within the retirement village area.

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.

For more information, please refer to CMW Geotechnical Investigation Report submitted at this application.

## 2.2. Bulk Earthworks

The total bulk earthworks for whole site is summarized in table 2 below:

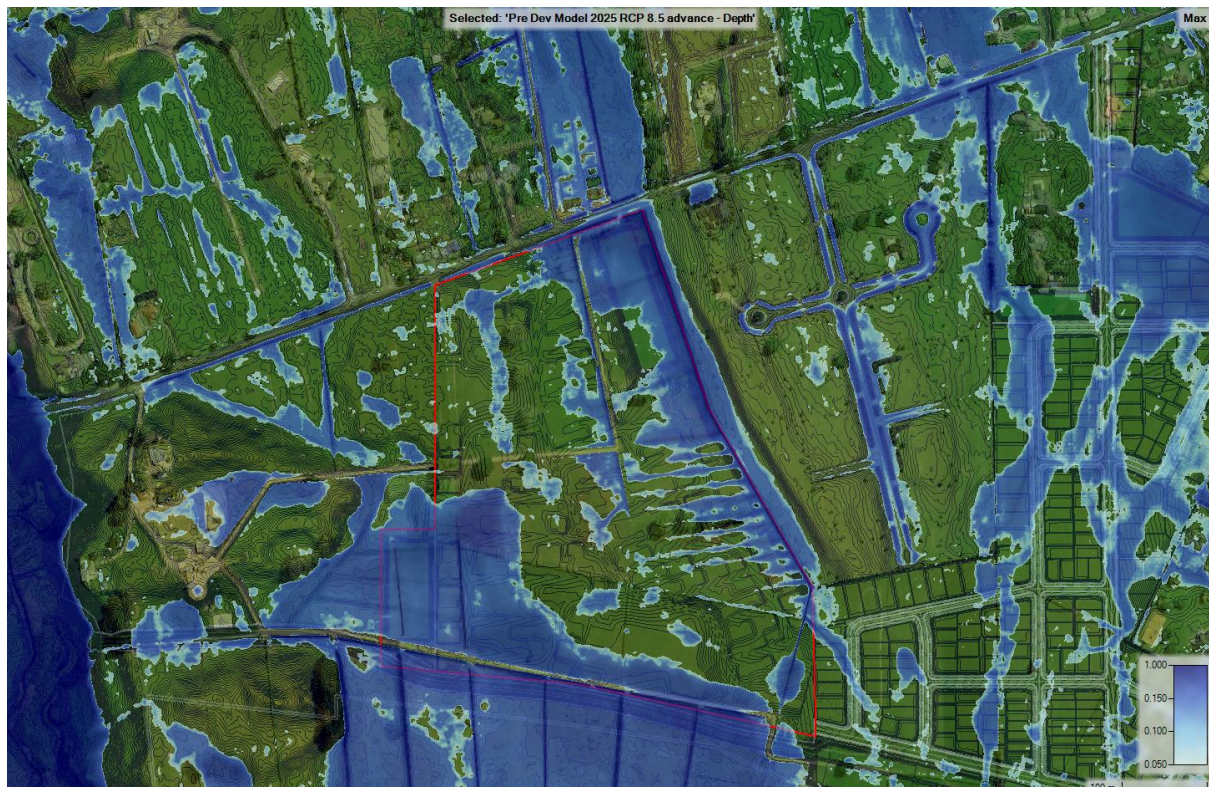
Bulk Earthworks (topsoil stripping exclusive)	
Total area of ground disturbance	214,800 m <sup>2</sup> (21.4ha)
Total volume of CUT	43,500 m <sup>3</sup>
Total volume of FILL	77,300 m <sup>3</sup>
Total Volume of Net FILL	33,800 m <sup>3</sup>
Maximum CUT and FILL depth	2.8m FILL / 3.4m CUT
Others	
Topsoil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

*Table 2: Summary of Bulk Earthworks*

## 2.3. Site Constraints

### 2.3.1. Earthworks within Existing Flood Plain

The proposed site comprises multiple interconnected overland flow path and ponding areas dictated by the existing topography of the surface, surrounding rural land uses and primary drainage with hydrology conditions as assumed in the model. Below is a depiction of the overall overview of flooding across the entire 4 sites and surroundings including Waitoa River.



Given the inherent characteristics of the site, there is a risk of floodwaters encroaching upon the designated earthwork area. While this risk is considerable, it can be effectively mitigated through a range of controls, which include but are not restricted to the following:

- Earthworks will only be undertaken during the approved earthwork season unless a Winter Works application is submitted and approved by relevant authorities.
- In a high-risk location only open a small manageable earthwork area at a time.
- Create low flow diversion channels to divert any existing drains away from earthwork areas.
- Stabilise the earthworks site when a large rainfall event is forecasted.

### 2.3.2. Earthworks with High Groundwater Level (Perched Groundwater)

A high groundwater level (perched) is expected in wastewater pipe trench excavation and other high cut areas. The presence of high groundwater levels (perched) can potentially impede the progress of earthwork operations and simultaneously present a substantial health and safety risk to the project.

This risk can be addressed by, but is not limited to, the following controls:

- Construct the cut-off drain from the downstream end working back upstream;
- Install subsoil drains as per the Geotechnical Engineer recommendations to lower the groundwater level;
- Undertake the earthwork operations during the earthwork season to avoid heavy rainfall events; and/or

- Install a dewatering regularly spaced pumps to lower the ground water prior-to and during earthwork operations.

Wallbridge Gilvert Aztec Ltd has been tasked with preparing the Hydrogeological Assessment of Effects for the Ashbourne construction. Please refer to this specialist report in the resource consent application documentation for further information.

### 2.3.3. Sensitive Receiving Environment

Stormwater runoff from the greenway is proposed to be discharged to Waitoa river (receiving environment).

To safeguard this significant receiving environment, a comprehensive erosion and sediment control strategy has been developed to effectively manage and enhance the water quality of sediment-laden water, ensuring it complies with the aforementioned specification. The mitigation measures include, but are not limited to, the following:

- All water runoff originating from within the earthworks site must be captured by either a Sediment Retention Pond (SRP) or a Decanting Earth Bund (DEB).
- The use of flocculant treatment is mandatory for all DEBs and SRPs.
- Prior to commencing bulk earthworks within their respective catchments, the treated water from all DEBs and SRPs must undergo testing to verify the effectiveness of these devices in terms of water treatment. Additionally, their water treatment efficiency should be assessed on a monthly basis or following significant rainfall events.
- Where pumping is necessary for treated water discharge, a manhole is required for the DEB or SRP. The pump unit will be situated within the manhole and will exclusively discharge treated water.
- The pumped treated water will be directed towards a grass swale, which will provide additional water quality treatment before discharging into the existing channel or stream.
- Groundwater resulting from dewatering operations should be discharged into a dedicated SRP or DEB to ensure water quality treatment before entering the existing stormwater channel or stream.
- In cases where DEBs and SRPs are not feasible, other sediment control methods, such as silt fences, may be employed at the discretion of the monitoring officer. However, it is important to note that the exposed earthwork area should be limited to less than 1000 square metres and must be completed and stabilised within a single day. Additionally, no earthworks should commence if rain is forecasted.

### 2.3.4. Ecology

EcoResto will undertake an Assessment of Ecological Effects in support of the resource consent application.

### 2.3.5. Contamination

SLR Consulting has been commissioned to prepare a Preliminary & Detailed Site Investigation (DSI) for the proposed earthworks extent. It is expected that any contaminated material will be removed and carted to landfill prior-to any large earthwork operation being undertaken. The recommendation from the DSI report will be followed throughout the earthwork operation.



### 2.3.6. Iwi Consultation

There is extensive consultation with iwi at the early phase of the project. Furthermore, Te Hira has been tasked to prepare a Cultural Impact Assessment report to address any potential impact from the project. Please refer to the Cultural Impact Assessment report for more information.

### 2.4. Geotechnical Investigation and Management

Various Geotechnical reports have been provided by CMW to support the fast-track resources consent application. The recommendations of which have been incorporated into the civil design and construction methodology.

The Geotechnical reports advise that, based on the available ground investigation, excavations are expected to be able to be carried out using conventional earth working equipment, such as excavators, bulldozers, and scrapers.

#### Geotechnical Risk Management

Geotechnical recommendations to be adopted in the detailed design will reduce risk during construction, such as.

- To accommodate the liquefaction potential on the site, Hybrid TC2/TC3 foundations will be anticipated.
- Controlling surface run-off to reduce infiltration of the water into the ground
- Improving the ground in soft areas
- Pumping to control ground water level
- Special construction techniques
- Mitigating the risks associated with temporary batter stability through proactive design and site management.
- Stockpiles to be away from the riverbank.
- Anticipating overland flows from storm events by design and installation of measures to mitigate.
- Consideration to be given to batter stability of proposed ponds at design and construction phase.
- The length of excavation open at any one time will be minimised, as far as practicable, with due recognition of and depending on several factors, such as local ground conditions, groundwater, weather, depth of excavations, the presence of geological defects, and the earthworks equipment and methodology used.
- Staging excavation which reduces support to slopes or creates temporary over-steepened slopes, to ensure that large areas are not left unsupported.
- Ensuring that slope angles in temporary batters are suitable and stable.
- Ceasing works during rainfall and assessing the stability of excavations following rainfall events, prior to resuming work.
- Benching or battering back excavated faces.
- Avoid loading the crests of slopes and excavations (including loading with a working plant, or with excavated material).
- Seeking advice from the Geotechnical Engineer where there is doubt as to the stability of a slope and for geological defects in the soil or rock mass, particularly where these are exposed in excavation faces.

#### Geotechnical Construction Observation

Several elements of the construction work necessitate engineering observation, subject to approval by the Geotechnical Engineer during the construction process. These elements include, but are not limited to:

- Observation and logging of under fill drains and undercut excavations confirm depth extents.
- Foundations and preparation of natural ground prior to fill placement.
- Subsurface drainage installation and extents, including the quality of drainage aggregate.
- Installation of geogrids and geotextiles.
- Fill placement. Regular compaction control testing is required in accordance with the earthwork specification.
- Blending of unsuitable materials, and the observation of placement performance and regular intervals during the works.
- Settlement monitoring at the stream

## 2.5. Consent Condition and Council Involvement

No earthworks will be undertaken prior to the approval of the monitoring officer, in that all the pre-construction conditions have been satisfied, and the sediment and erosion control has been established on site to meet the WRC Erosion & Sediment Control Guidelines for Soil Disturbing Activities TR0902.

## 2.6. Program of Works

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 for each work section:

- Install silt control measures, as shown on Engineering Drawings
- Strip topsoil to stockpile, or screen and sell to the public
- Cut effected areas and construct retaining walls as required.
- Carry out remaining bulk earthworks
- Stabilise site using topsoil, grassing, metal or other methods as required
- Retain silt control measures until the earthwork area is stabilised

## 2.7. Earthworks Summary

The bulk earthworks on site will be divided into three separated work sections. These are from Stage 1 to 3, including stormwater ponds, wastewater pumpstation, 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 within Stage 1 of the development.

Stormwater Pond 2 will be constructed within Stage 2 of the development.

Wastewater Pumpstation and WWTP will be constructed within Stage 1 Earthworks.

# 3. Earthworks Operation

## 3.1. Environmental Aspects

This section details the minimum requirements for environmental management processes and procedures to be implemented on site, to mitigate actual and potential risks associated with the

construction of the Ashbourne project. Management plans prepared by the contractor are to be consistent with these aspects.

### 3.1.1. General Environmental Objectives and Targets

Potential environmental objectives and targets relating to this CMP are described in the table below and will be confirmed with the contractor.

Objective	Target	Proposed KPI
<b>Environmental Compliance</b> Ensure the Project operates in accordance with all Designation and Resource Consent/NOR Conditions and relevant environmental related legislation.	Zero penalty infringement notices or prosecutions for breaches of environmental related legislation. No infringement or abatement letters from authorities.	Number of notices or prosecutions. Number of warning or pre-enforcement letters. Percentage of compliance with conditions of Consent
<b>Earthworks Compliance</b> Ensure the Project operates in accordance with WRC / NZTA Best practice for ESCPs and ESC in accordance with WRC Site Scoring System	Good earthworks performance on site Reduced potential for enforcement actions Better environmental outcomes Enhance opportunity for flexibility in earthworks programme	Number of 1 (fully compliant) scores Percentage of 2-4 scores
<b>Training</b> Train Project personnel in environmental management.	Implement training & awareness programs that promote compliance, improving environmental performance & skill base of staff and workers on the Project and minimise environmental risk.	100% of relevant Project staff receiving environmental training.
<b>Flora, Fauna and Receiving Environments</b> Manage effects of construction activities to minimise impacts on flora, fauna and receiving environments	No unauthorised impact to flora, fauna and receiving environments from construction.	Number of flora, fauna and receiving environments items impacted unlawfully.
<b>Community</b> Manage community and stakeholder relationship to minimise impacts from construction activities	Engage directly with sensitive receivers, key stakeholders, and relevant community groups Respond to complaints within a of days/hours of receipt	Number of complaints and time taken to resolve issues Number of complaints managed effectively within nominated timeframe
<b>Quality</b> Ensure environmental & related audit actions are closed out within the agreed timeframes.	No overdue audit actions.	Number overdue audit actions. Percentage of audit actions completed on time

*Table 3: Potential environmental objectives and targets*

### 3.1.2. General Environmental Risks & Opportunities

The table below presents indicators of key environmental performance issues identified in initial desk top risk assessments undertaken for the purpose of developing this plan. Confirmation with the contractor will be undertaken prior to works commencing. The risks identified in initial reviews and site visits will be used to inform and update, where necessary, environmental aspects and impacts which are described in the table below.



Aspect/Risk	Potential Impact
Erosion and Sediment Control	Uncontrolled discharge of sediment to receiving environment Pollution or degradation Loss of reputation Additional costs to remediate Potential delays
Water Quality	Uncontrolled discharge of concrete wash out / slurry Pollutant discharge to receiving environment Uncontrolled discharge of sediment to receiving environment Environmental damage Loss of reputation Additional costs to remediate Potential delays
Noise	Excessive noise generated by the project activities Loss of reputation Additional costs to remediate Potential delays
Archaeology	Items, structures, locations of cultural significance damaged or destroyed by project activities Loss of reputation Additional costs to remediate Potential delays
Landscape	Landscaping elements do not achieve desired coverage, become weed infested, fail, do not achieve ecological or urban design outcomes. Extended maintenance/re-planting programme Revegetation Restoration objectives not achieved Additional costs to remediate Loss of reputation
Vibration	Excessive vibration caused by project activities Degradation of property outside site Loss of reputation Additional costs to remediate Potential delays
Air Quality (Dust)	Dust created by work activities Pollution or degradation that has impacts on the community and / or environment Loss of reputation Additional costs to remediate Potential delays
Contamination	Uncontrolled cross contamination of site due to ground contamination Health and safety implications Environmental damage Loss of reputation Additional costs to remediate Potential delays

Hazardous Substances / Dangerous Goods	Uncontrolled release of hazardous substances / dangerous goods Health and safety implications Environmental damage Loss of reputation Additional costs to remediate Potential delays
Waste	Waste management activities not in accordance with regulatory and project requirements Environmental damage Loss of reputation Additional costs to remediate Potential delays
Behaviours	Poor uptake of project values and behaviours by staff Negative perception of company / project in wider stakeholder community
Culverts and Stream Diversion	Environmental damage (e.g., sediment impacts on water quality) Fauna lost, through disruption of aquatic fauna plant strike Poor design and/or construction leading to inadequate aquatic habitat Flora dieback/lost Loss of reputation Negative perception of company / project in wider stakeholder community Potential delays

*Table 4: Identified Key Risks and Potential Impacts*

These aspects/risks identified in the table above and subsequent risk assessment with the contractor will be used to inform the preparation of site-specific method statements.

### 3.1.3. Environmental Monitoring

Monitoring of environmental performance and regulatory compliance with resource consents and NOR conditions are required during the construction phase of the project. The contractor will identify a program which defines, at a minimum, general site monitoring (scheduled and unscheduled); environmental training; and site inductions along with incident response and reporting.

## 3.2. Health and Safety

A site-specific Health and Safety Plan will be provided by the Contractor prior to start of any works. This document will encapsulate routine monitoring measures, emergency responses, and the required documentation. It is imperative to note that this Health and Safety Plan will be dynamic, undergoing regular updates to address all emerging health and safety concerns.

To ensure the safety of all, a protective barrier in the form of safety fencing will be erected around the work extent. Access points to the site will be monitored and controlled by a gate and perimeter fencing. Relevant signage will be affixed to this fencing for clear communication. All construction-related vehicular movement will be streamlined through distinct, predetermined, and well-marked access points.

To maintain a continuous dialogue about health and safety measures, weekly toolbox meetings will be convened on-site. These meetings will be centred around discussions of potential risks associated with the week's scheduled activities and the strategies to mitigate them.

All personal involved in this site construction work, including visitors, are required to complete site induction every year to ensure on-going familiarity with risks present on this construction site. Visitors to the construction site will be obliged to comply with the requirements of the site-specific Health and Safety Plan upon entry and shall be escorted by a nominated contractor personnel throughout their visit.

### 3.3. Access/Haul Roads

The site will have one main accessway which will be utilised based on specific earthworks operation on site. This entrance will be the primary site entrance and will be utilised during construction and is located at Station Road. It is expected that these site accesses will be fenced off and monitored by the contractor. Only authorised personnel and nominated visitors can enter the construction site. This also includes ingress for emergency vehicles as dictated by signage at the site entrance.

The Bulk earthworks operation will require multiple haul roads for transporting the cut and fill material. The access track and haul road have the following features.

- The track will be a metal road approximately 3m to 5m wide with drainage swales beside the road formations as required, which will act as a cut-off to divert runoff.
- Upon completion of site work, the track will be removed.
- A stabilised construction entrance with a wheel wash facility will be installed at these access points.

### 3.4. Working Hours

All construction activities will adhere strictly to the approved consent hours of work generally set at 7.30 a.m. to 6.00 p.m. Monday to Friday, and 8.30 a.m. to 4:30 p.m. Saturday. No work will occur Sundays or public holidays.

### 3.5. Complaints

Staff will not enter into debate or argue with members of the public regarding complaints received.

Complaints will be addressed first-hand by the site construction manager and proactively followed up on. There will be a complaint register record for detailing the investigation and response. The key contact personnel will be available at site entrances for the public to contact in case of emergency or complaint lodgement.

### 3.6. Vibration Control

A construction vibration assessment will be done prior to construction commencing from a Vibration Consultant. The effects of vibration during construction are expected to have less than minor effects on any surrounding receiver and will be reasonable in terms s16 of the Resource Management Act.

Some of the mitigation methods for vibration control are:

- Residents will be advised prior to construction activities being undertaken near their buildings.
- The lightest practicable model of vibration inducing plant shall be used within 30m of any dwellings.
- Compaction shall be performed using the lightest practical compaction equipment with the highest practicable vibration frequency to achieve specified compaction.
- Excavator operators shall avoid banging buckets on the ground and workers will be advised on minimising vibration.

Styles Group have undertaken Construction Noise & Vibration Assessments, please refer to this report for further details.



### 3.7. Noise Control

Modern plants and equipment are all fitted with exhaust mufflers and soundproofing that are designed to reduce plant noise and have been manufactured to meet international standards. All items of plant are subject to periodic maintenance checks to ensure they can be operated safely and as intended. If complaints are received, they will be taken seriously, and every effort made to minimise disturbance e.g., continue work in that area at a time that might be more amenable to the complainant(s). Any noise complaints will be followed up with the complainant and will also be discussed at project site meetings. They will also become subject matter at the weekly site toolbox meetings.

If noise levels are beyond the allowable limits, then an alternative methodology will need to be deployed. The implementation of additional options will be undertaken in consultation with the regulatory authorities, Principal, and Engineer, including, if required and instructed, engaging a noise monitoring specialist to measure and report on-site construction activity to ensure compliance with NZS6803 (NZ Standard for Acoustics – Construction Noise).

Styles Group have undertaken Construction Noise & Vibration Assessments, please refer to this report for further details.

### 3.8. Weed Management

The protocols outlined in the Waikato Regional Council factsheet will be used to minimise the adverse effects on biosecurity.

### 3.9. Sediment Control

Throughout the duration of the earthworks, these sediment control measures will be consistently maintained and closely monitored to ensure they function as required. Removal of silt control measures will only be considered once the site is deemed to be stable in terms of silt runoff, to be agreed by Matamata-Piako District Council and the Site Engineer.

The following silt and sediment control protection measures are being proposed:

#### 3.9.1. Stabilized Site Entrances

The contractor shall ensure that all entrances to the site are constructed upon establishment or prior to any intended use. Entrances shall be an area of stabilised and well compacted aggregate constructed and maintained for heavy vehicle use. These entrances shall be constructed in accordance with the agreed, proposed (as per C2300/C2351 ESC plans), or adopted local Council guidelines, an example of which can be found within the appended standard details.

#### 3.9.2. Dust Control

For the proposed works, dust generated at the site is likely to have the greatest effect on any existing residential properties bordering the site. To achieve no nuisance dust emissions, the following preventive measures shall be implemented:

- Dampening down of potential dust generation areas with a water truck;
- Mulching and grassing stockpiles and built levels where or when practicable;
- Chemical dust suppressants, used as per manufacturer recommendations as a method of sealing problematic or largely unfinished areas, if the previously mentioned methods fail to mitigate the dust appropriately.
- Ensuring that surfaces are constructed to their final design requirement and are stabilised as quickly as practicable; and
- Controlling reduced vehicle speeds.

Wind conditions should be monitored to assist in daily planning of works to minimise the potential for excessive dust generation.

### 3.9.3. Cut-off Drains/Bunds

Compacted earth bunds will be placed along the top of batter slopes to divert “clean” runoff away from the earthwork area. Compacted earth bunds placed at the bottom of the cut batter slopes to divert generated “dirty” runoff to the nearest local Decant Earth Bund (DEB) / Sediment Retention Pond (SRP). Cut-off drains shall be formed at the bottom of shallow batters where bunding alone will not likely contain expected flows. The purpose of the bund/drain is to prevent any surface water flowing over the newly formed batter faces, into stabilised areas of the site, and to divert flows around the site perimeter to the nearest low point where a DEB / SRP is to be located, if required.

### 3.9.4. Decanting Earth Bunds/Sediment Retention Ponds

Site run-off will be directed by cut-off drains and bunds to the natural low point within each bund’s catchment area prior to discharge onto existing stabilised ground. The locations proposed shall be verified and agreed onsite during a pre-construction meeting and as-builts of decant bund’s size/location shall be provided to the Compliance Officer, if required.

Decanting earth bunds (DEB) will serve as the primary treatment for the works. DEBs will be sized by volume to 2-3% of the catchment area as per appended calculations. The details of the DEBs recommended layout can be found online via Waikato Region Council Erosion & Sediment Control Guidelines for Soil Disturbing Activities (TR0902), or other equivalent guidelines, such as Auckland Council GD05 guideline and appended standard details. Where possible, a DEB & SRP will be constructed with a length to width ratio between 3:1 – 5:1, however this may be constrained by site space limitations. Typically, the outlet structure of these DEBs & SRPs will comprise of a floating T-Bar dewatering device (decanting arm with anti-seep collar, as shown in standard details within engineering plans) which discharges to stabilised ground. Where possible, the discharge end of the pipe will be perforated to disperse flows past the working area to stabilised or undisturbed ground.

If chemical treatment is required, the decant bar shall be lifted above the expected storage volume to enable treatment to take place, before being lowered post storm event treatment whereby the storage volume is discharged.

### 3.9.5. Chemical Treatment

To improve water quality treatment within sediment control devices throughout the construction phase, the use of chemical flocculants is strongly recommended for all DEBs and SRPs.

The method of treatment is variable and dependant on ground conditions and catchment area, this will be confirmed onsite during establishment works and bench testing.

It is proposed that an approved flocculation method will be implemented; the available methods can be found outlined in Table 5 below:

Flocculation Method	Time Frame	Treatment Area
Floc Blocks for DEBs	Short and Long Term	Up to 5,000 m <sup>2</sup>
Batch Dosing for DEB’s & SRPs	Short Term	Up to 50,000 m <sup>2</sup>
Continuous Dosing of DEBs & SRPs	Long Term	Up to 50,000 m <sup>2</sup>

*Table 5: Proposed Flocculation Method*

Once the DEB & SRP have been flocculated the water quality will be assessed by either measuring the suspended sediment or checking clarity. If the water quality is acceptable the DEB or SRP is emptied by unblocking the outlet, and earthworks within its catchment can continue accordingly.

In cases where a pump is required to empty treated water from the DEB and SRP due to differences in ground level, the installation of a manhole is necessary. The pump is exclusively permitted to extract water from the manhole structure. The discharged water from the pump will then be directed towards a grass swale to further refine the water quality by removing any potential suspended solids captured during the pumping operation.

#### 3.9.6. Silt Fences

Silt fences will be installed as a treatment measure where sheet flows are considered likely. Such as the toe of fill embankments, where it is not practical to divert flows to a DEB. Alternatively, they may be used in locations where newly generated sheet flows from stabilised areas may concentrate and result in scour of existing natural ground, in this situation a silt fence will impede and aid in mitigating excessive flow velocity.

#### 3.9.7. Wellpoint Dewatering Devices

Prior to and during earthworks in areas with high groundwater levels, wellpoint dewatering devices will be employed. The purpose of these devices is to ensure the stability and safety of excavation faces by lowering the water table. This not only ensures safety but also expedites the construction process. However, it is important to note that the extracted water might contain suspended solids, which could be detrimental to the receiving environment. To mitigate this, the water will first be directed to DEB or SRP for treatment. Once treated, the water will be discharged into the existing stormwater channel.

#### 3.9.8. Topsoil Management

Efficient topsoil management is a core component of this project's environmental strategy. The topsoil will be removed from each earthwork area and stockpiled for later use. Any surplus topsoil, forecasted to exceed project requirements, will undergo screening to make it available for sale to the wider public.

To address sediment and erosion control at the stockpile location, preventative measures will be employed. This includes the use of mulching and grass seeding to facilitate the establishment of grass cover on the topsoil stockpile. These practices help maintain the integrity of the topsoil stockpile, prevent soil erosion, and ensure minimal topsoil loss throughout the project.

Soil rehabilitation will be implemented in landscaping areas as required to reverse compaction effects and to improve near surface soakage prior to placement of topsoil and planting.

#### 3.9.9. Sediment Control Performance Monitoring & Maintenance

All sediment control measures will be checked regularly, to ensure that they are performing as intended by design. The site Construction Manager in conjunction with the Project Engineer will be responsible for actively monitoring installed erosion and sediment control devices. Periodic audits will be undertaken and tabled at regular progress meetings.

A site walk over shall be undertaken weekly 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 required. 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.

#### **Stabilised Vehicle Entrance**

- Maintain the Stabilised Vehicle 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 Vehicle Entrance and clean out as necessary.

#### **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.

#### **Decant Earth Bunds/Sediment Retention Ponds**

- Inspect after every rainfall event to confirm water clarity or organise sediment testing.
- Release stored flows if/when required to ensure that the DEB capacity is maintained prior to any future rain event.
- Muck out and remove collected sediment whenever 1/3 of the dead storage is reached, or bi-monthly, as required.

#### **Chemical Treatment**

- Inspect stored chemical volumes after every rainfall event and during periods of prolonged rainfall.
- Refill or repair any systems immediately if required to ensure that the design capacity is maintained.

#### **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 ensure adequate sediment storage and reduce pressure on the Silt Fence. Remove accumulated sediment from the area to an appropriate secure location.
- Do not remove Silt Fence materials and sediment deposition until the catchment area has been appropriately stabilised.

Sediment control and other environmental issues, health and safety matters, and construction-related Resource Consent condition compliance requirements will be integrated into fortnightly on-site client/engineer/contractor progress meetings as a proactive construction management tool. These meeting discussions are recorded with decisions and agreed courses of action to be followed up on.

### 3.10. Fill Compaction

Each layer of material shall be compacted by approved compacting machinery throughout the whole area and depth to achieve the specification listed below or as specified by a qualified Geotechnical Engineer.

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 6: Fill Compaction Requirements by Soil Types*

### 3.11. Traffic Management

A comprehensive Traffic Management Plan (TMP) will be developed by the contractor prior to the commencement of works. The TMP will address all construction-related vehicle movements, with particular attention to minimising disruption to surrounding residents and maintaining safe traffic operations.

Key measures include:

- Designated Access Points: Entry and exit to the construction site shall occur only via Station Road.
- Construction Traffic Routes: Heavy vehicle routes shall be pre-approved by Matamata-Piako District Council and appropriately signed.
- Vehicle Control Measures: Construction accessways will be controlled with security gates with entry restricted to authorised vehicles.
- Dust and Debris Management: Receiving road network will need to be monitored for debris being carried into the local roading network. Vehicle wheel wash facilities maybe required at exits to prevent debris onto public roads.
- Traffic Safety: All traffic management measures will comply with Waka Kotahi (NZTA) Code of Practice for Temporary Traffic Management (CoPTTM) requirements.
- Public Notification: Residents along haul routes will be notified in advance of any significant truck movements or temporary road works. A letter drop will be undertaken by the nominated contractor prior to construction works commencing.

Temporary traffic signage, traffic controllers, and restricted construction hours may be employed during peak traffic periods to further minimise disruption.

For more information, please refer to Commutes Integrated Transportation Assessment submitted at this application.

### 3.12. Community and Stakeholder Engagement

Unity Developments Limited acknowledge the importance of proactive communication with the community throughout the construction period.

The following items are suggested to be implemented:

- Pre-Construction letter drop will inform residents and businesses of the construction schedule, accessways, and key project contacts.
- Complaints Register: A designated Site Liaison Officer will be appointed to manage complaints and queries. Contact information will be displayed at all site entrances.
- Response Protocol: Complaints will be acknowledged within 24 hours and notified to the local authority (MPDC) with a follow-up and action plan provided within 72 hours.

Maintaining positive relationships with locals is a priority to ensure the project proceeds with minimal disruption and community support.

## 4. Construction Methodology and Sequence of Works

As highlighted in the previous section, the earthworks operations at this site will be categorized into three sections. These sections have been segregated based on the stages of development.

To provide comprehensive guidance for the earthwork activities within this domain, an overarching earthwork principle has been formulated. This principle serves as a unifying framework, guiding the execution of earthworks across these sections. Summarised below are the key principles of the earthworks for this area:

- i. Establish Temporary Stormwater Diversion:
- ii. Sediment and Erosion Control Establishment:
- iii. Minimise the Earthworks Area:
- iv. Stabilise Earthworks:

Earthwork's methodology is dynamic and adapted to suit the local environment, ensuring that each earthwork area within these sections have specific construction methodology based on the principles mentioned above, which are essential to protect the sensitive receiving environment.

The construction methodology for each respective work section is detailed below.

### 4.1. Stormwater Ponds Methodology & Sequence of Works

#### 4.1.1. SW Pond 1

The earthwork plan for SW Pond 1 is comparatively straightforward. It has been devised to occur in Stage 1. The construction methodology for this area is as follows:

##### Stage 1:

- Establish sediment and erosion control
- Carry out earthworks within stage 1 area

- Construct Pond 1

#### 4.1.2. SW Pond 2

The earthwork plan for Pond 2 is comparatively straightforward. It has been devised to occur in Stage 3. The construction methodology for this area is as follows:

##### **Stage 1:**

- Establish sediment and erosion control
- Carry out earthworks within stage 3 area
- Construct Pond 2

## 5. Conclusion

The proposed earthworks outlined in this proposal have been designed to facilitate the required infrastructure for Ashbourne Retirement Village development, and in accordance with Erosion and Sediment Control Guidelines for Soil Disturbing Activities in the Waikato Region, January 2009.

Careful consideration is given to mitigate possible impacts of the proposed development to the receiving environment through implementation of accepted engineering practices.

### 5.1. Post Construction Monitoring and Maintenance

Following completion of bulk earthworks and infrastructure works, ongoing monitoring and maintenance will be undertaken to ensure compliance with consent conditions and environmental conditions. This period will coincide with the Defects Liability Period.

Activities include:

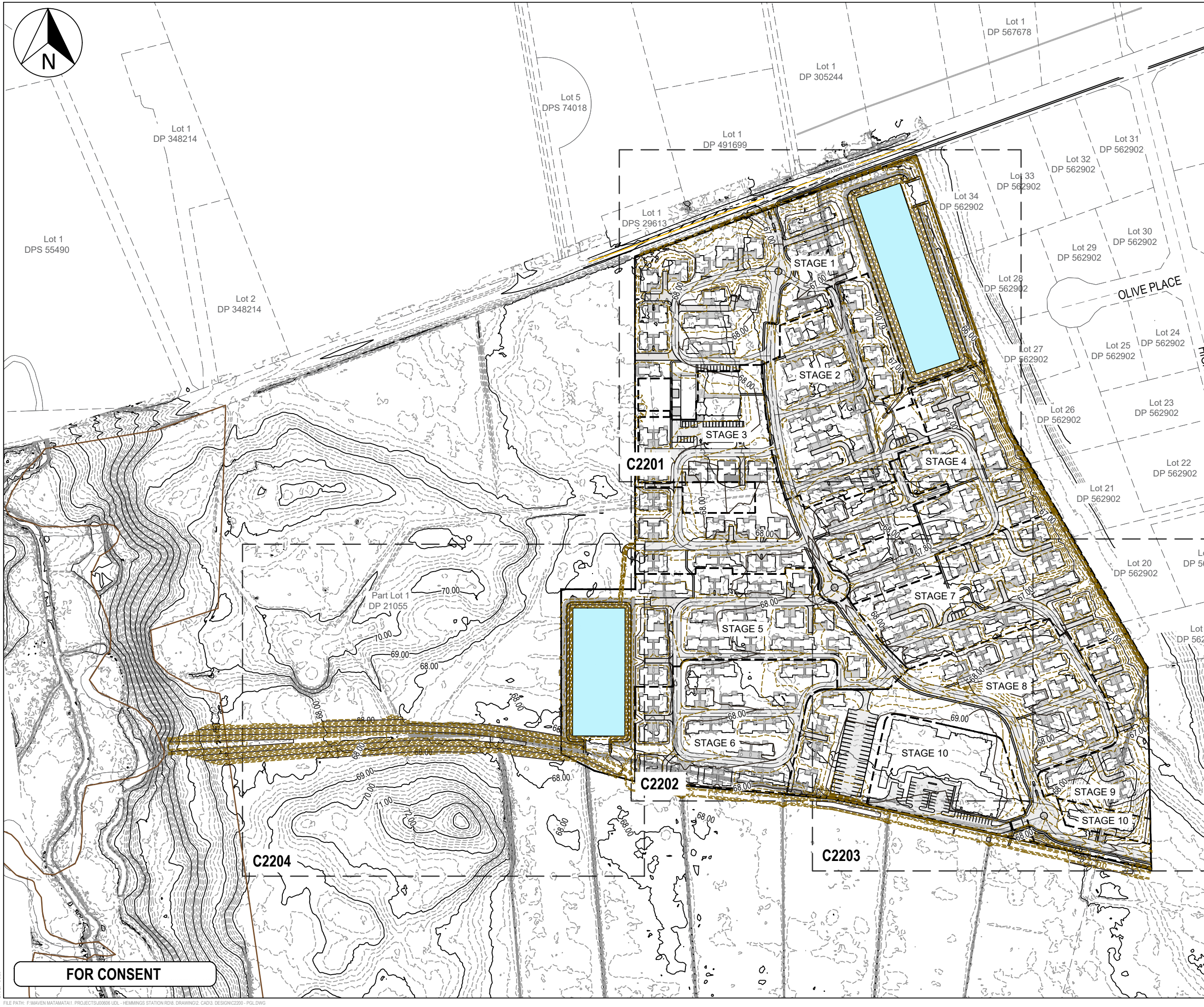
- Erosion and Sediment Control Decommissioning: Progressive removal of sediment control devices once full site stabilisation is achieved, subject to approval by WRC at indicated hold points ie waiting for stabilisation 80% grass strike coverage on grassed topsoil.
- Vegetation Establishment: Monitoring of grass and landscape planting success, with remedial planting undertaken as necessary.
- Defect Liability Period Inspections: Periodic site inspections will be undertaken during the defect liability period to address erosion, sedimentation, or settlement issues.
- Final Certification: A completion report, including 'as-built' plans and compliance certificates, will be submitted to MPDC as part of the 224c process.

The above will ensure that long-term environmental and infrastructure outcomes are maintained beyond construction.

## Appendix A –Earthworks Drawings



ORIGINAL SIZE: A3  
DATE: 05/25  
FILE PATH: F:\MAVEN MATAMATA\1. PROJECTS\J00606 UOL - HEMMINGS STATION RD\8. DRAWING\2. CAD\3. DESIGN\C2200 - PGL.DWG



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

- 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
Survey	MAVEN		10/2024
Design	KQ		04/2025
Drawn	DP		04/2025
Checked	SB		04/2025

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Project

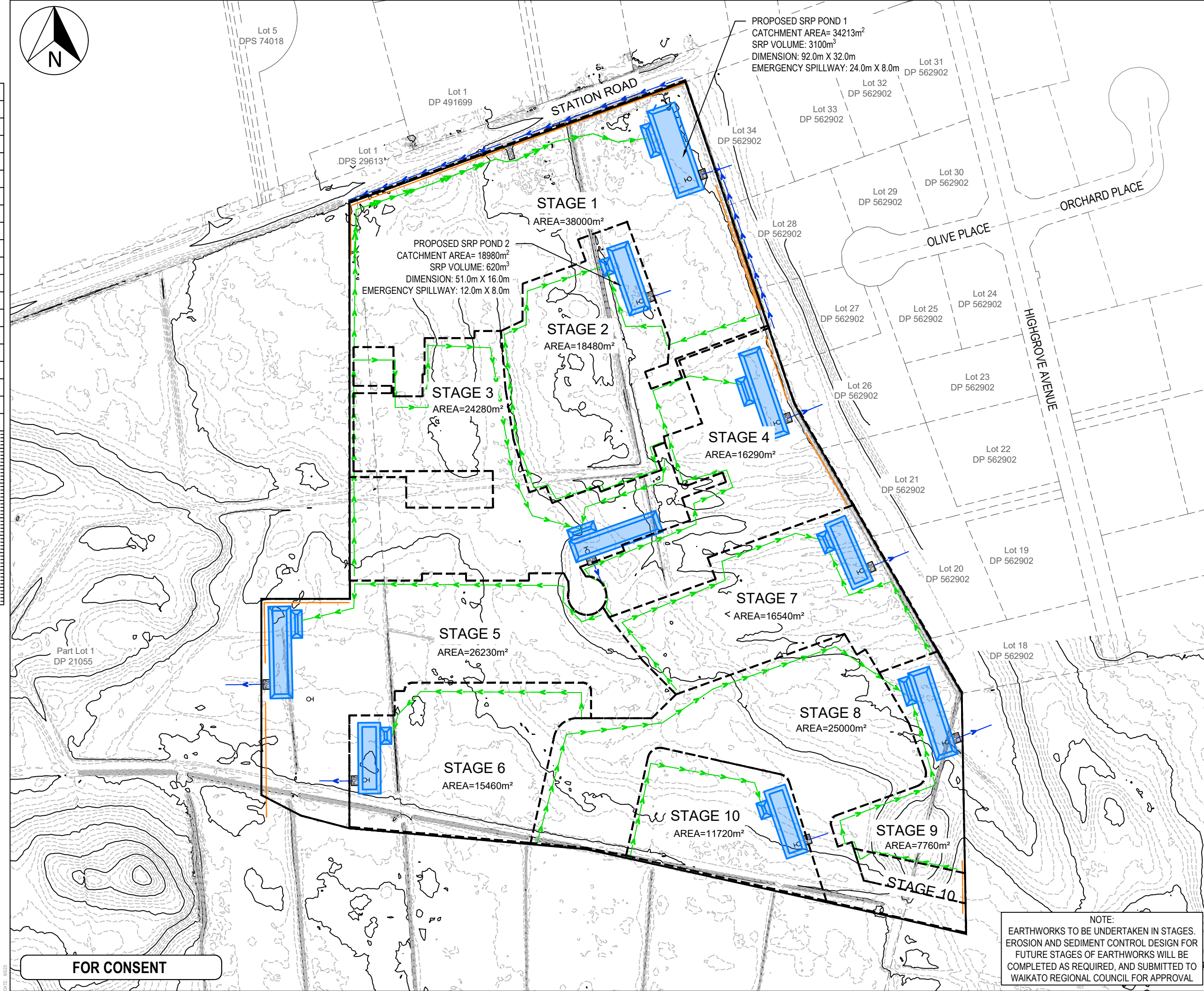
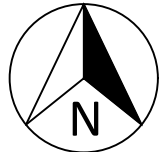
**ASHBOURNE  
RETIREMENT VILLAGE  
MATAMATA  
FOR  
UNITY DEVELOPMENT LTD**

Title

**PROPOSED OVERVIEW  
CONTOUR  
PLAN**

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





#### Notes

- All works to be constructed in accordance with Waikato Regional Infrastructure Technical Specifications (RITS).
- Levels in terms of the NZVD16.
- 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".
- All erosion and sediment control measures should be in place before land-disturbing activities start and only removed when the site is stabilised.
- Always talk to your environment WRC representative to obtain accurate and up-to-date advice.
- It is contractor's responsibility to ensure that soil is kept on site and to ensure that the road is clean.
- The contractor shall comply with all relevant health and safety requirements.
- 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**

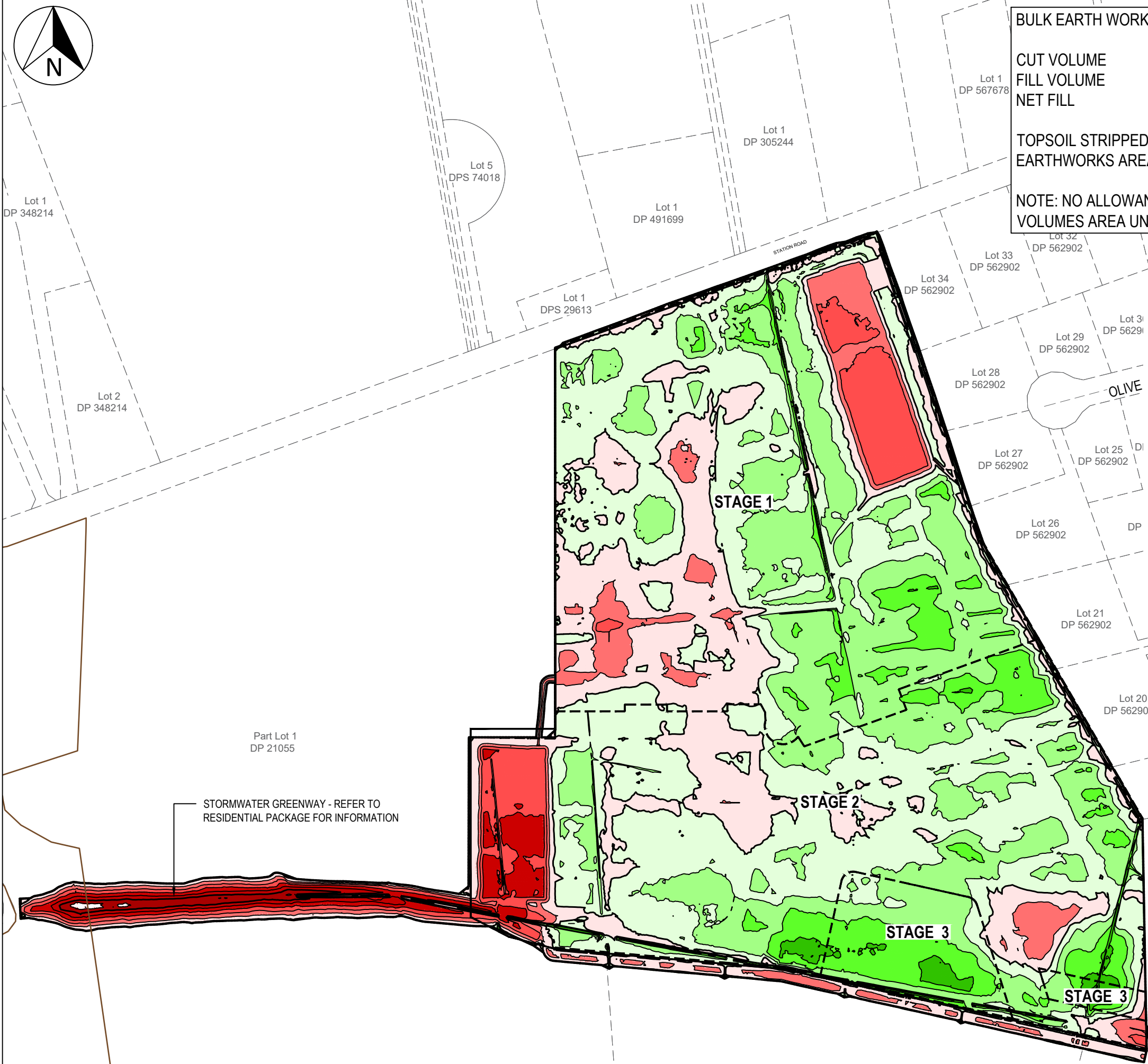
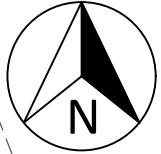
Project no.	J00606
Scale	1:2500@A3
Cad file	C2300 - ESC.DWG
Drawing no.	C2300
Rev	<b>B</b>

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  
DATE: 6/5/25  
FILE PATH: F:\MAVEN MATAMATA\1. PROJECTS\J00606 UOL - HEMMINGS STATION RD\8. DRAWING\2. CAD\3. DESIGN\C2200 - PGL.DWG



BULK EARTH WORKS

CUT VOLUME

FILL VOLUME

NET FILL

43500 m<sup>3</sup>

77300 m<sup>3</sup>

33800 m<sup>3</sup>

TOPSOIL STRIPPED (200mm) =

EARTHWORKS AREA =

42960 m<sup>3</sup>

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

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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>