
APPENDIX G

ENVIRONMENT MANAGEMENT PLAN

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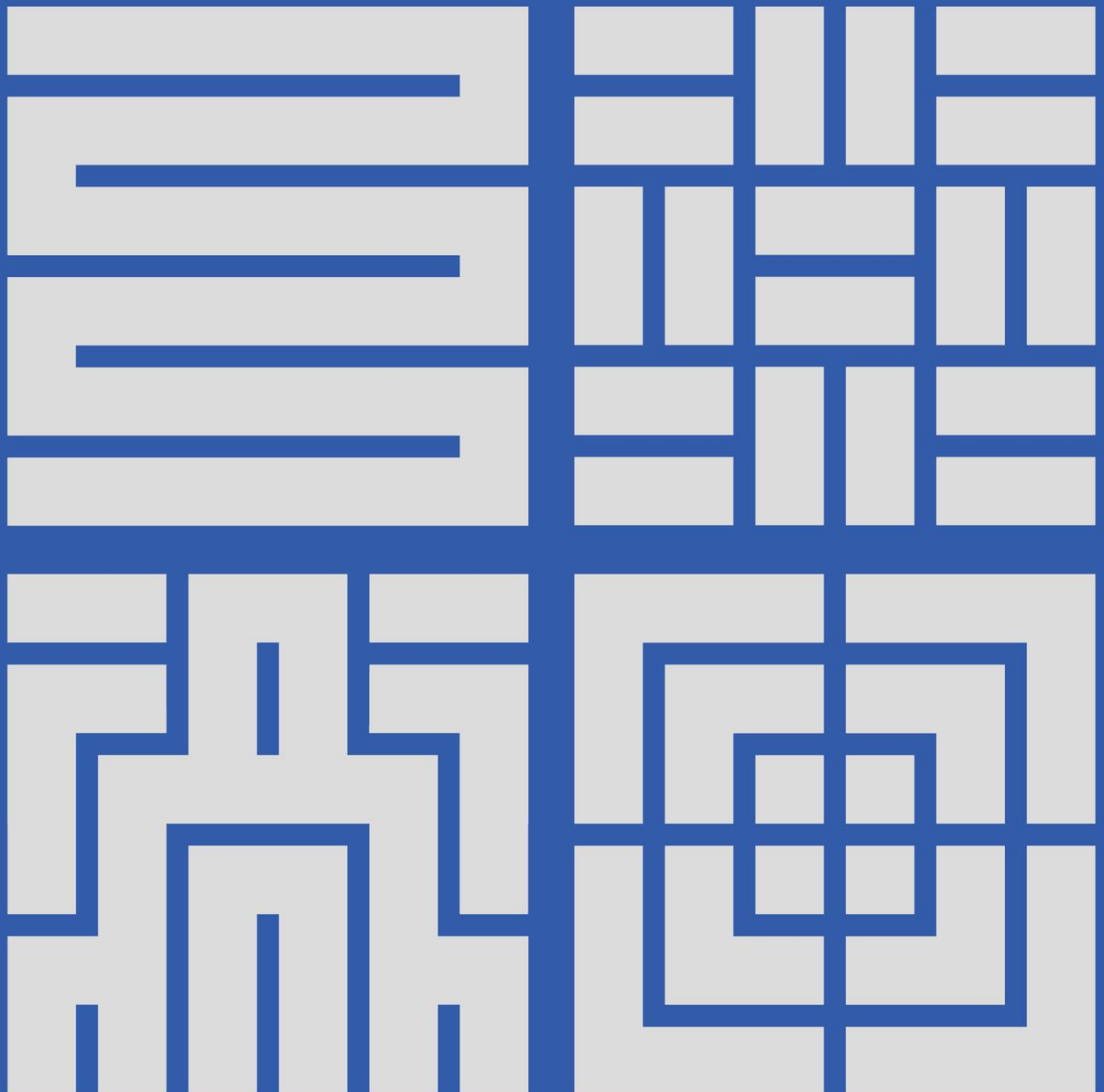
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**NILLUMBIK SOLAR FARM
ENVIRONMENT MANAGEMENT PLAN**

LMS Energy Pty Ltd | 290-304 Yan Yean Road, Plenty, Victoria
67345-1- EMP V3 | 11 March 2022 2021

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VALUE THROUGH INTEGRATION

NILLUMBIK SOLAR FARM

209 – 304 YAN YEAN ROAD, PLENTY, VICTORIA

Environment Management Plan
LMS Energy Pty Ltd

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1. INTRODUCTION

This Environmental Management Plan (EMP) has been developed to support the planning application for the proposed installation of solar panels and associated infrastructure at the former Plenty Landfill (the project). Referred to as the Nillumbik Solar Farm it is described in the construction plans as 30032-GA-101, 30032-GA-102 and 30082-EA-118 (see **Appendix A**).

This plan has been developed to identify and address environmental considerations relevant to the project, and the information required by the planning authority for their consideration of the project. The EMP addresses matters listed in the guideline published by the Department of Environment, Land, Water and Planning entitled *Solar Energy Facilities Design and Development Guideline – Example planning permit conditions* (DELWP Guidelines).

A second and related document – a *Construction Environment Management Plan* (CEMP) is also being developed. The CEMP will address environmental management of the construction phase of the project.

This EMP addresses pre-construction considerations, to identify and recommend any modifications to the project that may be necessary due to environmental considerations, and the environmental management of the facility in its operational phase (post-construction).

1.1 Objectives

This EMP has as its objectives:

- To identify environmental considerations that could potentially be impacted by the project;
- To estimate the potential impacts of the project on the environment and establish if the impacts exist, or are acceptable, or if alternative designs are required in order to eliminate or make acceptable the identified risks.

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2. SITE AND PROJECT DESCRIPTION

The site is a pre-existing landfill facility that has recently been decommissioned and completed a capping process as part of the site rehabilitation. The landfill had been historically known as the 'Plenty Landfill'.

Being a former landfill, the site is regulated by the Victorian Environment Protection Authority (EPA). On 18 November 2014 the EPA issued an amended Pollution Abatement Notice (PAN) to Nillumbik Shire Council. The PAN required a range of works to be undertaken, that in general related to capping the former landfill and undertaking works, monitoring and maintenance of the site to ensure there would be no future unacceptable impacts on the environment.

One of the key documents generated in satisfaction of the PAN is the *Plenty Landfill Aftercare Management Plan* (ACMP) prepared by Golder Associates and dated June 2015. The ACMP outlines the works required to bring the former landfill to an acceptable closure status, and the subsequent management and maintenance requirements. The works and monitoring programs are required and confirmed by an EPA appointed auditor (contaminated land).

The landfill closure works outlined in the ACMP have been largely completed as of the date of this report. The closed landfill will therefore be in a post-closure care and maintenance state by the time site activities for the solar farm commence. All requirements of the ACMP will continue unchanged by the presence of the solar farm.

The solar farm will utilise some existing landfill infrastructure such as sediment management and stormwater control systems, without impacting on the landfill aftercare that includes landfill leachate and landfill gas management, and without adding new burdens to these systems.

2.1 Project Details

The proposal includes the operation of fixed, tilted solar panels and associated inverters within a high voltage compound with a total capacity of 1.2MW. Associated fencing, landscaping, internal driveways, car parking, and water tanks are included in the proposal. An underground powerline extension from the high voltage compound will travel to the Yan Yean Road site boundary. The proposal also includes development of the adjacent road reserve containing Yan Yean Road for a utility installation, being the extent of the underground powerline extension extending out into the road reserve to a new 22kV recloser pole and connecting into the existing 22kV overhead pole sited 15m further north along the road reserve.

The inverters will only be operating during daylight hours. The site will be an unmanned facility. The number of vehicles and personnel accessing the site will therefore be limited to occasional maintenance staff.

The site will be accessed using the existing access point from Yan Yean Road and internal driveway. A designated car parking area with four (4) car parking spaces is provided at the end of the formal driveway and turn around area. An access path is provided around the perimeter of the solar array area and high voltage compound area.

The proposed solar PV facility will include the installation of an array of fixed, tilted solar panels and associated inverters within a high voltage compound with a total capacity of approximately 1.2 MW.

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2.2 Implications of Construction on a Closed Landfill

This project is sited entirely within the boundary of a former landfill – with the exception of an electrical transmission line to the local supply authority grid. Hence the footprint of the project is entirely within the perimeter fence line of the former Nillumbik landfill and adjoining Nillumbik Recycling Centre – which includes a municipal recycling depot and animal pound.

Being on a former landfill means the land has been heavily modified by human activities, including the deposition of landfill wastes to many metres in depth. Almost the entire landfill site has, over its history of operation been cleared of all pre-existing native vegetation, and this disturbance would also have destroyed or removed any items of cultural significance.

The act of ‘closing’ the landfill is a well-regulated process¹ that involves detailed engineering design, construction and verification techniques. This is because closed landfills can continue to generate leachate and landfill gas within the waste mass. The capping of the landfill is required to minimise the infiltration of rainwater (to minimise the quantity of leachate generated) and to contain and manage the generation of landfill gases (to prevent the uncontrolled migration of those gases). Once constructed, the landfill cap must be maintained so as to not degrade. In particular rainwater and stormwater flow must be managed to prevent soil erosion from compromising the integrity of the landfill cap.

This means the completed landfill cap has been designed and constructed so as to minimise, control and direct the flow of surface waters so as to not erode soils on the landfill cap. This has in turn the subsequent benefit of ensuring there are very low sediment loadings in runoff that leaves the site and enters nearby surface waters.

A landfill cap typically consists of a number of layers, as shown in Figure 1 below.

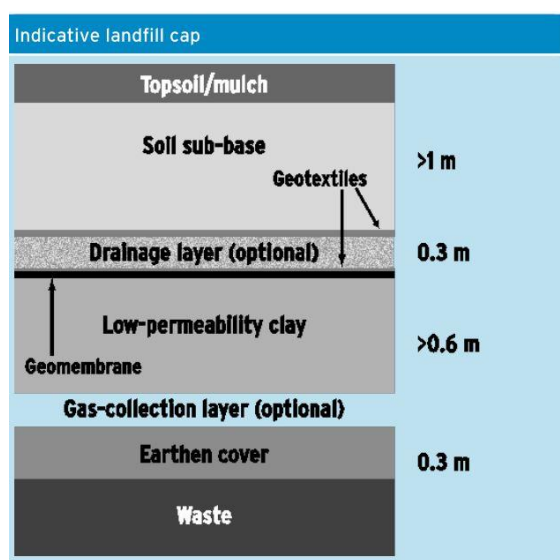


Figure 1 Typical landfill cap profile (from Vic EPA 2015)

This figure is understood to be representative of the cap on the Nillumbik landfill. The functional parts of the landfill cap are the low-permeability clay layer and associated geomembrane and geotextile layers, along with any drainage

¹ See: EPA Publication 788.3 *Siting, design, operation and rehabilitation of landfills*, dated August 2015; and EPA Publication 1490.1 *Closed Landfill Guidelines*, dated January 2018.

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and gas collection layers. The topsoil/mulch and the soil sub-base (the two uppermost layers provide physical protection to the deeper, functional layers. Limited earthworks within the two upper-most layers would not affect the functioning of the landfill cap, although deeper works that penetrate the upper geotextile layer should be avoided wherever possible.

Construction works and developments on the landfill cap:

- should not reach or breach the uppermost geotextile layer if at all possible;
- must not compromise the integrity of the landfill cap;
- must not modify surface coverings or flow patterns that would erode soils from the cap; and
- should include verification testing at the completion of works to confirm that the cap integrity has not been compromised, and rectification works undertaken if necessary.

Although the landfill is now closed it is in a phase of its life where it is still under careful management. Stormwater diversion and erosion control systems will continue to be inspected and maintained by Nillumbik Shire Council in accordance with the ACMP.

2.3 Topography, Vegetation, Soil Description & Pre-Development Drainage Pattern

The capping of the landfill included the construction of permanent stormwater management of the site, inclusive of installation of drainage structures, as shown in drawings 1 – 17 (147615003_004-S_Rev1) as produced by Golder Associates (reproduced in **Appendix B**). One of the cross-sectional drawings is reproduced in Figure 1Figure 2 below.

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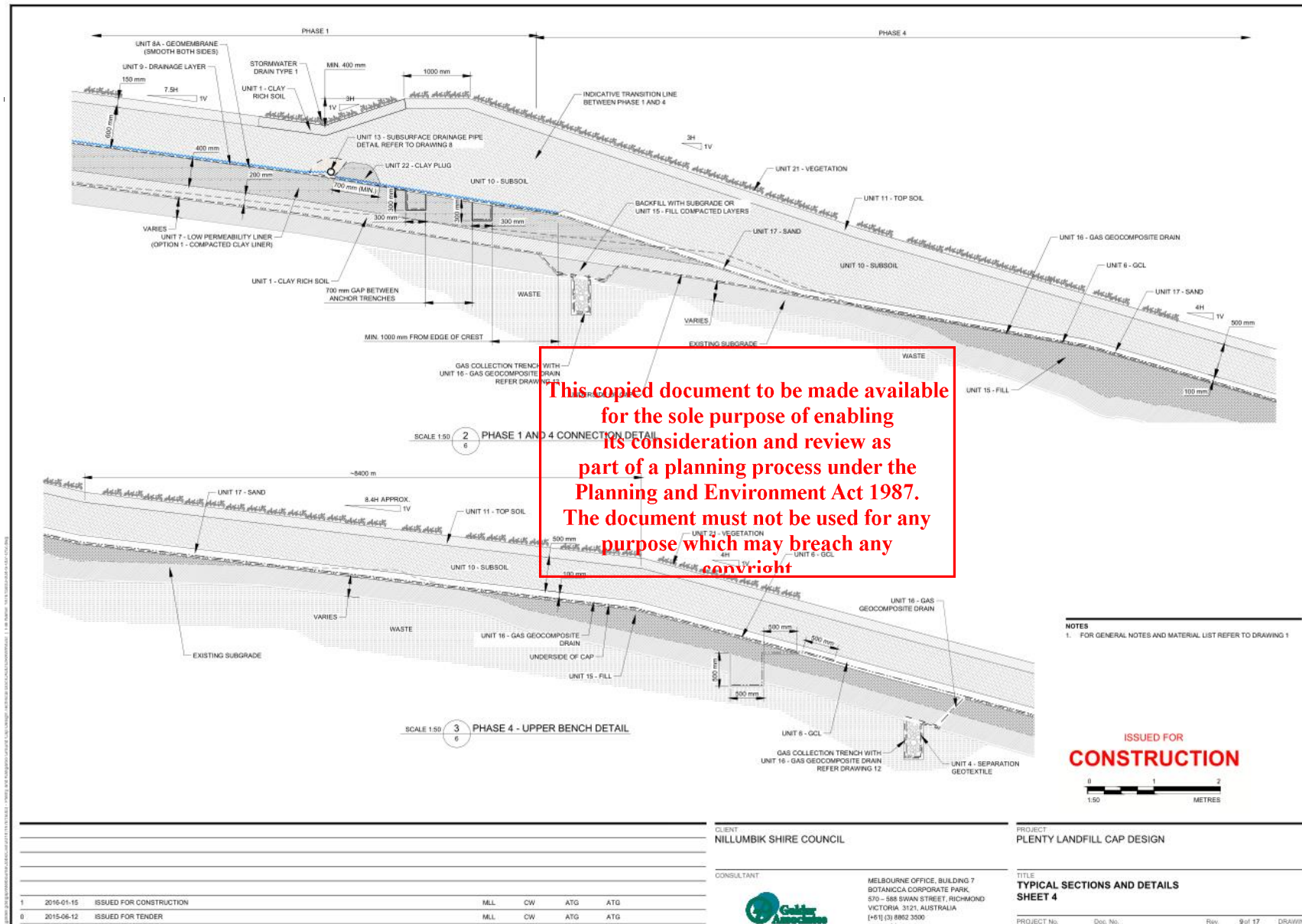


Figure 2

Typical cross-section of the Nillumbik Landfill cap (from Golder Associates)

The final surface profile is as shown in the as constructed drawings *Topsoil & Swale Drains Survey Shamrock Civil, Nillumbik Landfill Yan Yean Road, Plenty* and *PLENTY Phase1 Top of Topsoil (ver03)* and *PLENTY Phase1&4 surface drain sections (ver01)-Sheets 1 – 3 See Appendix C*.

Some photographs of the finished cap (taken in June 2021) are provided in Figures 3 to 13 below. The locations and orientations of the photographs are shown on Figures 4 to 6 in **Appendix A**.



Figure 3 View of landfill cap from Yan Yean Road (image 0068)

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Figure 4 View of landfill cap from Nillumbik Recycling Centre car park (image 081)

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Figure 5 View west towards Yan Yean Road from landfill cap (image 097)

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Figure 6 Looking north from the centre of the landfill cap (Image 099).



Figure 7 View north along the eastern toe (image 136)

2.4 Surrounding Area

The previous land use was for a council operated landfill and is neighboured by the Nillumbik Recycling Centre to the south, bushland to the north and west and some residential housing to the south-east / east. Some photographs of the perimeter of the landfill cap and adjoining properties are shown below.



Figure 8 View south along the eastern toe (image 139)

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Figure 9 Western corner of landfill and property beyond (image 168)

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Figure 10 Northern toe of landfill and adjoining property (image 163)

3. IDENTIFICATION OF POTENTIAL ENVIRONMENTAL RISKS

3.1 Traffic

Establishment of the solar farm will generate some new traffic to the site. This traffic will be much greater during the construction phase of the project, than during its operation.

Traffic impacts associated with the operational facility will be almost negligible as the facility will be unstaffed and monitored and controlled remotely. The only vehicles accessing the site will be staff/contractors visiting for scheduled and unscheduled maintenance works. This activity is anticipated to average 1 or less vehicles per week.

Any vehicles accessing the site will enter from Yan Yean Road using the recently upgraded intersection which has turning lanes and slip lanes and is controlled by traffic lights and the existing internal sealed driveway.

Four (4) car parking spaces and an adequate turn around area is provided at the entrance to the site, allowing vehicles to enter and exit in a forward direction. Informal track access on the fire break area is available around the perimeter of the facility.

Traffic movements will be greater during the construction phase of the project. The construction duration is understood to be an eight-to-ten-month period. Most of the construction will be on the landfill cap, where the use of heavy vehicles will not be possible. Construction traffic will predominantly consist of construction worker vehicles and equipment (solar panels, associated cabling steelwork and structural and electrical) deliveries. Horizontal boring activities will involve a small number of medium to large vehicles. All of these construction movements are considered to be well within the capacity of the existing road network and would not impact on local travel movements.

3.2 Construction

The construction phase of the project has the potential to generate environmental risk that may need to be managed or eliminated. This risks may include:

- Construction noise and vibration;
- Construction traffic;
- Dust, smoke from machinery;
- Soil erosion and sedimentation;
- Disposal of contaminated soils;
- Contamination of land and groundwater.

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In this project the proponent will be utilising construction methods that avoid sub-surface works wherever possible. This is required in order to not compromise the integrity of the engineered landfill cap. It will have related benefits in that site earthworks and construction impacts will have fewer and smaller environmental impacts than would be the case in the construction of a solar panel facility using more traditional methods.

Specifically LMS Energy has developed proprietary technologies that have no soil preparation requirements for the solar panel arrays. Modular concrete base panels are pre-cast off-site and are delivered to and placed in position on-

site with some pack levelling but without any cut and fill leveling or removal of topsoils. The panel mounting structures, solar panels and associated wiring is then assembled onto the base modules.

Earthworks will be limited to the excavation of footing holes for the site perimeter fence, the fence around the high voltage compound, and the underground power line extension. A small length of this powerline may be installed in the landfill cap, with the majority being to the west of the landfill – to the connection point on Yan Yean Road. The electrical compound will be built up slightly from existing levels and any excavations there will be shallow.

Prior to minor excavation works for HV compound fencing, LMS Energy will undertake non-destructive digging to confirm the depth to the geotextile layer. If there is insufficient depth for the subsequent footings/trench then either:

- The footings will be redesigned to be shallower (but broader); and/or
- The ground will first be built up with the addition of imported soil.

All electrical wiring between panels will run above-ground, supported on the panel mounting structures. Cabling is then routed along two above-ground cable racks that run north-south and east-west through the array field.

The access tracks/fire breaks will also be constructed without any topsoil removal or base preparation. Crushed rock or similar will be placed directly onto the existing topsoil.

The environmental risks during construction have been identified and the management of those risks detailed in a project specific *Construction Environment Management Plan* (CEMP) provided separately. The CEMP addresses:

- Measures to minimise amenity and environmental impacts during construction and decommissioning of the facility;
- Verification testing of excavation sites to confirm the landfill cap integrity has not been breached;
- Organisational responsibilities; and
- Incident response measures.

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3.3 Wildlife

The entire project footprint is within an extensively developed and re-worked area. The landfill cap does not represent a significant habitat for any wildlife, although kangaroos from the adjoining forested areas do enter the site and graze on the grass. Whilst the installation of the solar panels, access tracks and substation will reduce the grass coverage on the landfill cap, there will still be more vegetation present than during the operation of the site as an active landfill.

The ACMP requires burrowing animals to be managed, so as to preserve the integrity of the landfill cap.

3.4 Drainage and Stormwater

Drainage and stormwater management at the site has been carefully designed and managed so as to avoid ponding and minimise erosion of the cap. Consequently very little sediment runoff is expected. Furthermore the cap is designed to minimise infiltration of rainwater.

The installation of the solar panels and related infrastructure will therefore result in no additional run-off of stormwater (as infiltration of rainwater is already minimised). The new facilities and construction works will be designed so as to impose no additional erosion or infiltration risk to the landfill cap.

A more detailed consideration of the sedimentation, erosion and drainage risks created by the project has been undertaken by Fyfe, as included in the report *Nillumbik Solar Farm – Solar Panel Installation: Drainage and Stormwater Plan*, LMS Energy Pty Ltd, 290 – 304 Yan Yean Road, Plenty, Victoria, dated 1 October 2021 (see **Appendix D**).

3.5 Glare, Glint Light Spill

There is a small, potential risk of glare, glint and light spill from the solar panels impacting on the amenity of nearby receptors.

As seen in the figures below, relatively few receptors will have a clear line of sight to the solar panel installation. In any event Environmental Ethos Pty Ltd (Ethos) was commissioned to undertake a glint and glare study. Their report *Nillumbik Solar Farm Glint and Glare Impact Assessment Report* is provided in **Appendix E** (Glint and Glare report).



Figure 11 View north from array location to residence to the north (image 102)

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Figure 12 View to sheds to the west of the array location (image 100)

The Glint and Glare report considered glint and glare resulting from the proposed solar farm including potential impacts to dwellings and roads within 1 km of the facility, aviation infrastructure including any air traffic control tower or runway approach path close to a proposed facility, and any other receptor to which a responsible authority considers solar reflection may be a hazard.

The Glint and Glare report utilised Solar Glare Hazard Analysis software developed in the USA to address policy adherence required for the 2013 U.S. Federal Aviation Administration (FAA) Interim Policy 78 FR 63276. The FAA definitions of glint and glare are as follows:

“Reflectivity refers to light that is reflected off surfaces. The potential effects of reflectivity are glint (a momentary flash of bright light) and glare (a continuous source of bright light). These two effects are referred to hereinafter as “glare,” which can cause a brief loss of vision, also known as flash blindness.”

The FAA Technical Guidelines distinguishes between glint and glare according to time duration, without correlation to light intensity.

The Glint and Glare report concluded that:

- The viewshed modelling identified visibility of the Project is generally limited by the surrounding hill to the north, east and west. Visibility extends along the valley in a south and south easterly direction.
- Within 1km of the Project site, 37 dwellings and 3 commercial/non-residential buildings were considered as having potential line of sight to the Project.

- The modelling found potential glare hazard affecting 9 residential dwellings, 1 non-residential building and three roads within the study area.
- Out of the 9 dwellings identified by the modelling, 7 of the dwellings and 2 roads were identified in the assessment as unlikely to be impacted due to existing intervening screening vegetation.
- 2 dwellings and 1 non-residential building to the west of the Project were identified in the glare modelling as having the potential to be impacted. Substantial screening provided by existing vegetation is considered likely to reduce the potential of glare hazard to occur to 'low likelihood'. LMS Energy will liaise with council regarding the council's management of existing vegetation to maintain appropriate screening for the life of the Project, ensuring the potential for glare to impact the amenity of people at these locations will be managed.
- A 250m section of Yan Yean Road was identified as potentially affected by glare. Travellers heading south are more likely to be impacted, glare hazard potential occurs during the early morning between spring and autumn. Recent road works in this location included landscape treatment and tree planting along the road verges and these plantings are considered likely to provide some screening in the future. Additional plantings in the Yan Yean road verge can be negotiated where considered necessary.

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3.6 Native Vegetation

A portion of the site is located in the Environmentally Significant Overlay, as shown in Figure 13 below.



Figure 13 Environmentally Significant Overlay

However, as was stated in Section 3.3 the entire project footprint is within an extensively developed and re-worked area. The landfill cap is devoid of native vegetation. It has been planted with specially selected grasses that minimise the erosion of the topsoils on the cap.

As shown in the Figures and plans included in this report, no native vegetation will be impacted by the solar panel arrays and associated high voltage compound.

However, the route of the high voltage connection from the high voltage compound to the existing utility pole to the west of the site is through a line of mature trees as shown in Figure 14 below.

It was originally intended that this electrical connection be by above ground transmission lines. However electrical safety requirements would require the removal of trees along this route. Hence the design now includes the underground installation of the connecting power supply line, with the retention of these trees close to the route.

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Figure 14 Proposed alignment of underground power cable (image 080)

The project design has therefore been modified to route the transmission line underground from the high voltage compound to the off-site power pole.

The power line will be installed by horizontal underground boring which will avoid the need for excavation or trenching along the route. This will avoid any significant harm to the root systems of the trees present. Excavation works will be limited to pit that will be dug to approximately 1 metre deep at the entry and exit points of the cable. Installation works will be undertaken by contractors engaged by the electrical supply utility company. With this modified project design, the removal of vegetation will be avoided.

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3.7 Cultural Heritage

A part of the landfill cap is within an Area of Aboriginal Cultural Heritage Sensitivity (light green shading), as shown in Figure 15 below.



Figure 15 Heritage overlay

The heritage overlay covers part of the landfill property however the solar panel installation is entirely on the capped landfill portion of the site, with no works or infrastructure proposed in the heritage overlay area where the land is still considered to be sensitive area. It is therefore concluded that the project does not require a Cultural Heritage Management Plan.

A photograph of the current condition of this part of the site is shown in Figure 16 below. The site inspection by Fyfe confirmed that no works of any type will occur within the heritage overlay area and the existing fencing along the boundary lines in this area will continue to be utilised.

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Figure 16 View east into the heritage overlay area (image 131)

3.8 Fire and Emergency

The Nillumbik Solar Farm will be constructed of predominantly inert materials. However it could potentially present a fire or emergency risk as the following summary shows:

- Electrical faults: malfunctions of equipment. The solar panels themselves are rarely a fire source, but related components including DC isolators and inverters, and high voltage components can catch fires.
- Electrical wiring is a potential fire source, including at connections and where movement can wear insulation or bring conductors into contact.
- The absence of chemicals, oils and battery storage means those risks are not present.
- Grass cover on the landfill cap can be a fuel sources if it dries out.
- Whilst the landfill cap is sealed to prevent gas egress, there are serval landfill gas vent pipes that could potential discharge explosive gas mixtures in the vicinity of the solar panels.
- The presence of buried putrescible and combustible wastes within the landfill mass.
- The present of thickly vegetated properties on several boundaries also creates a risk that the solar farm could be impacted by fires on neighbouring properties, and that fires could spread from the site into the nearby vegetation.

- Activities at the adjoining Nillumbik Recycling Centre where wastes and recyclables are received and then transferred elsewhere.
- A relocatable pyrolysis unit is presently operating on the location of the proposed car park – but will be removed for the development of the solar farm.

An evaluation of these risks and their management is provided in Section 4.8 below.

3.9 Electromagnetic Emissions

All electrical equipment and wiring generates electromagnetic emissions (EME) – including items such as the inverters, transformers cables and the high voltage powerlines that will be a part of the development.

In recent years there has been some concerns raised about the possible health effects of EME, especially as they relate to telecommunications towers.

EME is the energy stored in an electromagnetic field. It is a part of the natural environment, emitted by sources like the sun, the Earth and the ionosphere, as well as manmade sources such as mobile phones and base stations, broadcast towers, radar facilities and electrical and electronic equipment such as microwaves, cordless phones, electric blankets and computer and televisions.

EME is non-ionising radiation, meaning that it has insufficient energy to break chemical bonds or remove electrons (ionisation). In contrast ionising radiation (such as X-rays) can remove electrons from atoms and molecules thus leading to damage in biological tissue.

The energy in EME is related to the frequency of the electrical currents involved. X-rays have a frequency of about 10^{19} cycles per second, microwave ovens and mobile phones a frequency of 10^9 to 10^{10} cycles per second, while power lines have a frequency of 50 cycles per second. Direct current – such as is generated in solar panels and fed to the inverters has a frequency of zero.

The following information (Figure 17 below) is reproduced from the Australian Radiation Protection and Nuclear Safety Agency. Given the voltages that will be generated by the Nillumbik Solar Farm, the strengths of the magnetic fields (which equates to the EME) will be comparable to that shown for beneath street power lines (orange shading).

Given there is no close access possible to the electrical equipment and power lines the exposure levels from equipment of the type present is reasonably expected to be indistinguishable from household background levels beyond a distance from 5 to 10 metres from the equipment.

Hence no further consideration or management of EME is considered warranted in this EMP.

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There is no established evidence that the exposure to magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects. In view of the epidemiological studies, however, the possibility remains that prolonged exposure to higher than typical magnetic fields may increase the risk of leukaemia in children.

For homes near high voltage (HV) powerlines the magnetic field exposure will vary according to the amount of current carried by the powerline and the distance of the home from the powerline. Generally, homes that are more than 50 m from a high voltage powerline are not expected to have higher than typical magnetic fields. For substations and transformers the magnetic fields at distances of 5-10m away are generally indistinguishable from typical background levels in the home. The figure below shows a range of magnetic field levels measured by ARPANSA around powerlines and in Australian homes. These are well below the exposure limit in the international guidelines of 200 μ T (2000 mG).

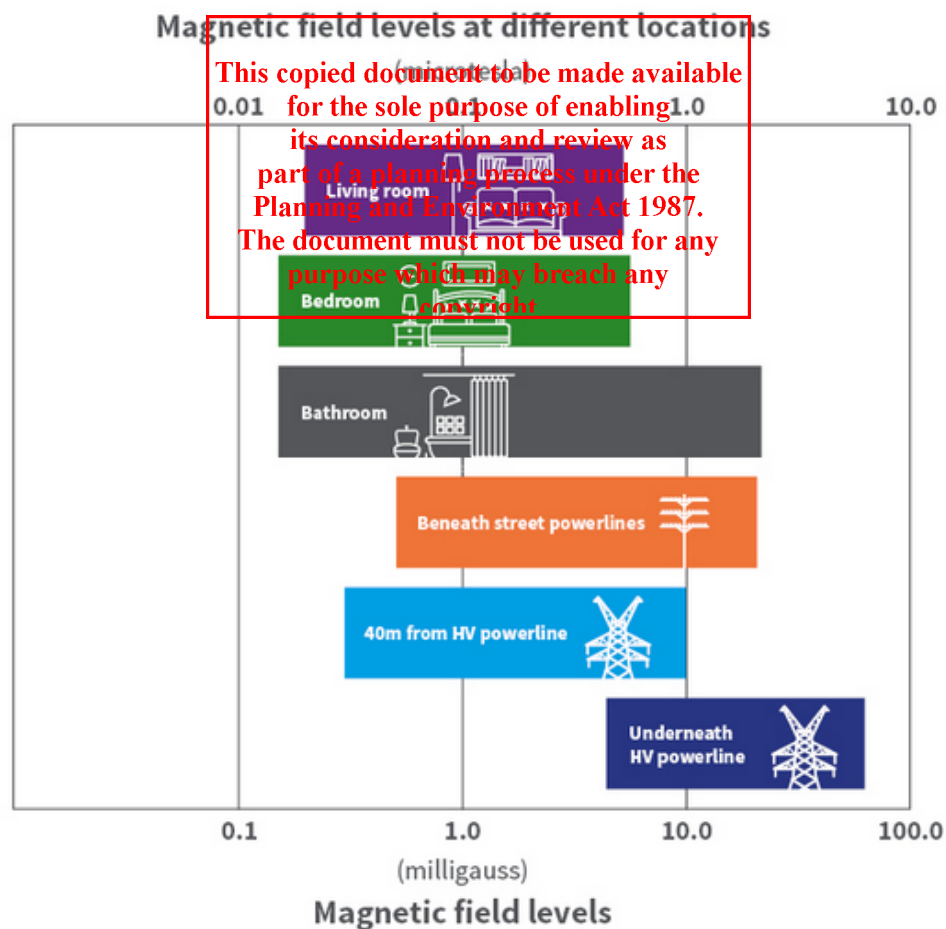


Figure 17 Information on electromagnetic energy (from <https://www.arpana.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/electricity>)

3.10 Complaints

Operation of any facility that has the potential to generate off-site impacts may be subject to complaints from affected parties. For this project it is conceivable that complaints could arise due to:

- Construction activities (noise, dust, traffic, water pollution);
- Operational activities, including:
 - Noise emissions;
 - Glint or glare;
 - Traffic;
 - Stormwater and water pollution;
 - Electromagnetic radiation;
 - Electrical outages.

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3.11 Operational Phase of the Solar Farm

The Environmental Management Plan prepared by Fyfe has identified the potential environmental risks and compliance with relevant requirements. Many of these requirements and actions are applicable during the construction phase only, resulting in a more limited set of environmental measures that will need to be implemented when the facility is in its operation phase, after commissioning. This includes:

- The facility is normally not staffed – rather it will be remotely monitored and controlled as is routine for such systems. This remote monitoring includes provision for automatic and emergency isolation and shutdown of components as necessary.
- Periodic inspections – LMS Energy schedules monthly Site Safety and Environmental audits of its operational facilities. The Nillumbik Solar Farm will be included in this schedule, that includes inspection for the condition of all plant and equipment, including:
 - Fire breaks, vegetation clearance, firefighting equipment, and water supply;
 - Weeds rubbish and obstructions;
 - Site erosion and sediment control devices, stormwater protection barriers;
 - Stockpiling of materials and waste storage; noise levels; and
 - Reported Incidents.
- There is no equipment with moving parts as the solar arrays are fixed in position. There are no mechanical maintenance requirements.
- Noise – There is the potential for noise emissions from some of the electrical equipment during daylight hours only. This has been assessed and demonstrated to comply with all requirements. Should this not be the case LMS Energy will investigate the noise sources and rectify them as necessary. Other noises may occur

infrequently such as during maintenance activities but are expected to be small in scale, brief in duration, and undertaken during standard business hours.

- Maintenance of vegetation is required for bushfire risk management – including maintaining grass at or below 100 mm in height during a declared fire danger period, providing adequate on-site water supply and access tracks. The presence of crushed rock will further reduce this risk.
- Wildlife management – Although the facility is fully within a perimeter fencing, there is a risk of wildlife entering into the solar farm as presently occurs from time to time. Such animals are noted to naturally egress the site via the same means as they enter, without intervention. The presence of wildlife does not present an operational risk to the infrastructure. Nor does it present any added risk to the wildlife. It is noted that Council animal welfare officers are based at the Nillumbik Regional Pound that is co-located at the Nillumbik Recycling Centre. It is understood that the council officers are available to assist at short notice if required.
- Electromagnetic radiation and interference – All electrical equipment and wiring generates electromagnetic radiation, including inverters, transformers cables and the high voltage powerlines. The voltages and currents involved at the Nillumbik Solar Farm are modest by industrial standards and diminish with distance from the source. Electromagnetic radiation levels from equipment of the types present is expected to be indistinguishable from background levels beyond 5 to 10 metres from the equipment.
- Glint and glare – A specialist study has shown the site to be relatively well screened from surrounding viewpoints. Given the fixed nature of the panels and the vegetation and topographical screening already provided, LMS Energy is not anticipating glint and glare impacts to be at a level of concern. However should this not be the case LMS Energy will undertake the necessary investigations and implement any corrective actions considered necessary.

3.12 Decommissioning of the Solar Farm

Risks and impacts associated with the decommissioning of the facility will be largely similar to, but generally less extensive in magnitude and extent than the construction activities described above. All infrastructure and structures will be removed, and the site restored/rehabilitated to its original conditions. This will include restoration of the landfill cap grass cover and profile to the specifications included in the ACMP.

Decommissioning will largely be the reverse of the construction process and is anticipated to be some 20 plus years into the future. By that time recycling opportunities are expected to be even more comprehensive than is the case at present. It is anticipated that the following components will be recovered for reuse or recycling:

- Concrete: recycled;
- Precast module footings: reused or recycled;
- Cabling: metal content recycled, sheathing potentially recycled;
- Solar panels: glass, metal, rare earths recovered and recycled;
- Structural steel, fencing: recycled; and
- Transformers, inverters: recycled.

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Some of these items – such as the modular panel support bases are potentially recyclable, and other materials (concrete, steel, aluminium) have well established recycling chains that will be utilised to the extent possible.

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4. MANAGING ENVIRONMENTAL RISKS

4.1 Traffic

As the traffic that will be generated by the project will be minimal, no specific traffic management measures are considered necessary.

4.2 Construction

As noted in Section 3.2 there are a range of environmental risks that may be encountered. These are specific risks with specific management measures that are applicable for the duration of the construction phase.

They are addressed in the stand-alone *Construction Environment Management Plan* (CEMP), a copy of which is provided in **Appendix F**.

Key management measures that the CEMP covers to properly manage these risks include:

- Protection of the integrity of the landfill cap;
- Erosion and sediment control;
- Tracking of soil onto public roads;
- Hours of operation;
- Complaints management and incident reporting; and
- Dust and noise emissions.

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Other matters that are included in the CEMP, but present a lower risk – due to the modest scale or nature of the activities include:

- Fuel and chemical spills and leaks;
- Contaminated soil;
- Vibration;
- Traffic and parking;
- Flora and fauna;

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The CEMP should be referred to for the complete listing of requirements and should be provided to the construction contractor.

4.3 Wildlife

As discussed in Section 3.3 there is no wildlife habitat on the site, so no specific management measures are warranted.

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It was noted that wildlife including kangaroos may enter the site from the surrounding properties, as has presumably been occurring for many years. LMS Energy will, as a part of its routine inspection and maintenance procedures check for the presence of trapped or distressed wildlife and attend to their well-being as required. This may include seeking the support of council rangers and staff associated with the adjoining Nillumbik Recycling Centre.

4.4 Drainage and Stormwater

As noted in Section 3.4 there is the potential for significant stormwater and erosion at the site. A specialist study was therefore undertaken by Fyfe to ensure that these risks are understood, and the appropriate management measures are implemented. This information is presented in the report *Nillumbik Solar Farm – Solar Panel Installation: Drainage and Stormwater Plan*, LMS Energy Pty Ltd, 290 – 304 Yan Yean Road, Plenty, Victoria, dated 1 October 2021, a copy of which is provided in **Appendix D**.

Key management measures that the Drainage and Stormwater Plan requires to properly manage these risks include:

- Establishing sediment controls around any areas of disturbance and significant traffic movement (entry/egress points);
- Protecting existing drainage paths from sediment loading using sediment fences;
- Regular inspection of these measures; and
- Reinstatement to the original conditions at the completion of construction.

The DSP should be referred to for the complete listing of requirements and provided to the construction contractor.

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4.5 Glare, Glint Light Spill

Section 3.5 identifies that there is the potential for glint and glare from the solar panel array to impact on off-site properties and roads. LMS Energy commissioned a specialist consultancy (Environmental Ethos) to identify and advise on management options for any such possible risks. Their report *Nillumbik Solar Farm Glint and Glare Impact Assessment Report* (Glint and Glare report) is provided in **Appendix E**.

All dwellings identified as having the potential to be impacted by glare in the modelling are substantially screened by existing vegetation. Therefore vegetation screening is important to maintaining effective screening during the life of the Project. Ongoing maintenance or required replacement of surrounding vegetation screens will be managed largely by the public land manager, with contribution from LMS Energy where considered appropriate.

Two (2) dwellings (OP1 and OP2) and the non-residential building (OP3) to the west of the Project require consideration of potential glare hazard. Whilst the likelihood of glare affecting the amenity of occupants at these locations is considered very low, the potential small hazard can be managed by maintaining and enhancing existing vegetation screens to ensure effective density and height.

4.5.1 Mitigation measures for potential impacts on roads

The section of Yan Yean Road identified in the modelling as potentially affected by glare is located south of Kurrak Road intersection and north of entrance to the recycling centre, and extends approximately 250 m. The intersections

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are not affected by glare due to screening by topography and vegetation. Travellers heading south are more likely to be impacted, glare hazard potential occurs during the early morning between spring and autumn.

Recent road works in this location included landscape treatment and tree planting along the road verges and these plantings are considered likely to provide some screening in the future.

In addition, a formal Complaints Process is included in this document (see Section 4.9) for managing concerns regarding glare and provides a rectification procedure to manage concerns regarding glare hazard and provide rectification measures if required.

4.6 Native Vegetation

As noted in Section 3.6 there is no native vegetation proposed to be removed or cleared as part of the proposed, so no specific native vegetation management measures are warranted.

4.7 Cultural Heritage

As noted in Section 3.7 the works footprint and the site of the solar panel installation is fully within the footprint of the former landfill cap. As this is a historically highly disturbed area there is no prospect of undisturbed items of cultural heritage being present. Furthermore the site does not include any area within a cultural heritage overlay.

Hence no specific cultural heritage management measures are required.

4.8 Fire and Emergency

The proposal has been considered in accordance with the *CFA Guidelines for Renewable Energy Installation, March 2021* (CFA Guidelines) to ensure that bushfire risk to the facility and surrounding land is mitigated to an acceptable level for a micro solar farm (defined as up to and including 5 MW).

The key fire risks identified include bushfire events, ignition sources from the previous landfill use, and property fires on neighbouring sites or at the Recycling Centre on-site.

In response to preliminary correspondence with the CFA Specialised Risk and Fire Safety Unit, the following design components have been incorporated into the proposal to mitigate risk:

- Whilst landfill fires are not uncommon at operating landfills, the act of closure excludes oxygen from the landfill mass and therefore eliminates the risk of combustion of the buried wastes.
- The provision of secure fencing around the perimeter of the facility and secondary fencing around the high voltage compound to restrict site access to authorised personnel;
- The provision of a 10 m wide fire break area around the perimeter of the facility; ensuring a cleared buffer between property boundaries and surrounding vegetation from the solar array and associated infrastructure;
- A vegetation maintenance schedule is included in the Landscape Plan, giving consideration for appropriate vegetation clearance and management during the Fire Danger Period;

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- Adequate access for emergency vehicles to and within the facility, utilising the existing formal internal driveway access from Yan Yean Road and inclusion of an adequate turn around area at the site entrance, and informal facility perimeter path (fire break);
- The provision of an on-site fire protection system comprising 22.5kL water supply and fire-fighting equipment at the site entrance;
- The proposed power line will be provided underground, eliminating the potential hazards associated with overhead powerlines sited above persons, property, and vegetation;
- Electrical wiring on the landfill cap will be securely fixed to cable trays;
- Appropriate management of ignition sources by siting panels and infrastructure away from vents and released gas associated with the capped landfill. During detailed design LMS Energy will undertake a hazardous area assessment of the existing atmospheric gas vents. Using a suitable calculation method the explosive gas zones will be determined and a hazardous area classification drawing produced in accordance with AS/NZS 60079.10.1. Design of the solar facility layout will ensure that electrical equipment is situated outside of the hazardous area zones or be suitably rated; and
- The proposal does not include a battery energy storage system or other dangerous goods storage on site.

An Emergency Management Plan incorporating a Fire Management Plan will be prepared prior to commencing works. The Emergency Management Plan will be prepared in accordance with the requirements of AS 3745-2010: *Planning for emergencies in facilities*.

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4.9 Complaints

All complaints will be recorded and acted on by LMS Energy.

As the land on which the Solar Farm is located is owned by the Nillumbik Shire Council and is within the property boundary of the Nillumbik Recycling Centre, LMS Energy will utilise the existing Nillumbik Shire Council Complaint Handling Process as the registration point for complaints. This will be advised on signage at the entrance to the Solar Farm Facility.

This registration point is preferred as the site will generally be un-staffed, the community is already familiar with the Nillumbik Shire Council's role in previously operating the landfill and associated recycling centre, and more recently in their involvement in developing the Solar Farm concept. The Council's complaint management process is documented in the Nillumbik Shire Councils' *Complaint Handling Policy*, dated March 2020. A copy of which is provided in **Appendix G**.

In accordance with that policy, complaints or feedback can be made by any individual as follows:

Online	http://www.nillumbik.vic.gov.au
Email Council	Nillumbik@nillumbik.vic.gov.au
Telephone Council	9433 3111
Mail	Nillumbik Shire Council PO Box 476 Greensborough, Victoria 3088
In person	32 Civic Drive Greensborough, Victoria 3088

Prior to the commencement of work at the site LMS Energy will prepare and provide information for the frontline staff that receive complaints. That information will ensure that complaints relating to the Solar Farm are passed on to the appropriate officers in LMS Energy, in addition to be passed on to the council officer with responsibility for the project.

LMS Energy will then handle the complaint following the same process as would be followed by Council (see **Appendix G**).

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5. REFERENCES

- *Best Practice Erosion and Sediment Control* (IECA, 2008)
- Drawings 1 – 17 (147615003_004-S_Rev1) (Golder Associates, 2016)
- EPA Publication 1490.1 Closed Landfill Guidelines, dated January 2018.
- EPA Publication 788.3 *Siting, design, operation and rehabilitation of landfills*, dated August 2015.
- *Guidelines for Renewable Energy Installations* (Country Fire Authority March 2021)
- *Plenty Landfill Aftercare Management Plan* (Golder Associates, 2015)
- *PLENTY Phase1 Top of Topsoil (ver03) and PLENTY Phase1&4 surface drain sections (ver01)-Sheets 1 – 3.* (LMS Energy, 2020)
- Plenty Renewable Energy Facility Plans (Document IDs: 30032-EA-118_Rev B, 30032-GA-101_Rev 3, 30082-GA-102_Rev D, 30032-GA-107_Rev A, 3002-GA-111 Rev A) (LMS Energy, 2021)
- *Topsoil & Swale Drains Survey Shamrock Civil, Nillumbik Landfill Yan Yean Road*, Plenty

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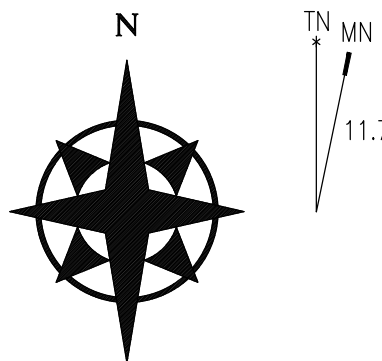
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APPENDIX A

NILLUMBIK SOLAR FARM – CONSTRUCTION PLANS

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GDA94 / MGA ZONE 55
NEARMAP PTY LTD AERIAL IMAGE DATED 06 MAY 2021

LEGEND

- PROPOSED 22KV UNDERGROUND LINE
- PROPOSED 22KV OVERHEAD LINE
- TITLE BOUNDARY
- FACILITY FENCE

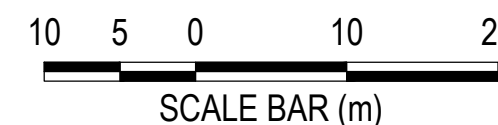
PV SYSTEM DETAILS

SITE ADDRESS: 290 YAN YEAN ROAD, PLENTY, VIC, 3090
NMI: TBA
EXPORT CAPACITY: 2800 kW

NOTES:

- LAYOUT IS BASED ON AERIAL IMAGERY. DIMENSIONS ARE ONLY APPROXIMATE.
- DETAILED ONSITE MEASUREMENTS TO BE TAKEN BY THE INSTALLATION CONTRACTOR PRIOR TO CONSTRUCTION.
- AUSNET/LMS POINT OF CONNECTION PROPOSED AT NEW POLE MOUNTED RECLOSER ON YAN YEAN ROAD. FINAL CONNECTION ARRANGEMENT TO BE ADVISED BY AUSNET.
- NUMBER OF POLES, LOCATION AND FINAL HEIGHT TO BE DETERMINED AT DETAILED DESIGN STAGE.
- PROPOSED CARPARK TO BE INSTALLED BY COUNCIL.
- DIMENSIONS ARE APPROXIMATE.

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FULL SIZE 1:500, HALF REDUCTION 1:1000

ADVERTISED PLAN



FOR INFORMATION

PLENTY RENEWABLE ENERGY FACILITY

CONNECTION POINT
LOCALITY PLAN

DRAWN: SA
DATE: 16/06/21
DESIGN: RD
DATE: 16/06/21
APPRVD:
DATE:
A.B.N. 39 059 428 474



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E	02/03/22	SA	DB			ISSUED FOR PLANNING									
D	17/12/21	SA	RD	DB		PROPERTY BOUNDARY CORRECTED									
C	06/10/21	SA	DB			TREES AND PIT REMOVED									
B	16/08/21	SA	RD			22kV TERMINATION POLE ADDED									
A	16/06/21	SA	RD			FOR INFORMATION									
No	DATE	DRN	DES	CHKD	APP	DESCRIPTION	No	DATE	DRN	DES	CHKD	APP	DESCRIPTION	DRAWING NUMBER	DESCRIPTION
REVISIONS							REVISIONS							REFERENCE DRAWINGS	

1 2 3 4 5 6 7 8 9 10 11 12

A

B

C

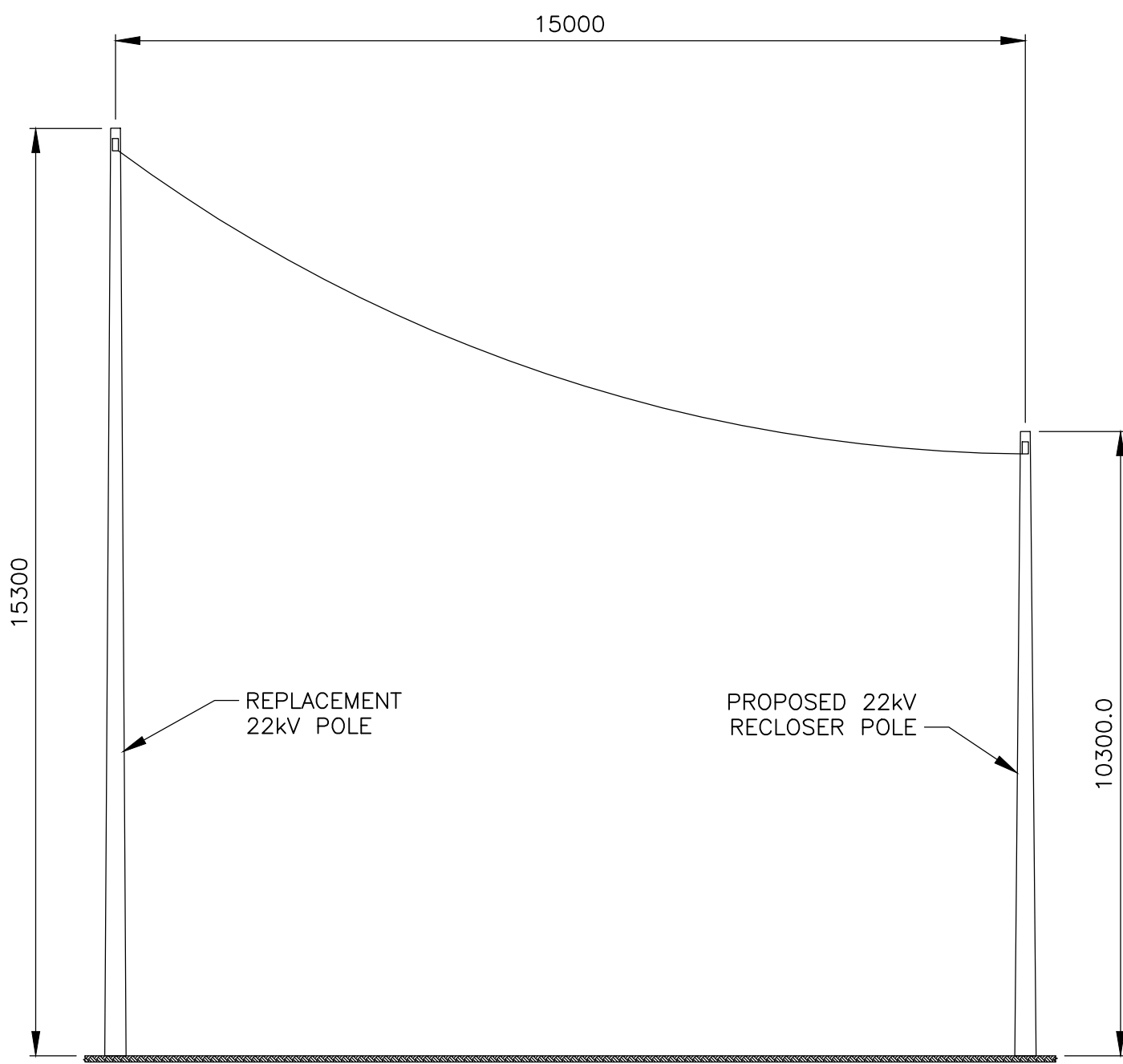
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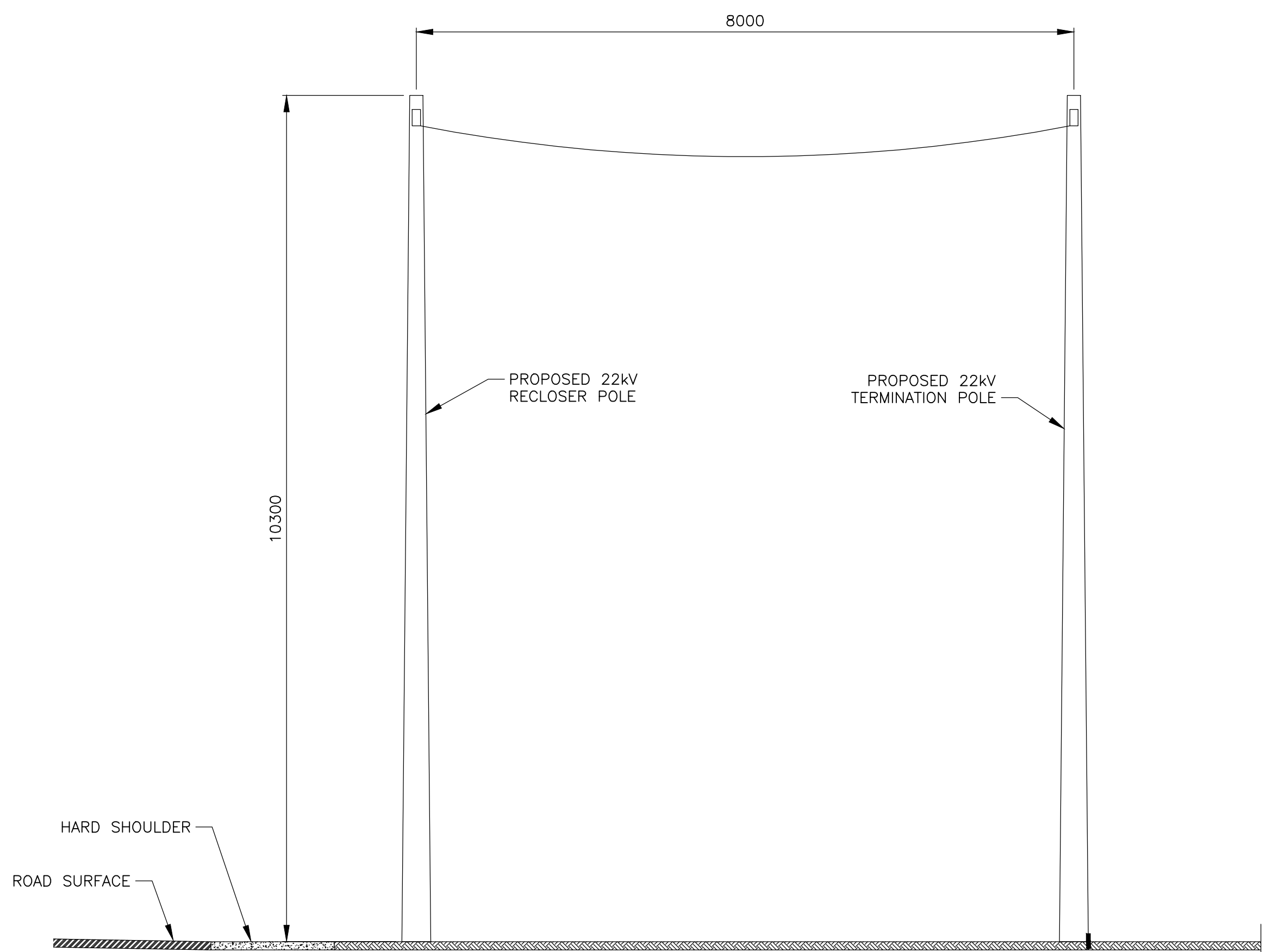
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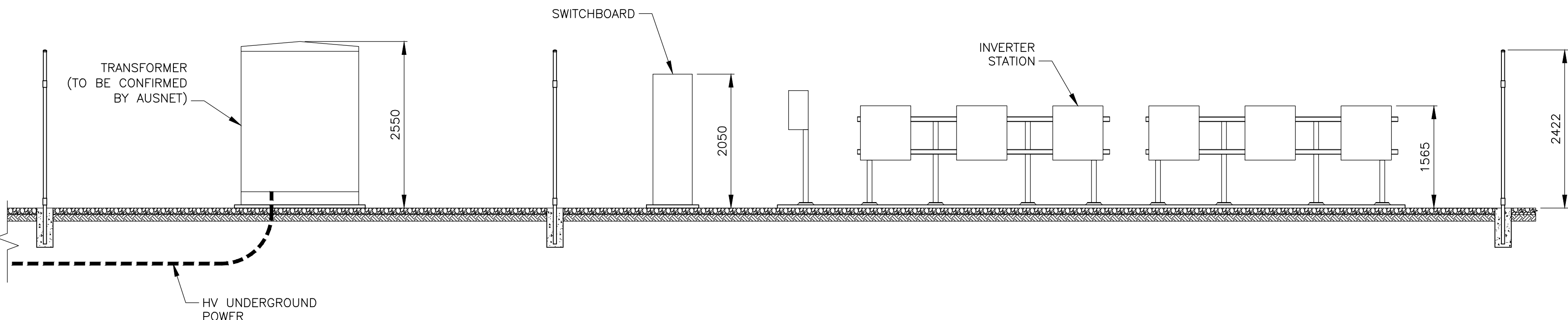
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SECTION A
SCALE 1:100



ADVERTISED PLAN



SECTION B
SCALE 1:50

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FOR INFORMATION

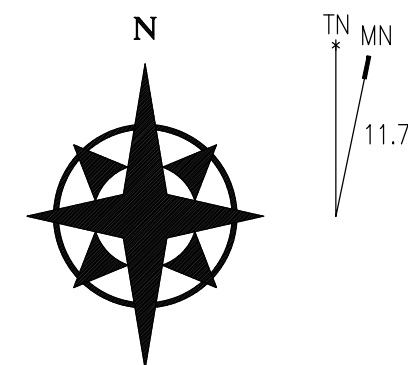
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D	17/12/21	SA	RD	DB		PROPERTY BOUNDARY CORRECTED											
C	06/10/21	SA	DB			PIT REMOVED											
B	16/08/21	SA	RD			22kV TERMINATION POLE ADDED											
A	16/06/21	SA	RD			FOR INFORMATION											
No	DATE	DRN	DES	CHKD	APP	DESCRIPTION	No	DATE	DRN	DES	CHKD	APP	DESCRIPTION	DRAWING NUMBER	DESCRIPTION		
REVISIONS							REVISIONS							REFERENCE DRAWINGS			

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DRAWN: SA
DATE: 17/06/21
DESIGN: RD
DATE: 17/06/21
APPRVD:
DATE:
A.B.N. 39 059 428 474

PLENTY RENEWABLE ENERGY FACILITY				
CONNECTION POINT ELEVATIONS				
SCALE	DRAWING NUMBER	SHEET	SIZE	REV
AS NOTED	30032-EA-118	2 OF 2	A1	E



GDA94 / MGA ZONE 55
NEARMAP PTY LTD AERIAL IMAGE DATED 27 OCTOBER 2021

LEGEND

- PROPOSED 22KV UNDERGROUND LINE
 PROPOSED 22KV OVERHEAD LINE
 PROPERTY BOUNDARY
 500KV TRANSMISSION LINE
 RESIDENCE

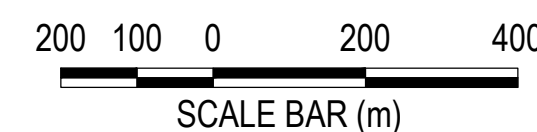
PV SYSTEM DETAILS

SITE ADDRESS: 290 YAN YEAN ROAD, PLENTY, VIC, 3090
EXPORT CAPACITY: 2800 kW

NOTES:
1) LAYOUT IS BASED ON AERIAL IMAGERY. DIMENSIONS ARE ONLY APPROXIMATE.

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ADVERTISED PLAN



FULL SIZE 1:10000, HALF REDUCTION 1:20000

FOR INFORMATION

PLENTY RENEWABLE ENERGY FACILITY

SOLAR FACILITY LOCALITY PLAN

SCALE	DRAWING NUMBER	SHEET	SIZE	REV
1:10000	30032-GA-102	1 OF 1	A1	F

DISTANCE FROM INFRASTRUCTURE (METRES)		
DWELLING	COMMERCIAL PROPERTY	DISTANCE
1		205
2		249
	3	288
4		382
5		341
6		310
7		245
8		263
9		283
10		274
11		371
12		244
13		184
14		398
15		208
16		375
17		372
18		556
19		495
20		257
21		296
22		497
23		438
	24	514
	25	578
26		594
27		524
28		539
29		626
30		747
31		1003
32		594
33		856
34		708
35		1007
36		904
37		1239
38		928
39		897
40		846

TRANSMISSION LINE DISTANCE FROM DEVELOPMENT	
500kV	DISTANCE (METRES)
-----	337

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DRAWN:	R.D.
DATE:	01/07/20
DESIGN:	R.D.
DATE:	01/07/2020
APPRVD:	
DATE:	
AR.N.	39 059 428 474

F	03/03/22	SA	DB			ELECTRICAL COMPOUND & SOLAR PANEL UPDATE													
E	16/12/21	SA	RD	RD		RADIUS EXTENDED TO 1.5km AND TABLES ADDED													
D	16/08/21	SA	RD			RESIDENCE RENUMBERING													
C	16/06/21	SA	RD			FOR INFORMATION													
B	29/03/21	CPF	RD			DIP – ISSUED FOR CONNECTION ENQUIRY													
A	15/03/21	CPF	R.D.			DIP – ISSUED FOR CONNECTION ENQUIRY													
No	DATE	DRN	DES	CHKD	APP	DESCRIPTION	No	DATE	DRN	DES	CHKD	APP	DESCRIPTION			DRAWING NUMBER		DESCRIPTION	
REVISIONS							REVISIONS							REFERENCE DRAWINGS					

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LEGEND

PV SYSTEM DETAILS

NOTES:
1. LAYOUT IS BASED ON AERIAL IMAGERY.
2. DIMENSIONS ARE APPROXIMATE.

A horizontal scale bar with alternating black and white segments. Above the bar, numerical values are placed: 60, 30, 0, 60, and 120. Below the bar, the text "SCALE BAR (m)" is centered.

FOR INFORMATION

PLENTY RENEWABLE ENERGY FACILITY


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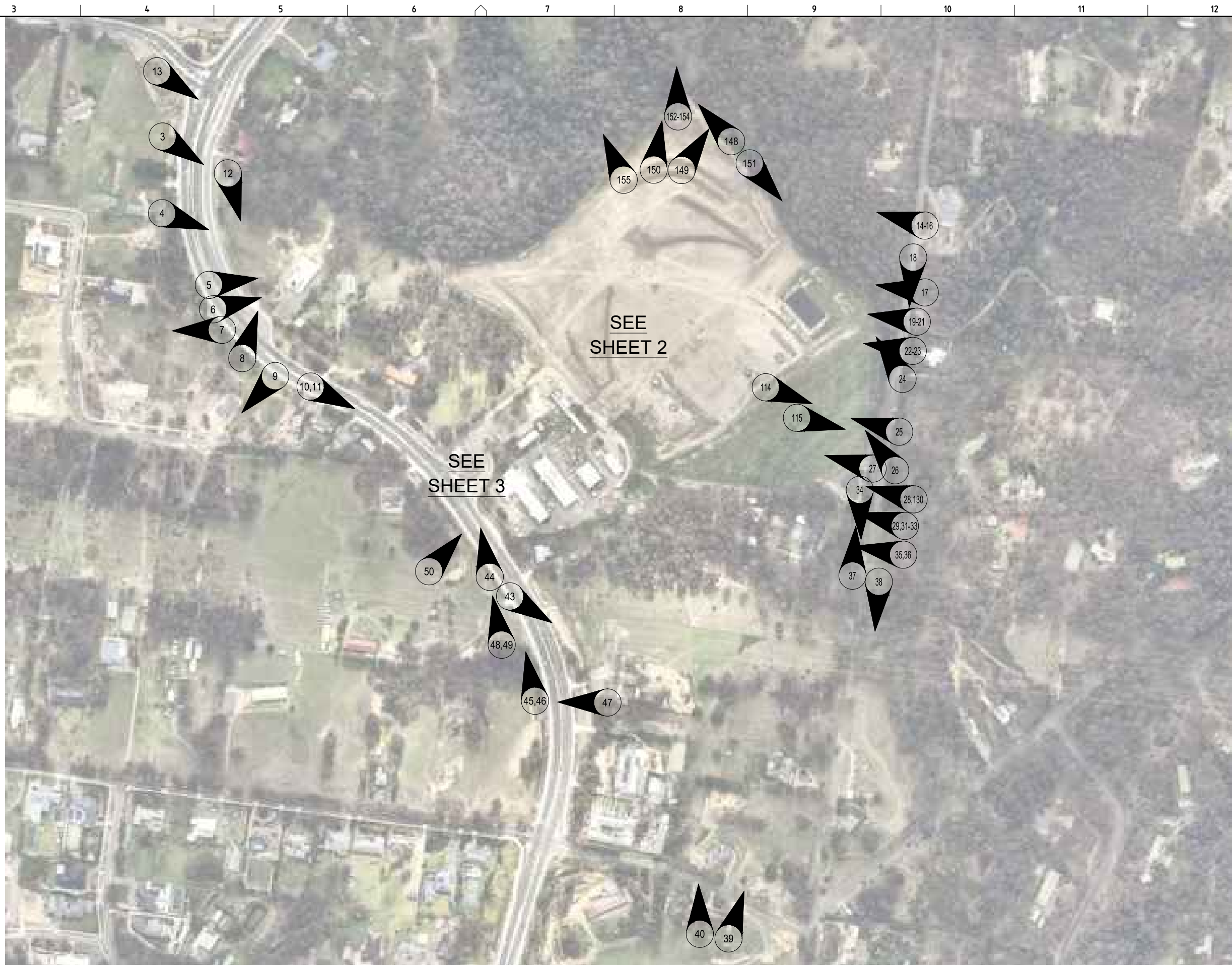
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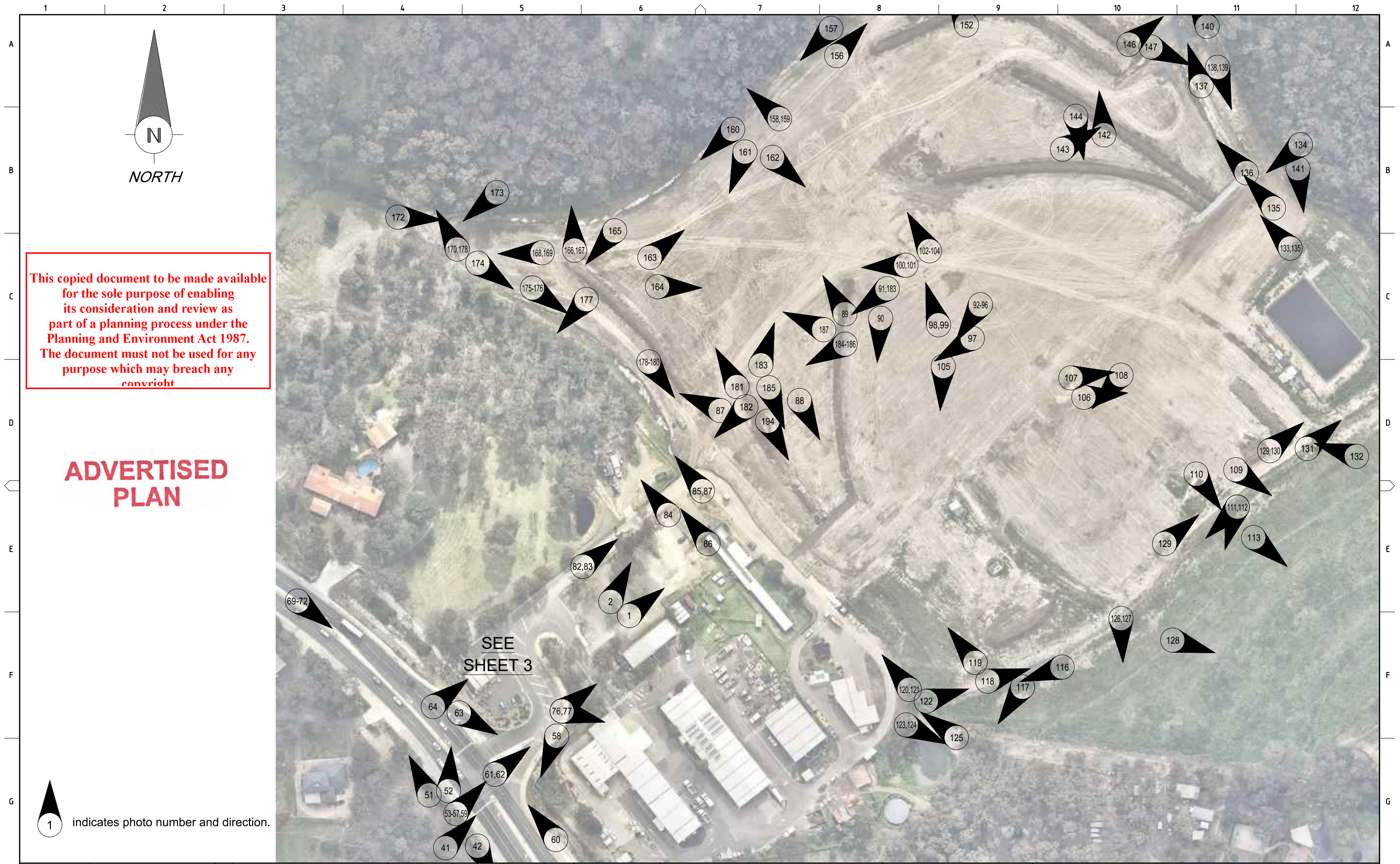


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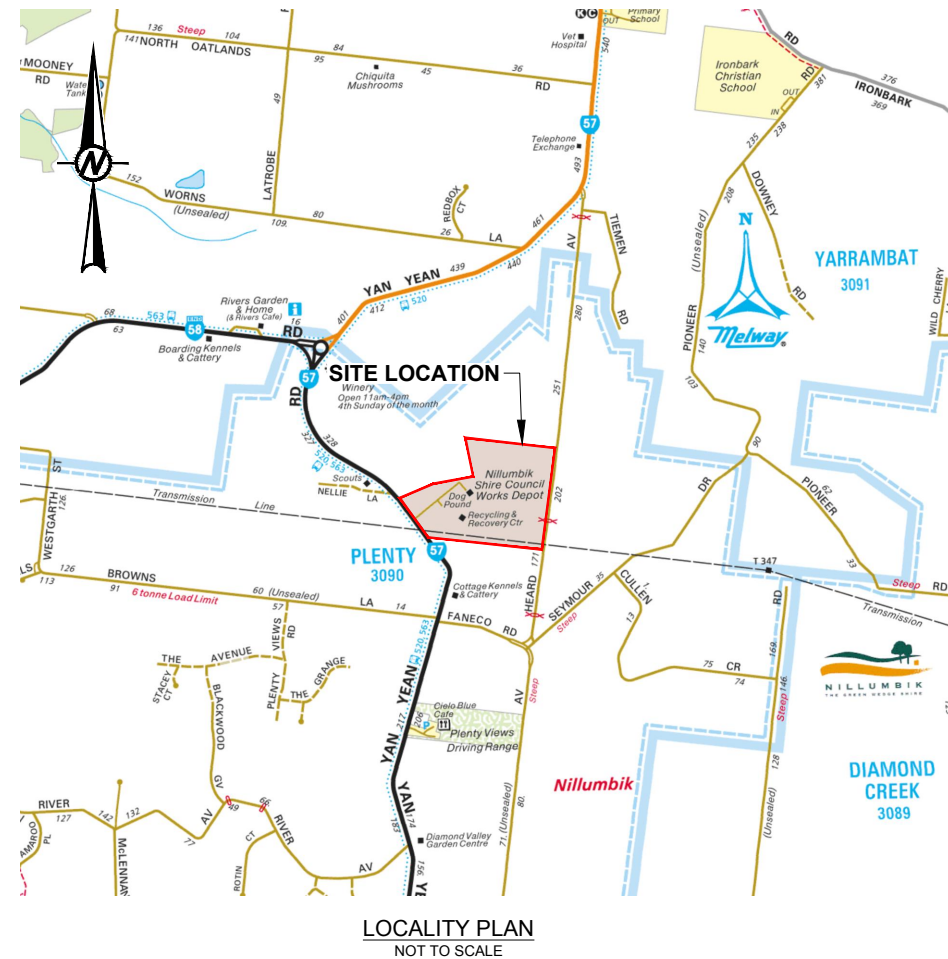
☒ YES (Please email / fax to Golder Associates) ☐ NO

j:\civil\2014\147615003 - plenty and kangaroo ground cap design\correspondence out\147615003-044 construction issue drg\147615003-044-t-rev1.docx

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PLENTY LANDFILL CAP DESIGN



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DRAWING LIST

DRAWING No.	TITLE
1	COVER SHEET
2	EXISTING CONDITIONS
3	REHABILITATION PHASES
4	UNDERSIDE OF CAP WITH GAS COLLECTION SYSTEM
5	STORMWATER MANAGEMENT PLAN
6	TYPICAL SECTIONS AND DETAILS SHEET 1
7	TYPICAL SECTIONS AND DETAILS SHEET 2
8	TYPICAL SECTIONS AND DETAILS SHEET 3
9	TYPICAL SECTIONS AND DETAILS SHEET 4
10	TYPICAL SECTIONS AND DETAILS SHEET 5
11	TYPICAL SECTIONS AND DETAILS SHEET 6
12	TYPICAL SECTIONS AND DETAILS SHEET 7
13	GAS COLLECTION SYSTEM AND PENETRATION DETAILS SHEET 1
14	GAS COLLECTION SYSTEM AND PENETRATION DETAILS SHEET 2
15	LEACHATE POND AND SPILLWAY LAYOUT PLAN CROSS SECTION AND DETAILS - SHEET 1
16	LEACHATE POND AND SPILLWAY LAYOUT PLAN CROSS SECTION AND DETAILS - SHEET 2
17	NORTH WEST CORNER FILL PLAN AND DROP STRUCTURE SECTIONS AND DETAILS







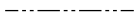













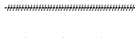












NOTES

1. THESE NOTES APPLY TO ALL PROJECT DRAWINGS IN THE SET UNLESS NOTED OTHERWISE AND SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION.
2. ALL LEVELS ARE IN METRES TO AUSTRALIAN HEIGHT DATUM (mAHD).
3. ALL CO-ORDINATES ARE IN METRES TO MAP GRID AUSTRALIA (MGA 94 ZONE 55).
4. ALL DIMENSIONS ARE IN METRIC UNITS AS SPECIFIED.
5. DIMENSIONS AND LOCATION OF EXISTING STRUCTURES SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
6. LOCATION AND DEPTH OF ALL SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
7. DIMENSIONS SHALL NOT BE SCALED OFF DRAWINGS.
8. DRAWING MUST BE PRINTED IN COLOUR TO CORRECTLY IDENTIFY ALL DESIGN ELEMENTS.

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MATERIAL LIST

	UNIT 1	CLAY RICH SOIL
	UNIT 2	GAS COLLECTION AGGREGATE
	UNIT 3A	PERFORATED GAS COLLECTION PIPE
	UNIT 3B	SOLID WALL GAS COLLECTION PIPE
	UNIT 4	SEPARATION GEOTEXTILE
	UNIT 5	GAS RISER PIPE
	UNIT 6	GCL
	UNIT 7	LOW PERMEABILITY LINER (OPTION 1 - COMPACTED CLAY LINER)
	UNIT 7	LOW PERMEABILITY LINER (OPTION 2 - GCL)
	UNIT 8A	GEOMEMBRANE (SMOOTH BOTH SIDES)
	UNIT 8B	GEOMEMBRANE (TEXTURED BOTH SIDES)
	UNIT 9	DRAINAGE LAYER
	UNIT 10	SUBSOIL
	UNIT 11	TOP SOIL
	UNIT 12	DRAINAGE AGGREGATE
	UNIT 13	SUBSURFACE DRAINAGE PIPE
	UNIT 14	CUSHION GEOTEXTILE
	UNIT 15	FILL
	UNIT 16	GAS GEOCOMPOSITE DRAIN
	UNIT 17	SAND
	UNIT 18	GEOGRID
	UNIT 19	LEACHATE POND PERIMETER FENCE
	UNIT 20	SPILLWAY AGGREGATE
	UNIT 21	VEGETATION
	UNIT 22	CLAY PLUG
	UNIT 23	LANDFILL GAS CLEANOUT PIPE
	UNIT 24	ELECTRICAL CONDUIT
	UNIT 25	VERTICAL GAS WELL
	UNIT 26	ROCK-FILLED WIRE BASKET
	UNIT 27	LEACHATE TRANSFER PIPE
	UNIT 28	RIP RAP
	UNIT 29	LEACHATE EXTRACTION PIPE
	UNIT 30	LEACHATE POND CONFINING LAYER

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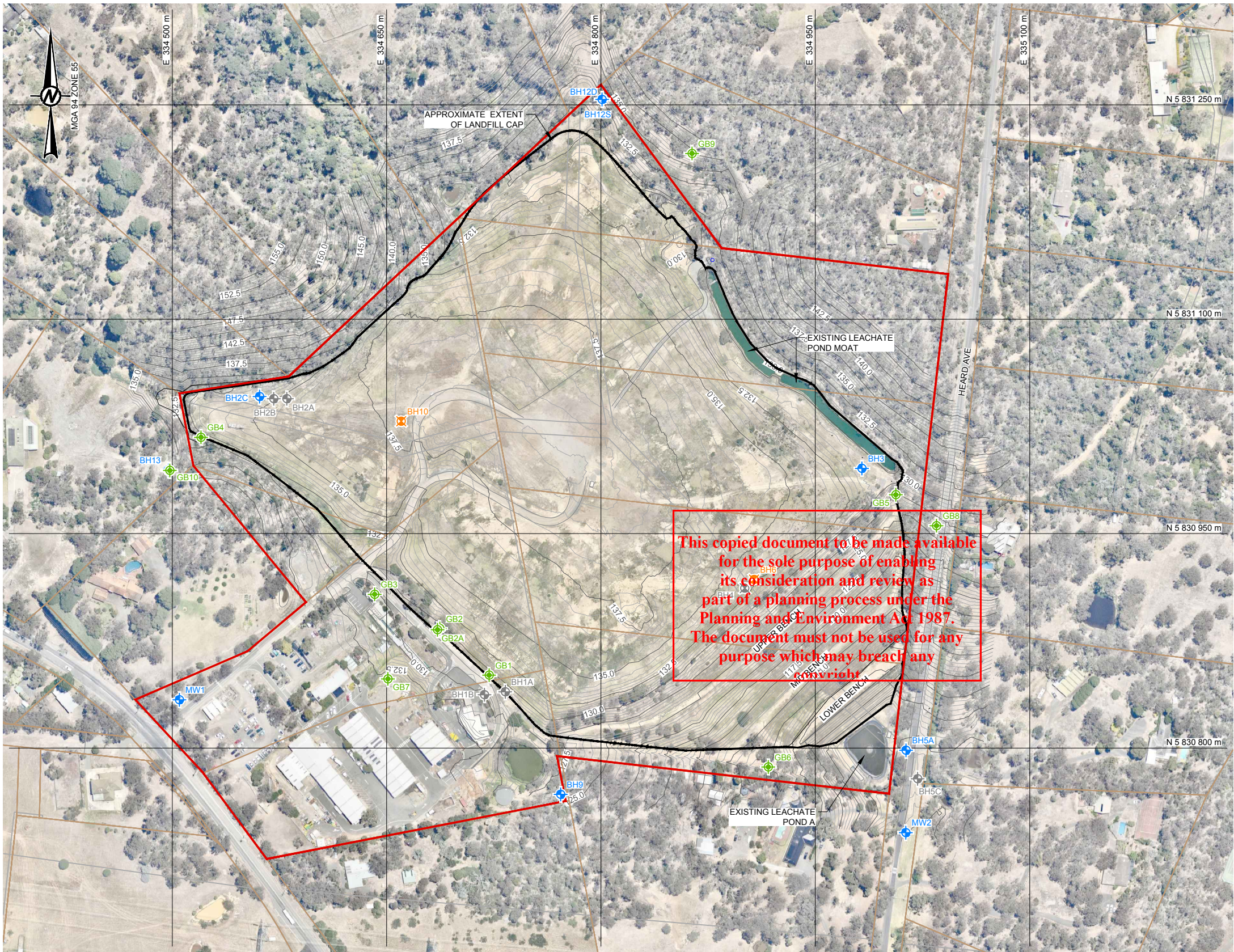


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PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
COVER SHEET

PROJECT No.	Doc. No.	Rev.	1 of 17	DRAWING
147615003	004-S	1		1



PLAN VIEW
SCALE 1:3,000

LEGEND

- CADASTRAL BOUNDARY
- APPROXIMATE SITE BOUNDARY
- APPROXIMATE EXTENT OF UNDERSIDE OF CAP
- EXISTING SURFACE CONTOURS AT 0.5 m INTERVAL
- OPERATION GROUNDWATER MONITORING WELL
- OPERATIONAL LFG MONITORING WELL
- OPERATIONAL LEACHATE MONITORING WELL
- NON OPERATIONAL LEACHATE MONITORING WELL
- NON OPERATIONAL GROUNDWATER MONITORING WELL

- NOTES**
- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
 - NON OPERATIONAL LEACHATE AND GROUNDWATER MONITORING WELLS ARE BELOW GROUND LEVEL.

- REFERENCE**
- SURVEY BASE PLAN SOURCE FROM LANDAIR SURVEY, NILLUMBIK SHIRE COUNCIL - FEATURE & SURVEY, DRG REF.: NILLUMBIK SHIRE COUNCIL FEATURE & LEVEL SURVEY - PLENTY LANDFILL SITE, PLENTY LANDFILL 240214 r.dwg, DATED 19 MARCH 2014

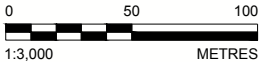
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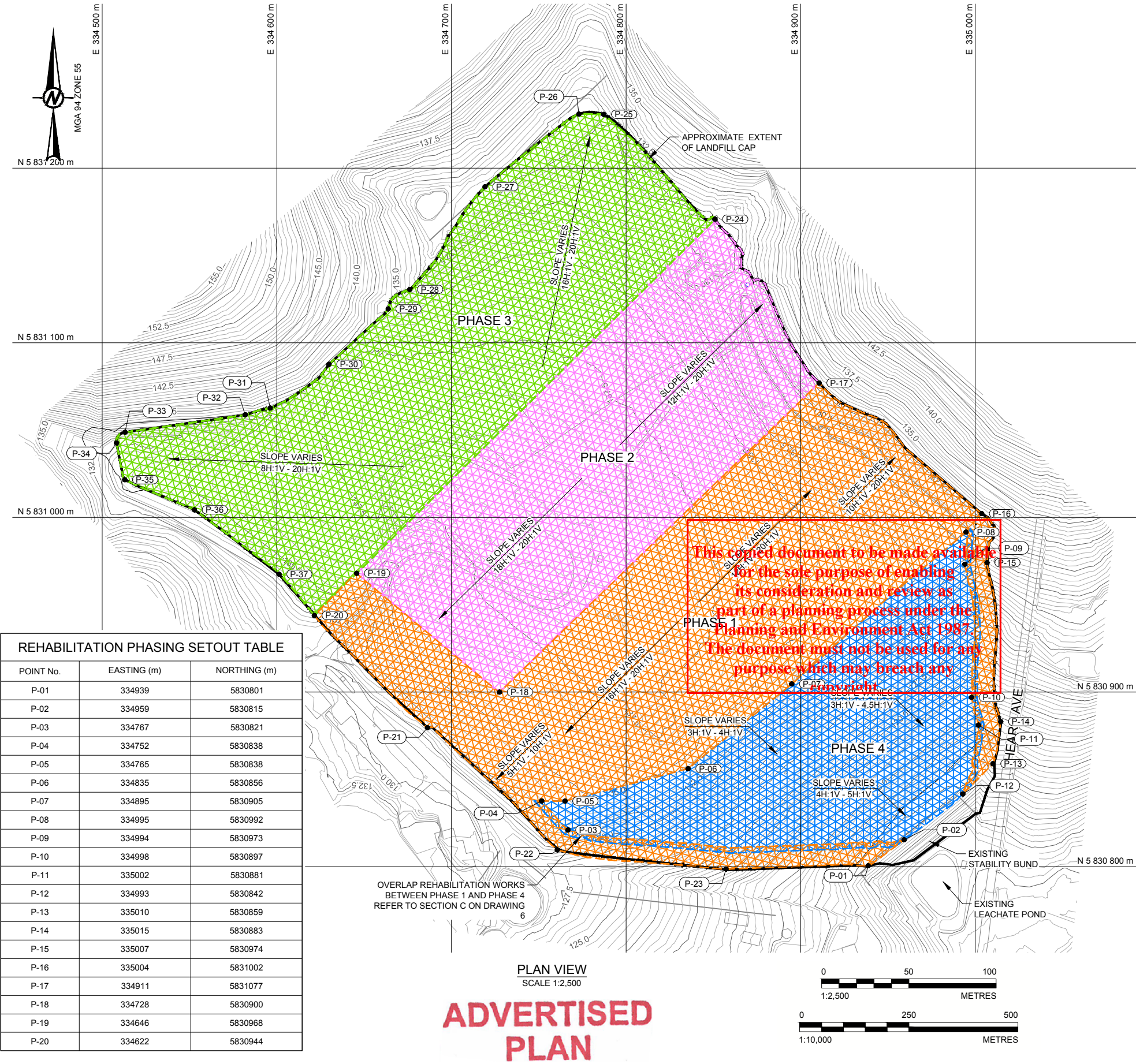
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PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
EXISTING CONDITIONS

PROJECT No.	Doc. No.	Rev.	2 of 17	DRAWING
147615003	004-S	1		2

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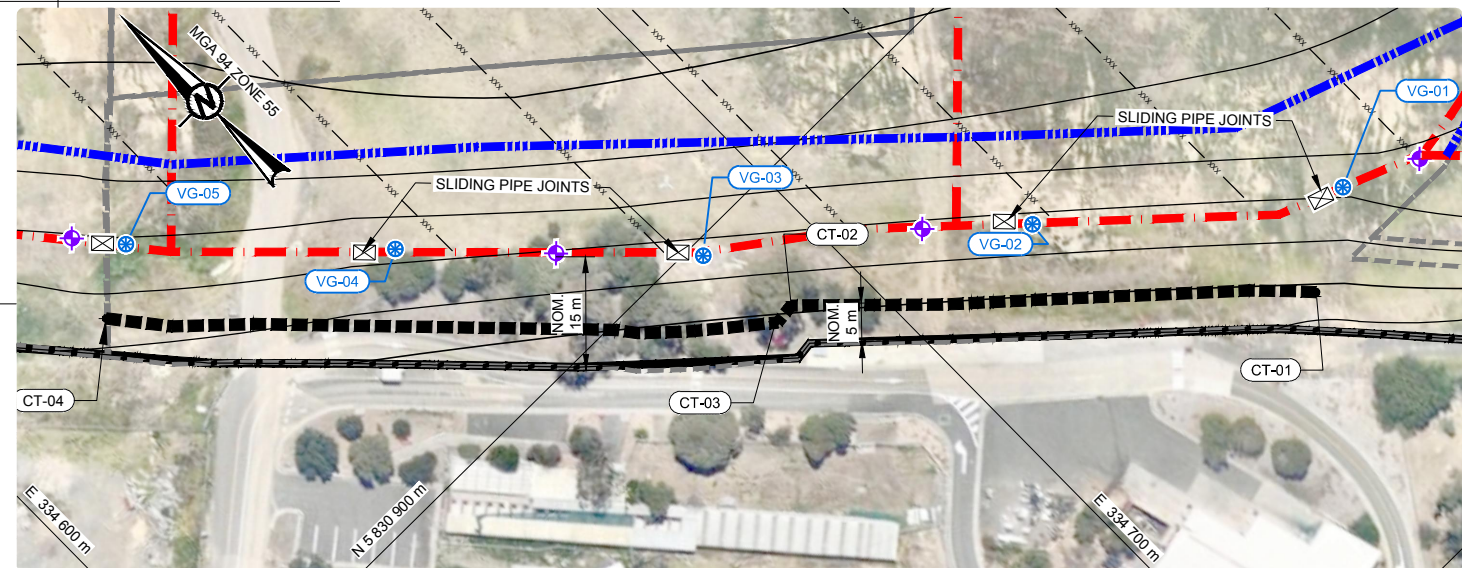
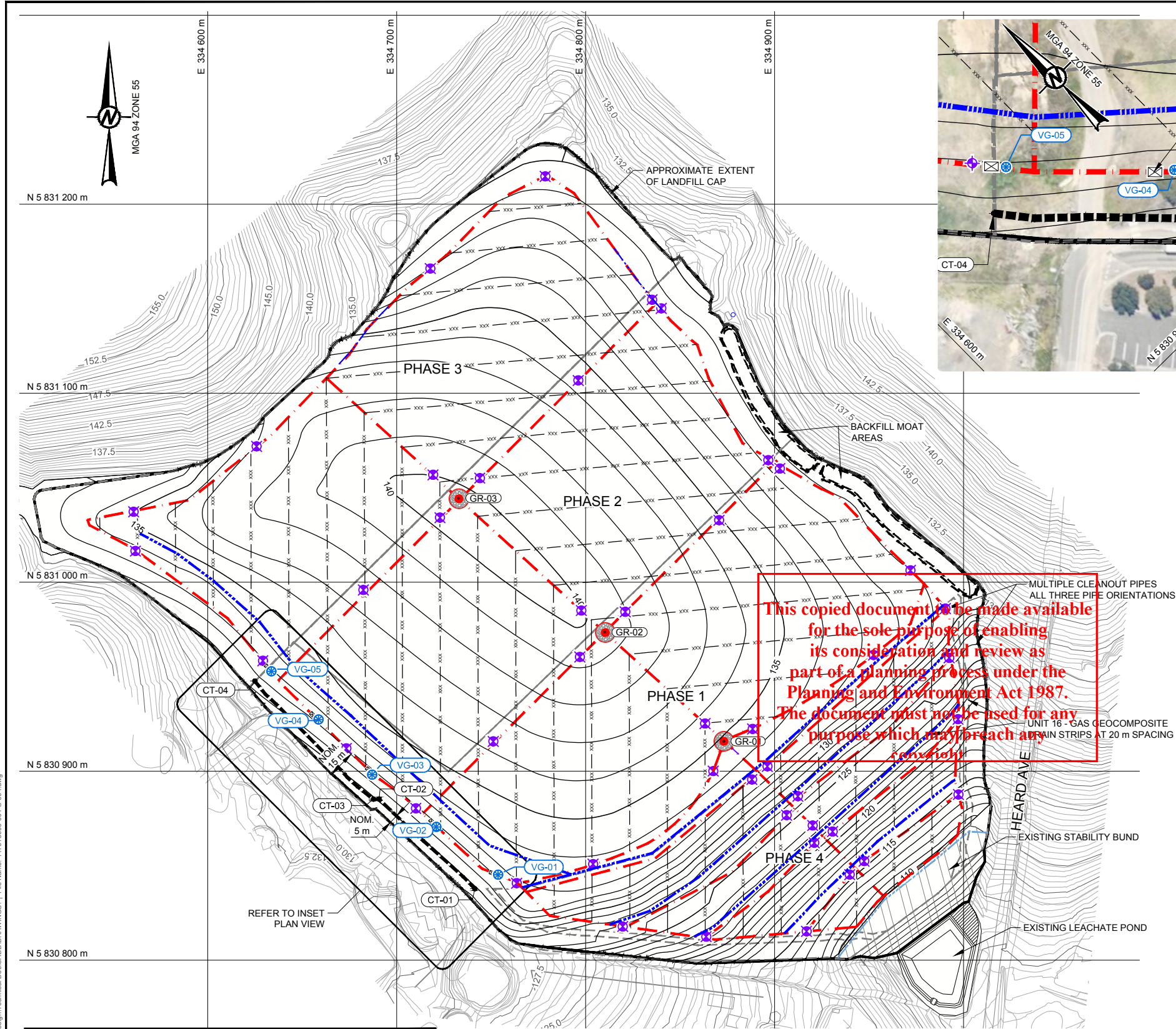


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PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
REHABILITATION PHASES

PROJECT No. 147615003 Doc. No. 004-S Rev. 1 3 of 17 DRAWING 3



INSET PLAN VIEW
SCALE 1:1,000

LEGEND	
	APPROXIMATE EXTENT OF UNDERSIDE OF CAP
	PHASE BOUNDARY
	EXISTING SURFACE CONTOURS AT 0.5 m INTERVAL
	BOUNDARY OF MOATS
	UNDERSIDE OF CAP CONTOURS AT 1 m INTERVAL
	GAS COLLECTION TRENCH
	LAND FILL GAS CUT-OFF TRENCH
	GCL ANCHOR TRENCH INDICATIVE ALIGNMENT
	GCL OVERLAP INDICATIVE ALIGNMENT
	UNIT 16 - GAS GEOCOMPOSITE DRAIN STRIPS AT 20 m SPACING
	LANDFILL GAS RELIEF VENT
	UNIT 23 - LANDFILL GAS CLEANOUT PIPE
	PHASE 1 UNIT 25 - VERTICAL GAS WELL
	SLIDING PIPE JOINT

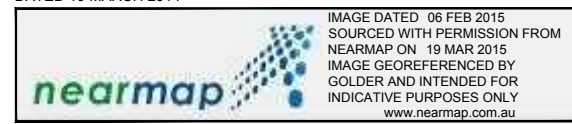
VERTICAL GAS WELL SETOUT TABLE		
POINT No.	EASTING (m)	NORTHING (m)
VG-01	334754	5830845
VG-02	334721	5830870
VG-03	334687	5830898
VG-04	334659	5830927
VG-05	334634	5830953

LANDFILL GAS CUT-OFF TRENCH SETOUT TABLE		
POINT No.	EASTING (m)	NORTHING (m)
CT-01	334741.31	5830837.72
CT-02	334690.62	5830885.22
CT-03	334687.66	5830885.14
CT-04	334624.91	5830947.63

LANDFILL GAS RELIEF VENT SETOUT TABLE		
POINT No.	EASTING (m)	NORTHING (m)
GR-01	334873.13	5830915.75
GR-02	334810.10	5830973.49
GR-03	334732.80	5831044.43

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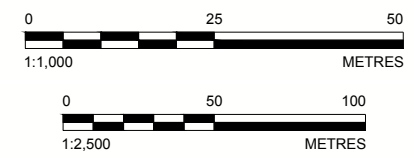
REFERENCES
SURVEY BASE PLAN SOURCE FROM LANDAIR SURVEY, NILLUMBIK SHIRE COUNCIL - FEATURE & SURVEY, DRG REF.: NILLUMBIK SHIRE COUNCIL
FEATURE & LEVEL SURVEY - PLENTY LANDFILL SITE, PLENTY LANDFILL 240214 r.dwg, DATED 19 MARCH 2014



PLAN VIEW
SCALE 1:2,500

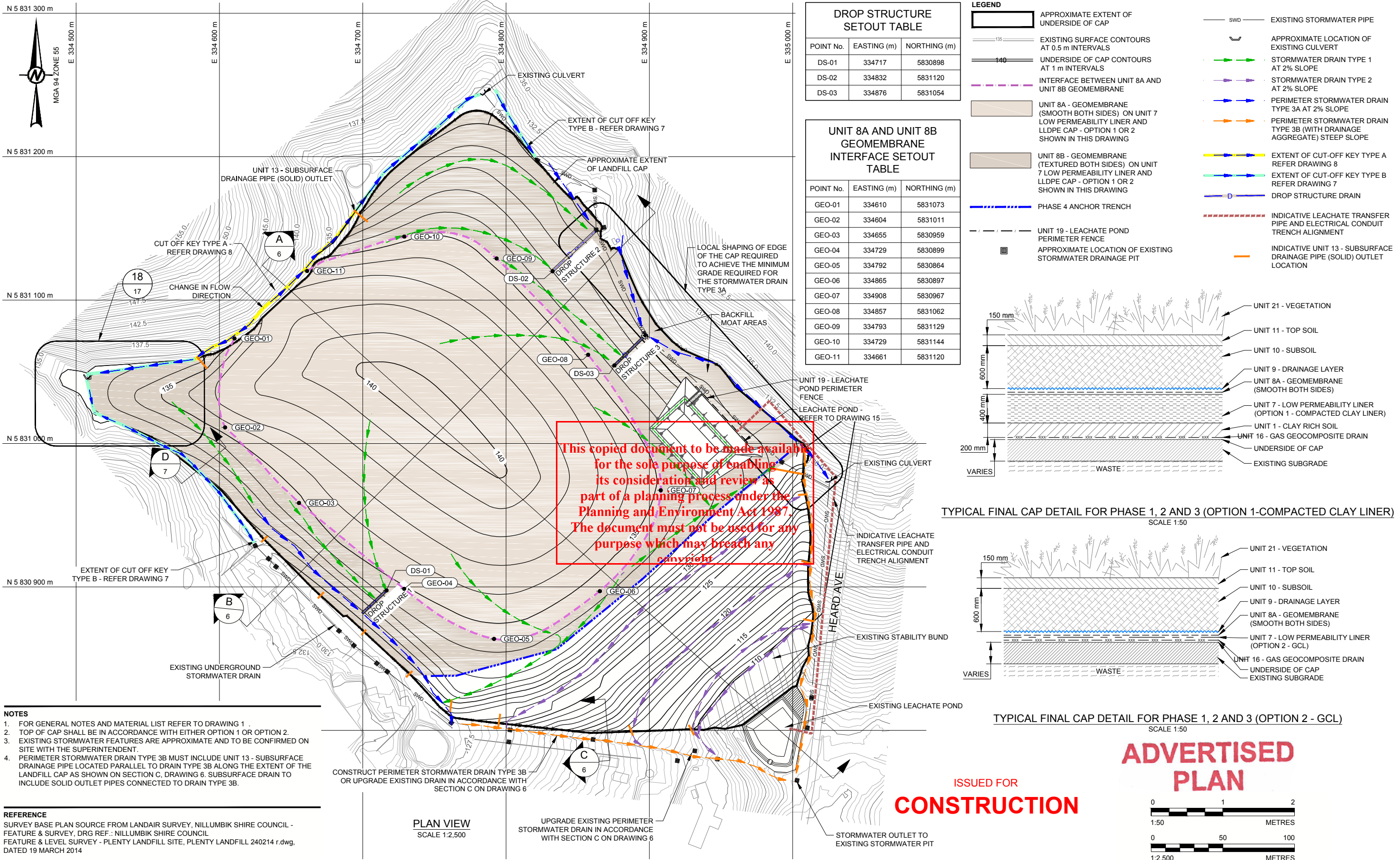
- NOTES
- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
 - GAS COLLECTION TRENCH TO GRADE TOWARDS LANDFILL GAS VENTS AT 2% TO SUIT GROUND CONDITIONS.
 - UNIT 16 - GAS GEOCOMPOSITE DRAIN STRIPS AT APPROXIMATELY 20 m SPACING.
 - INSTALLATION OF UNIT 25 - VERTICAL GAS WELL NO. 6 TO NO. 23 ARE SUBJECT TO THE RESULT OF THE PHASE 1 TRIAL (UNIT 25 - VERTICAL GAS WELL NO. 1 TO NO. 5).

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CLIENT NILLUMBIK SHIRE COUNCIL	PROJECT PLENTY LANDFILL CAP DESIGN
CONSULTANT 	TITLE UNDERSIDE OF CAP WITH GAS COLLECTION SYSTEM
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	Doc. No. 004-S
	Rev. 1
	4 of 17
	DRAWING 4



- NOTES**
1. FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
 2. TOP OF CAP SHALL BE IN ACCORDANCE WITH EITHER OPTION 1 OR OPTION 2.
 3. EXISTING STORMWATER FEATURES ARE APPROXIMATE AND TO BE CONFIRMED ON SITE WITH THE SUPERINTENDENT.
 4. PERIMETER STORMWATER DRAIN TYPE 3B MUST INCLUDE UNIT 13 - SUBSURFACE DRAINAGE PIPE LOCATED PARALLEL TO DRAIN TYPE 3B ALONG THE EXTENT OF THE LANDFILL CAP AS SHOWN ON SECTION C, DRAWING 6. SUBSURFACE DRAIN TO INCLUDE SOLID OUTLET PIPES CONNECTED TO DRAIN TYPE 3B.

REFERENCE

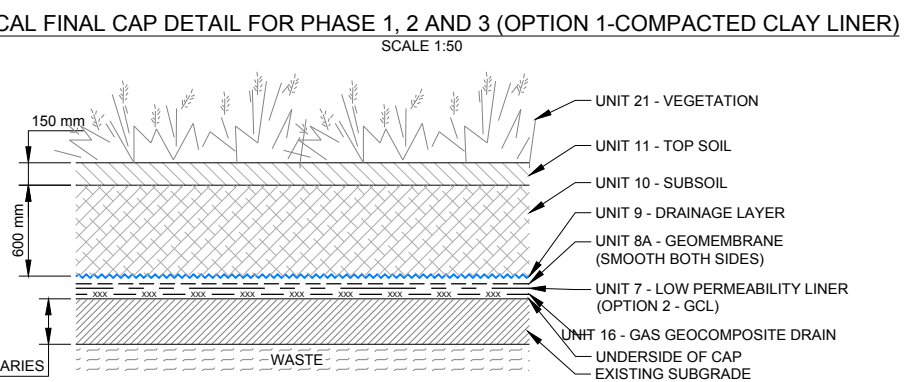
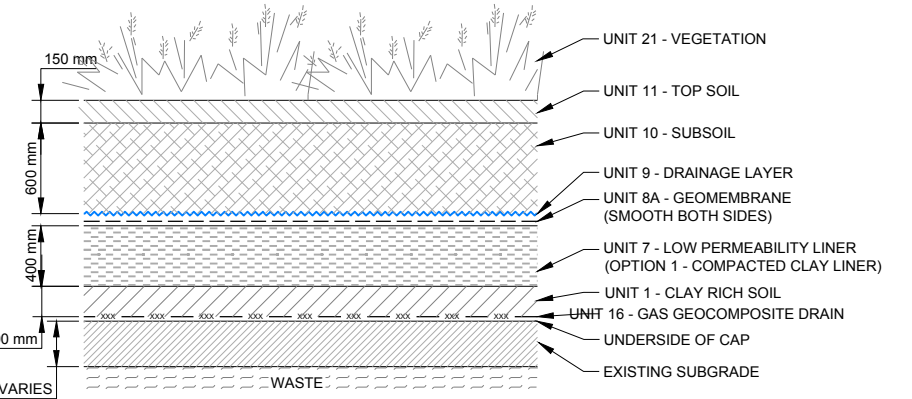
SURVEY BASE PLAN SOURCE FROM LANDAIR SURVEY, NILLUMBIK SHIRE COUNCIL - FEATURE & SURVEY, DRG REF.: NILLUMBIK SHIRE COUNCIL FEATURE & LEVEL SURVEY - PLENTY LANDFILL SITE, PLENTY LANDFILL 240214 r.dwg, DATED 19 MARCH 2014

PLAN VIEW
SCALE 1:2,500

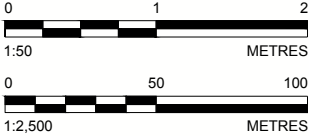
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LEGEND

- APPROXIMATE EXTENT OF UNDERSIDE OF CAP
- EXISTING SURFACE CONTOURS AT 0.5 m INTERVALS
- UNDERSIDE OF CAP CONTOURS AT 1 m INTERVALS
- INTERFACE BETWEEN UNIT 8A AND UNIT 8B GEOMEMBRANE
- UNIT 8A - GEOMEMBRANE (SMOOTH BOTH SIDES) ON UNIT 7 LOW PERMEABILITY LINER AND LLDPE CAP - OPTION 1 OR 2 SHOWN IN THIS DRAWING
- UNIT 8B - GEOMEMBRANE (TEXTURED BOTH SIDES) ON UNIT 7 LOW PERMEABILITY LINER AND LLDPE CAP - OPTION 1 OR 2 SHOWN IN THIS DRAWING
- PHASE 4 ANCHOR TRENCH
- UNIT 19 - LEACHATE POND PERIMETER FENCE
- APPROXIMATE LOCATION OF EXISTING STORMWATER DRAINAGE PIT
- EXISTING STORMWATER PIPE
- APPROXIMATE LOCATION OF EXISTING CULVERT
- STORMWATER DRAIN TYPE 1 AT 2% SLOPE
- STORMWATER DRAIN TYPE 2 AT 2% SLOPE
- PERIMETER STORMWATER DRAIN TYPE 3A AT 2% SLOPE
- PERIMETER STORMWATER DRAIN TYPE 3B (WITH DRAINAGE AGGREGATE) STEEP SLOPE
- EXTENT OF CUT-OFF KEY TYPE A REFER DRAWING 8
- EXTENT OF CUT-OFF KEY TYPE B REFER DRAWING 7
- DROP STRUCTURE DRAIN
- INDICATIVE LEACHATE TRANSFER PIPE AND ELECTRICAL CONDUIT TRENCH ALIGNMENT
- INDICATIVE UNIT 13 - SUBSURFACE DRAINAGE PIPE (SOLID) OUTLET LOCATION



**ADVERTISED
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						CLIENT NILLUMBIK SHIRE COUNCIL		PROJECT PLENTY LANDFILL CAP DESIGN			
						CONSULTANT		TITLE STORMWATER MANAGEMENT PLAN			
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								5 of 17			
								DRAWING 5			

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SCALE 1:500 A LONG SECTION

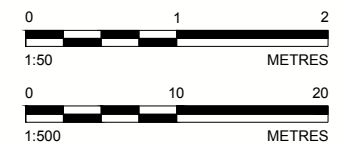
SCALE 1:500 B LONG SECTION

SCALE 1:50 C SECTION BETWEEN PHASE 1 AND PHASE 4

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- NOTES
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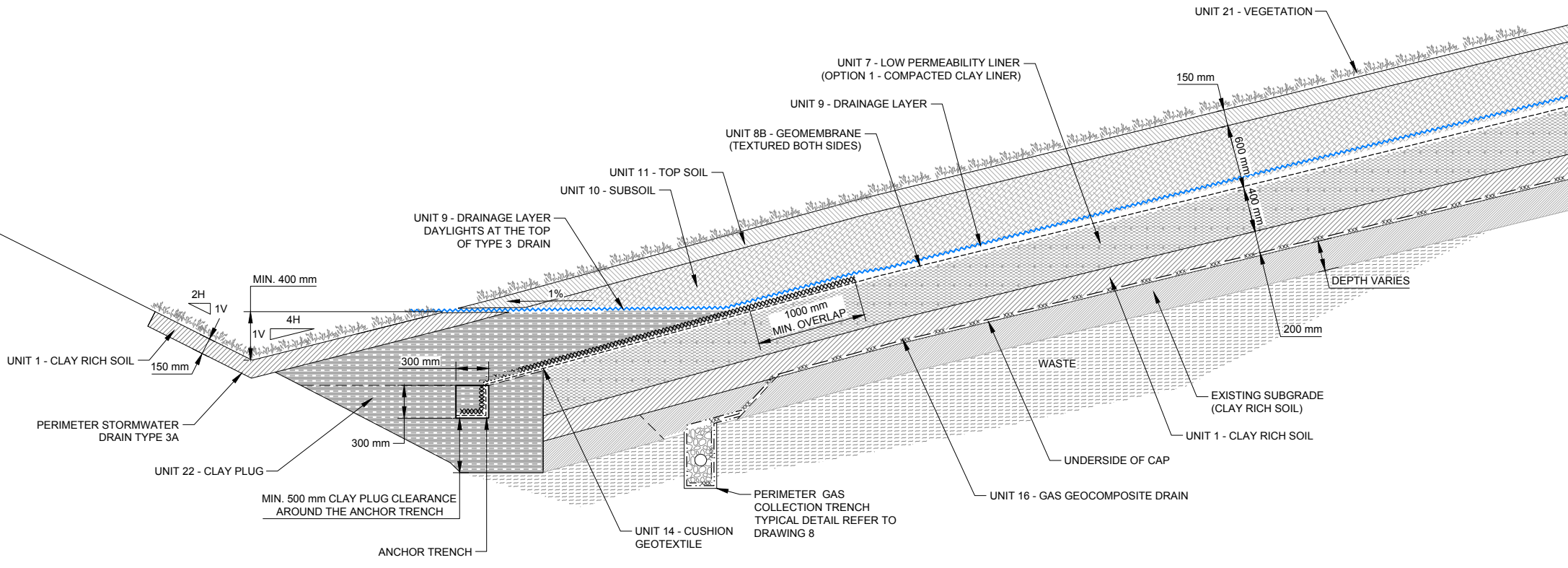
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PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
TYPICAL SECTIONS AND DETAILS
SHEET 1

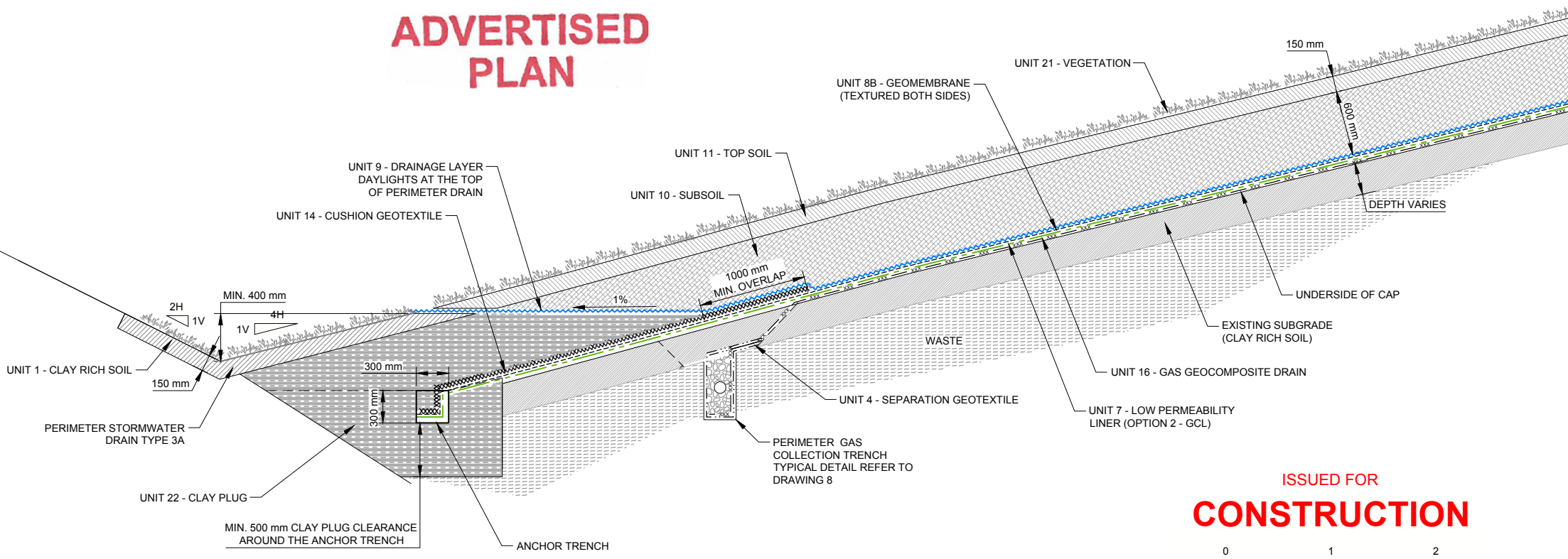
PROJECT No. 147615003 Doc. No. 004-S Rev. 1 6 of 17 DRAWING 6

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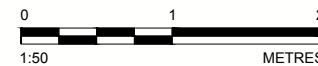
SECTION (OPTION 1 - COMPACTED CLAY LINER) WITH CUT-OFF KEY TYPE B

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SECTION (OPTION 2 - GCL) WITH CUT-OFF KEY TYPE B

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1. FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1 .

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PROJECT
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TITLE
**TYPICAL SECTIONS AND DETAILS
SHEET 2**

PROJECT No. 147615003 Doc. No. 004-S Rev. 1 7 of 17 DRAWING 7

1 2016-01-15 ISSUED FOR CONSTRUCTION

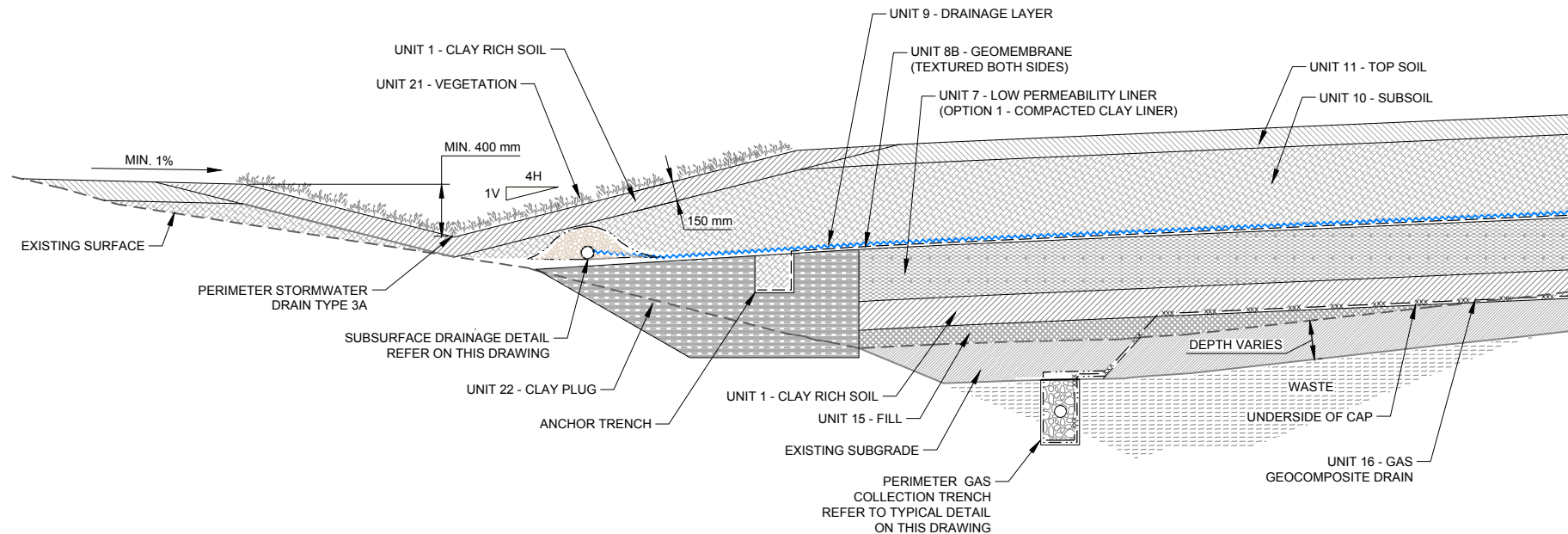
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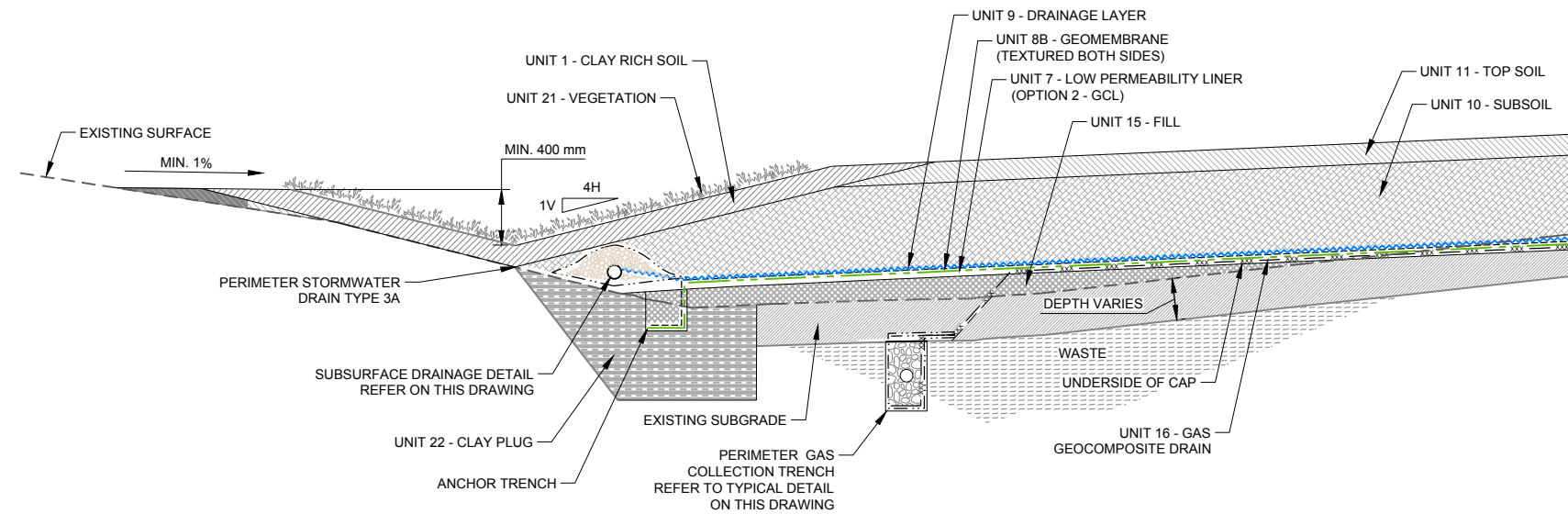
MLL CW ATG ATG

MLL CW ATG ATG

PREPARED DESIGN REVIEW APPROVED



SCALE 1:50 **1** CUT-OFF KEY TYPE A WITH CAP DETAIL (OPTION 1 - COMPACTED CLAY LINER)
6

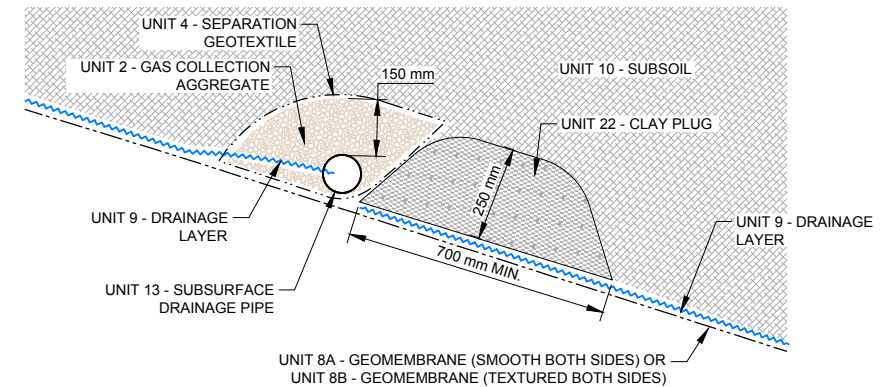


SCALE 1:50 **1** CUT-OFF KEY TYPE A WITH CAP DETAIL (OPTION 2 - GCL)
6

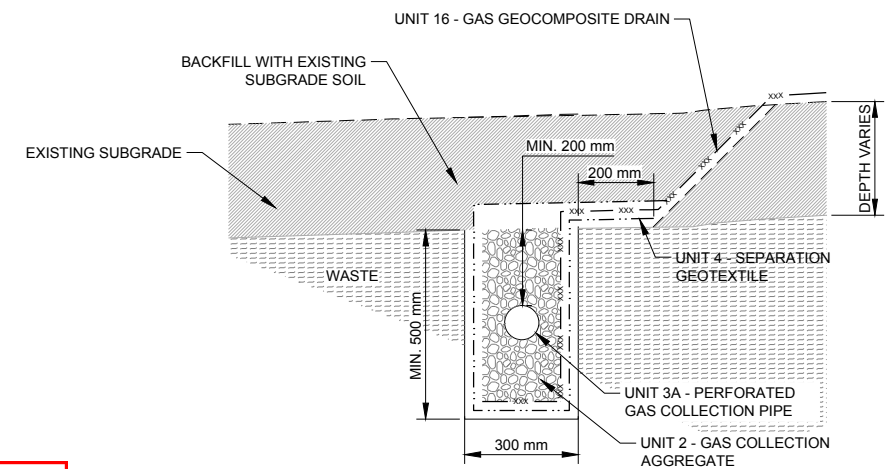
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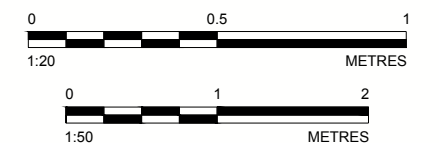


TYPICAL SUBSURFACE DRAINAGE PIPE AND CLAY PLUG DETAIL
SCALE 1:20



TYPICAL PERIMETER GAS COLLECTION TRENCH DETAIL
SCALE 1:20

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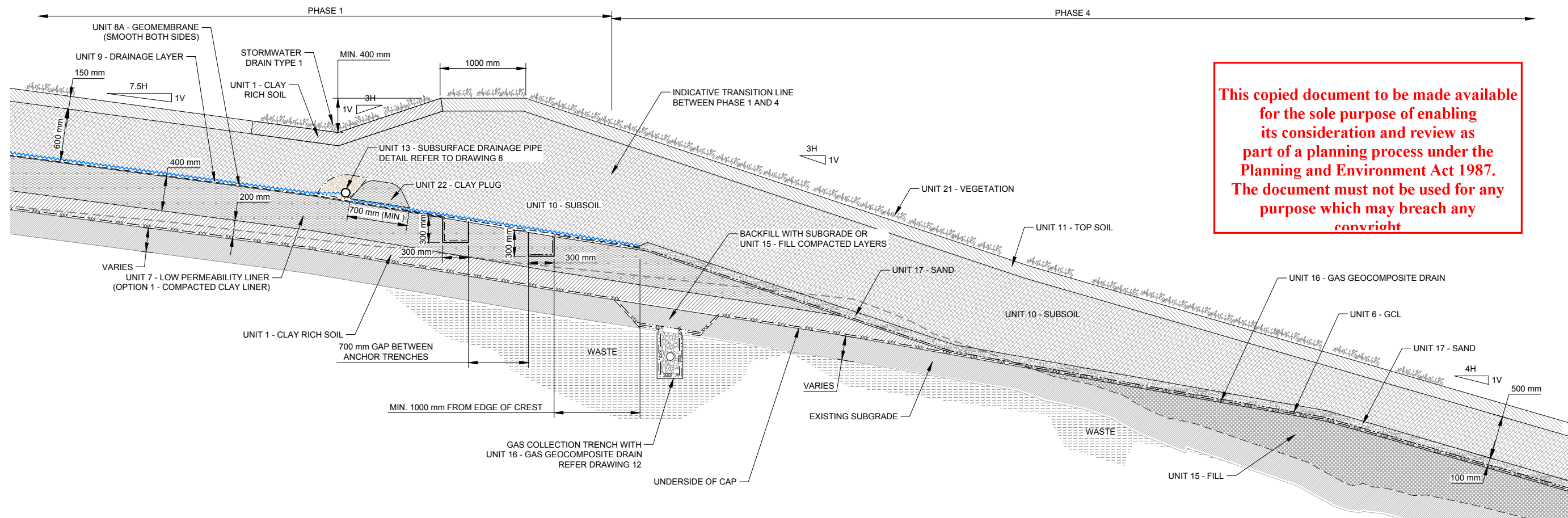


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PROJECT
PLENTY LANDFILL CAP DESIGN

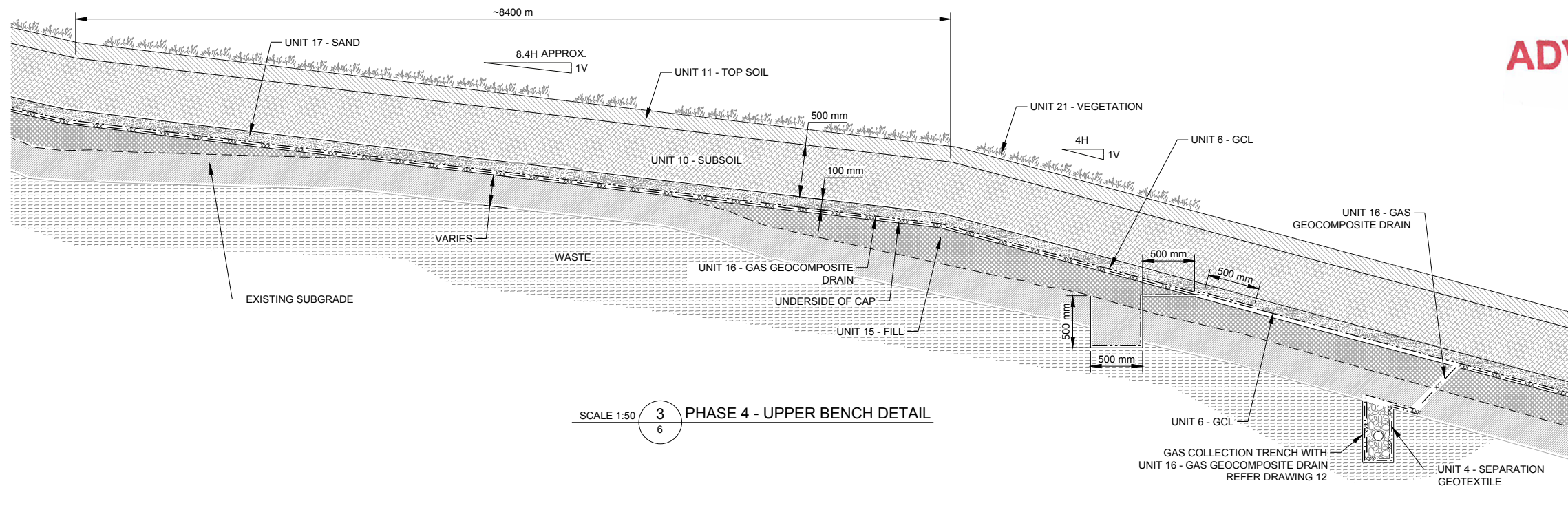
TITLE
**TYPICAL SECTIONS AND DETAILS
SHEET 3**

PROJECT No. 147615003 Doc. No. 004-S Rev. 1 8 of 17 DRAWING 8



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SCALE 1:50 2 PHASE 1 AND 4 CONNECTION DETAIL 6



SCALE 1:50 3 PHASE 4 - UPPER BENCH DETAIL 6

ADVERTISED PLAN

NOTES
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PROJECT
PLENTY LANDFILL CAP DESIGN

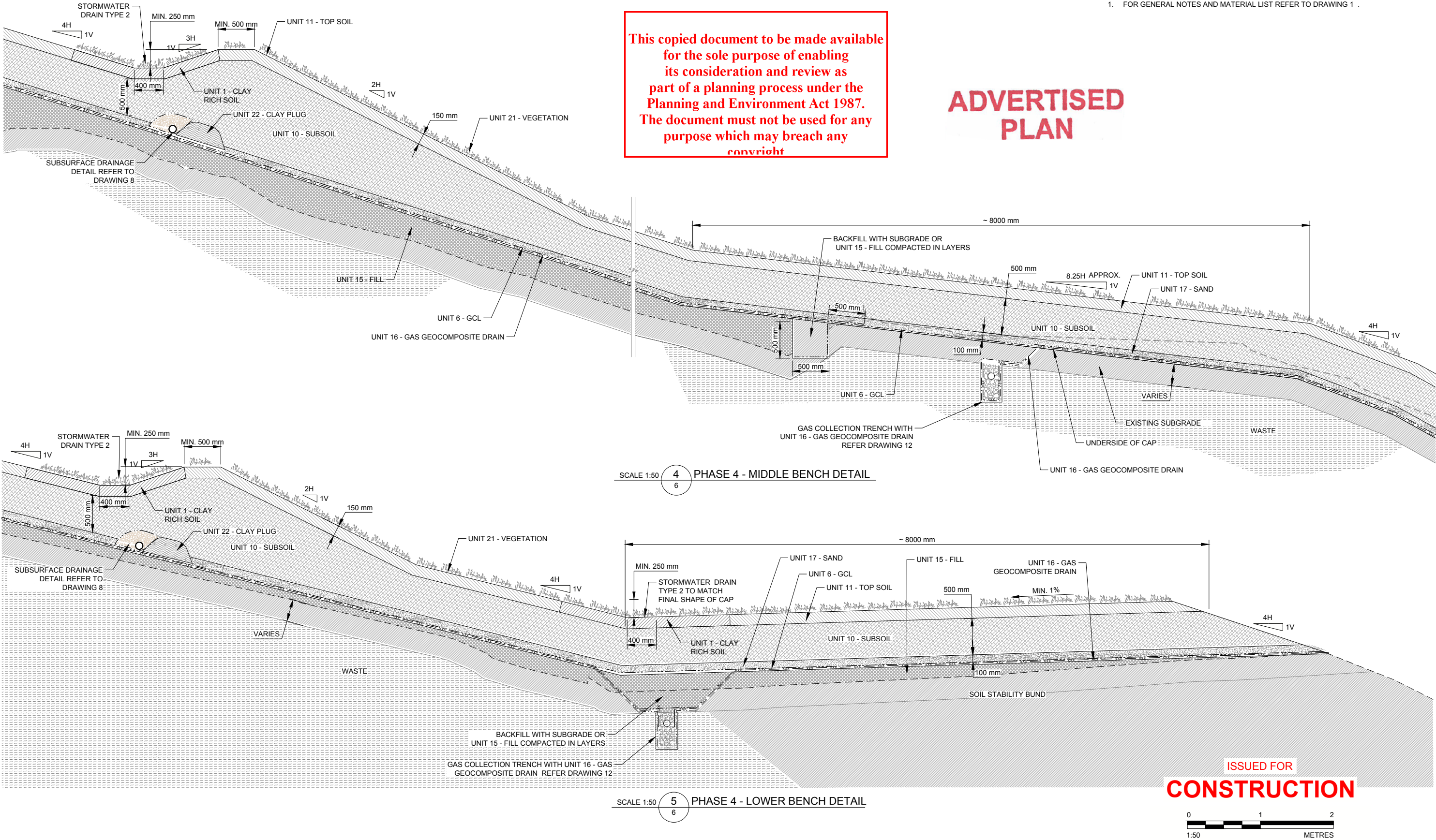
TITLE
TYPICAL SECTIONS AND DETAILS
SHEET 4

PROJECT No. 147615003 Doc. No. 004-S Rev. 1 9 of 17 DRAWING 9

NOTES
1. FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1 .

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0	2015-06-12	ISSUED FOR TENDER	MLL	CW	ATG	ATG
Rev.	YYYY-MM-DD	DESCRIPTION	PREPARED	DESIGN	REVIEW	APPROVED

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CONSULTANT

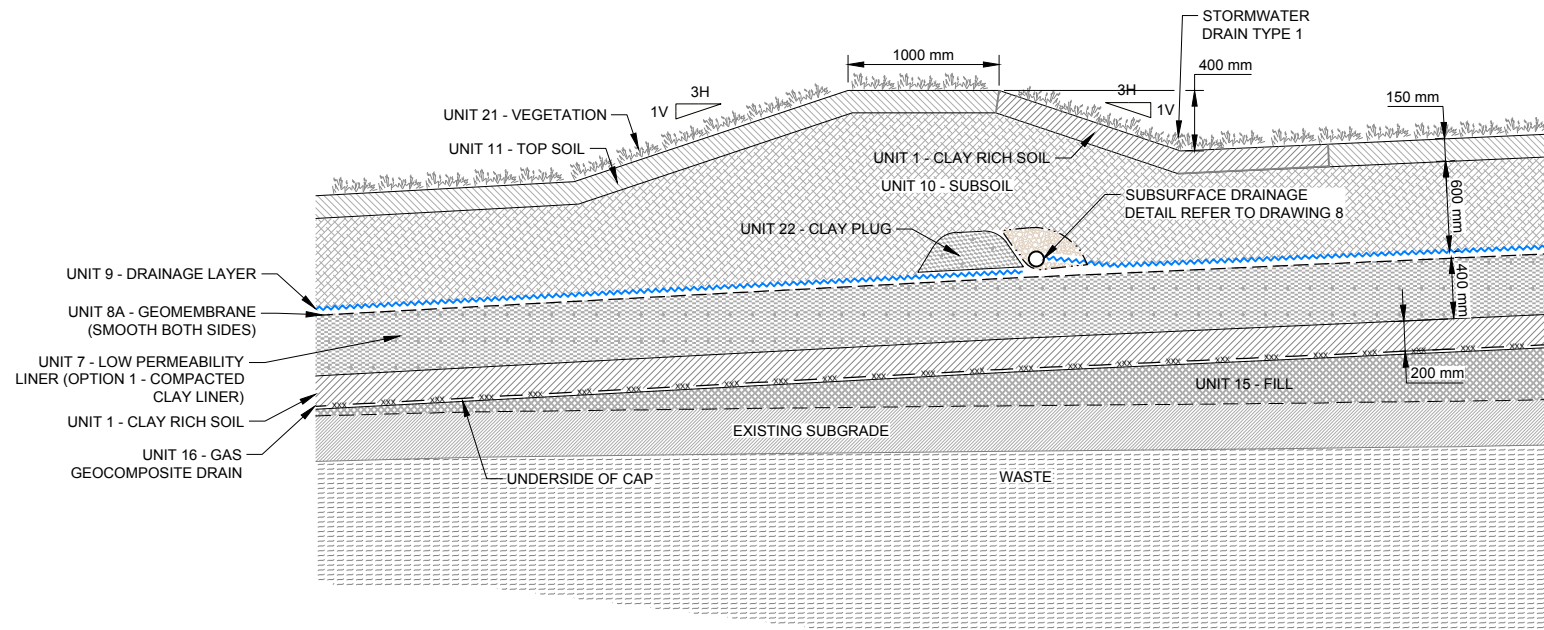


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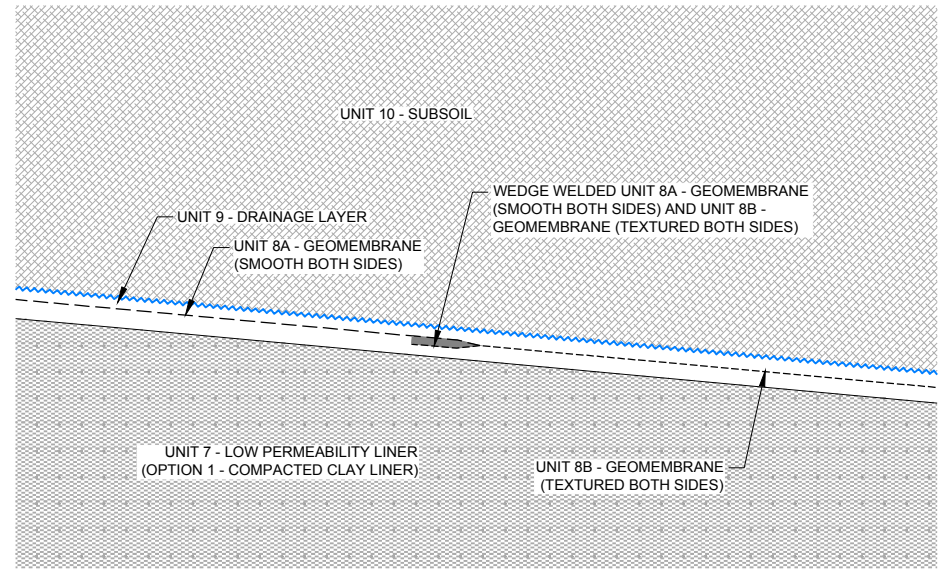
PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
TYPICAL SECTIONS AND DETAILS
SHEET 5

PROJECT No. 147615003 Doc. No. 004-S Rev. 10 of 17 DRAWING 10

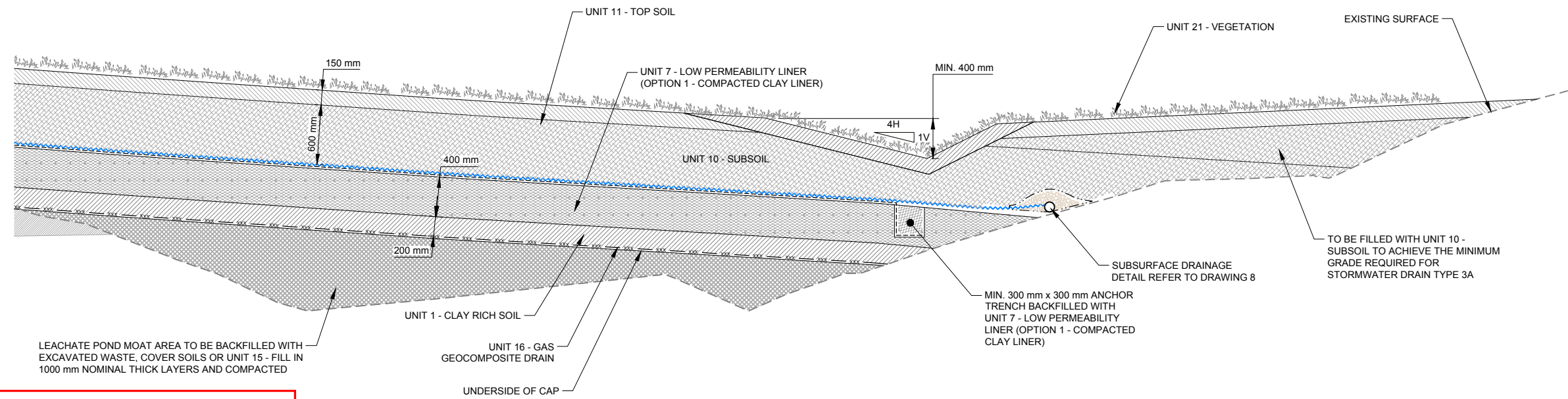


SCALE 1:50 **6** TYPICAL CREST STORMWATER WITH DRAIN TYPE 1 DETAIL



INTERFACE BETWEEN UNIT 8A AND UNIT 8B GEOMEMBRANE
SCALE 1:10

ADVERTISED PLAN

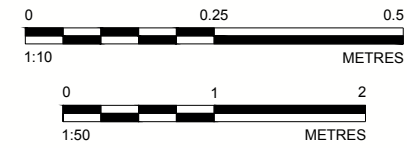


SCALE 1:50 **7** TYPICAL MOAT AREAS CAPPING DETAIL

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- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1 .



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2	2016-01-15	ISSUED FOR CONSTRUCTION	PDM	CW	ATG	ATG
1	2015-09-25	ADDED ANCHOR TRENCH TO DETAIL 7	PDM	CW	ATG	ATG
0	2015-06-12	ISSUED FOR TENDER	MLL	CW	ATG	ATG

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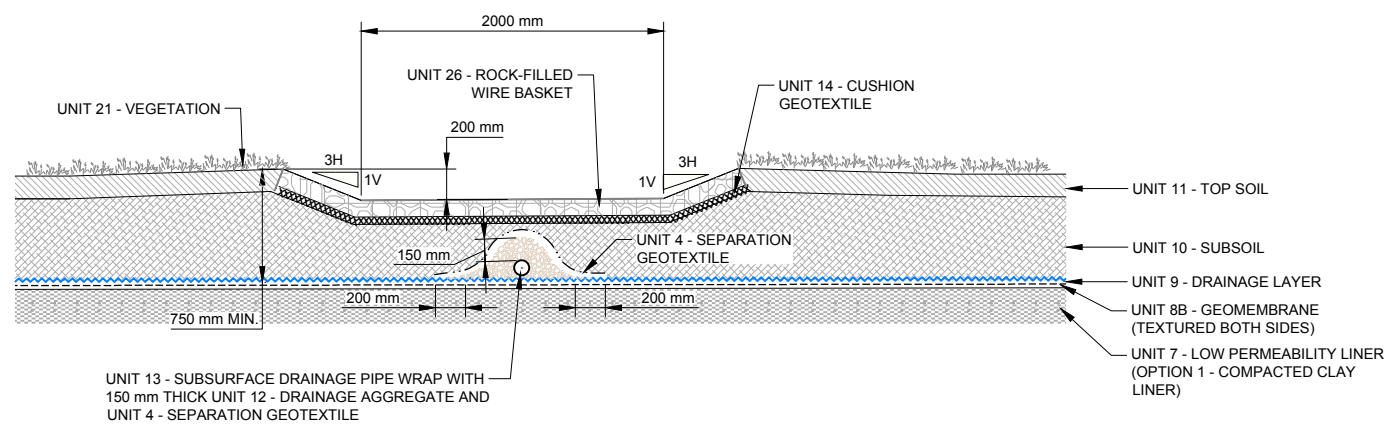
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PLENTY LANDFILL CAP DESIGN

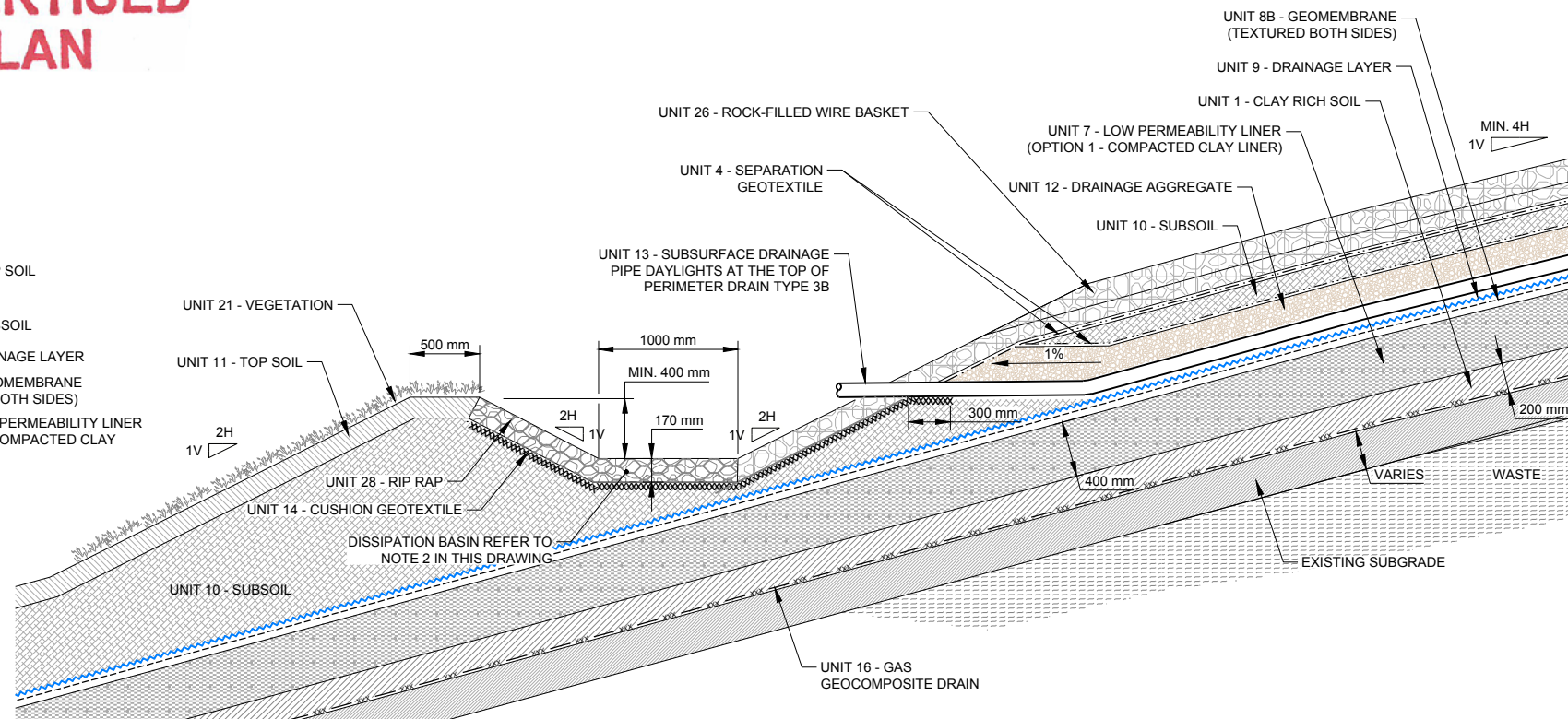
TITLE
**TYPICAL SECTIONS AND DETAILS
SHEET 6**

PROJECT No. 147615003 Doc. No. 004-S Rev. 2 11 of 17 DRAWING 11

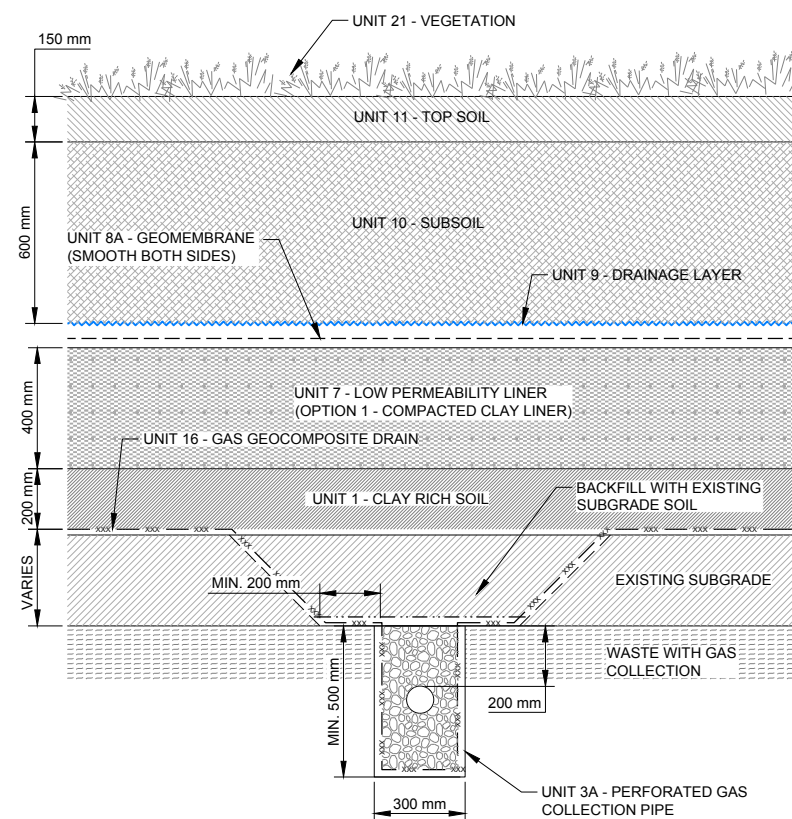
ADVERTISED
PLAN



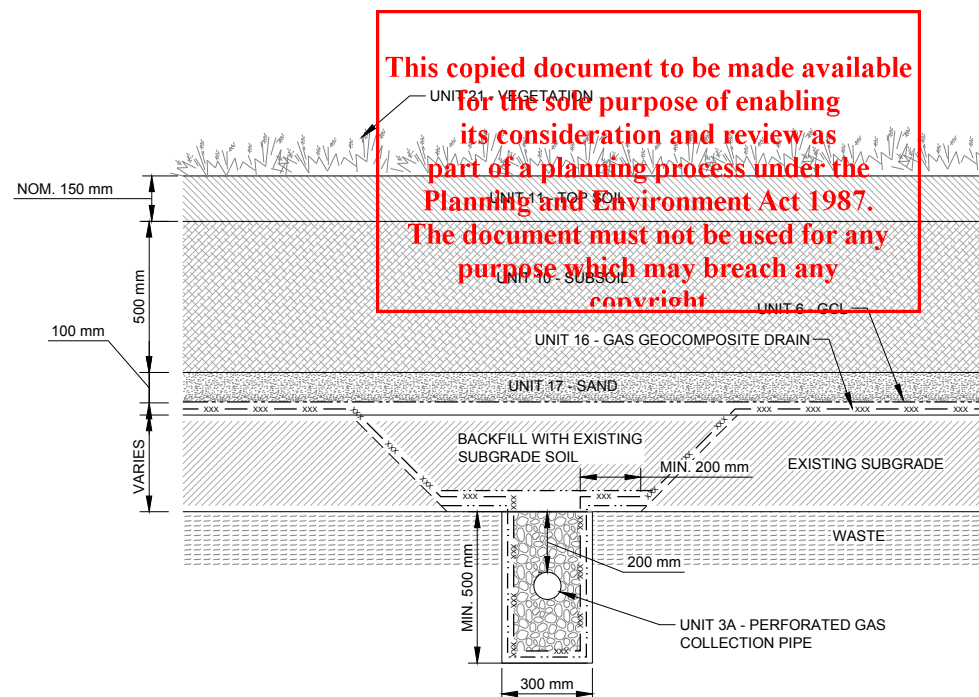
DROP STRUCTURE NUMBER 1 SECTION
SCALE 1:50



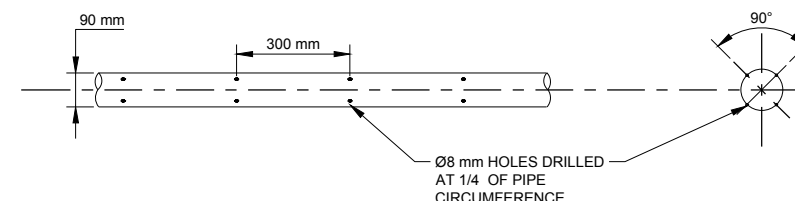
DROP STRUCTURE NUMBER 1 AT PERIMETER DRAIN
SCALE 1:50



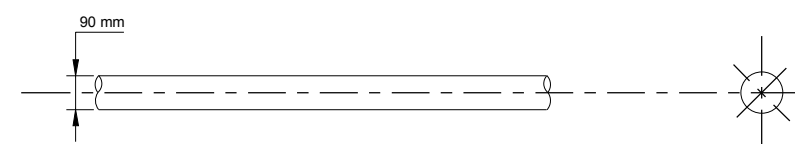
TYPICAL GAS COLLECTION TRENCH ON CREST (PHASES 1, 2 AND 3)
OPTION 1 WITH UNIT 16 - GAS GEOCOMPOSITE DRAIN
SCALE 1:25



TYPICAL GAS COLLECTION TRENCH (PHASE 4)
WITH UNIT 16 - GAS GEOCOMPOSITE DRAIN
SCALE 1:25



UNIT 3A - PERFORATED GAS COLLECTION PIPE DETAIL
SCALE 1:20

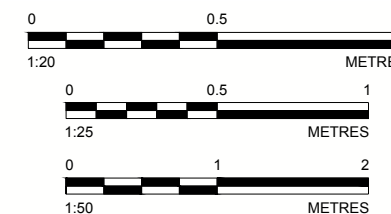


UNIT 3B - SOLID WALL GAS COLLECTION PIPE DETAIL
SCALE 1:20

NOTES

- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
- LOCAL WIDENING OF PERIMETER STORMWATER DRAIN TYPE 3A FROM A "V" CHANNEL TO A TRAPEZOIDAL AND BACK TO A "V" CHANNEL SHALL BE UNDERTAKEN OVER A 7 m LENGTH.

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Path: \\golder-gd\gdp\melbourne\Local\147615003 - Plenty and Kangaroo Ground Cap Design\Technical\Doc\Drawings\1 - File Name: 147615003-004-S-0712.dwg

Rev.	YYYY-MM-DD	DESCRIPTION	PREPARED	DESIGN	REVIEW	APPROVED
1	2016-01-15	ISSUED FOR CONSTRUCTION	MLL	CW	ATG	ATG
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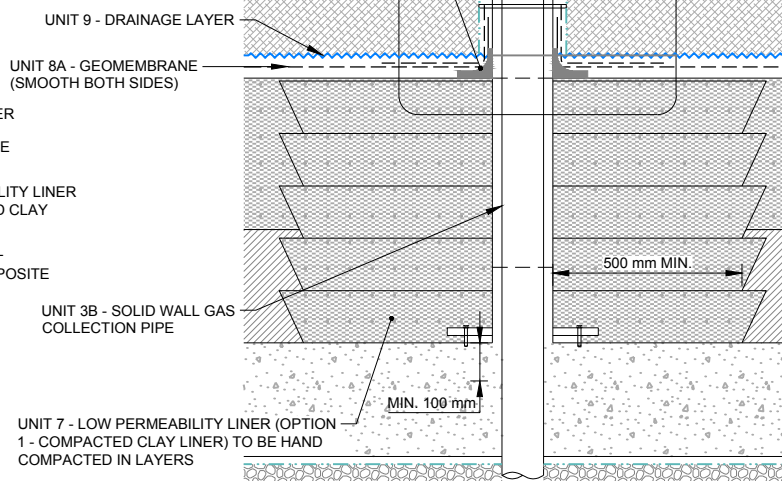


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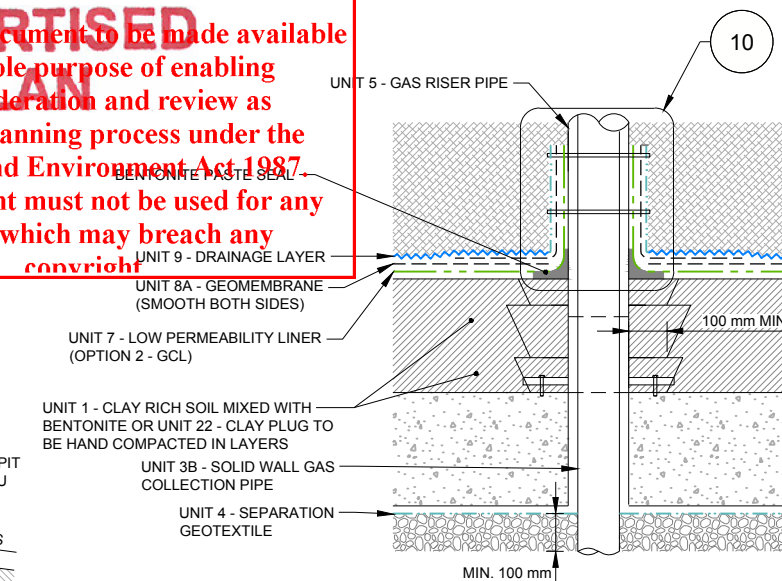
PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
**TYPICAL SECTIONS AND DETAILS
SHEET 7**

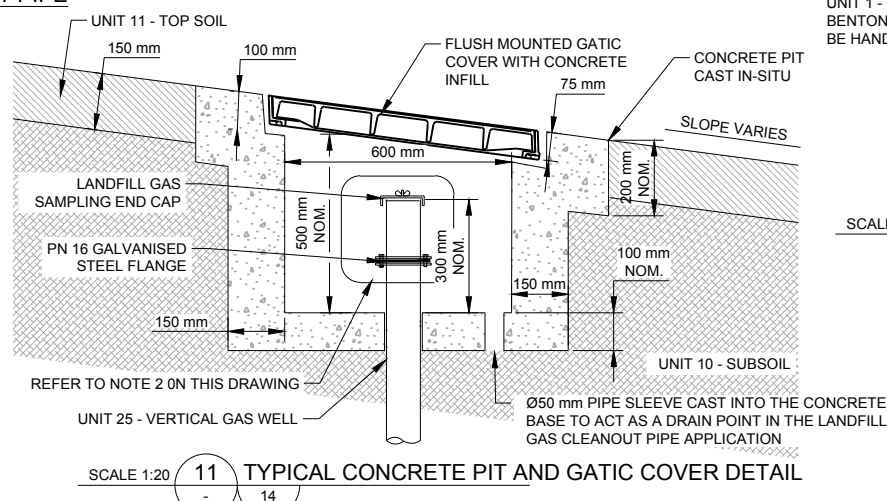
PROJECT No. 147615003 Doc. No. 004-S Rev. 1 12 of 17 DRAWING 12



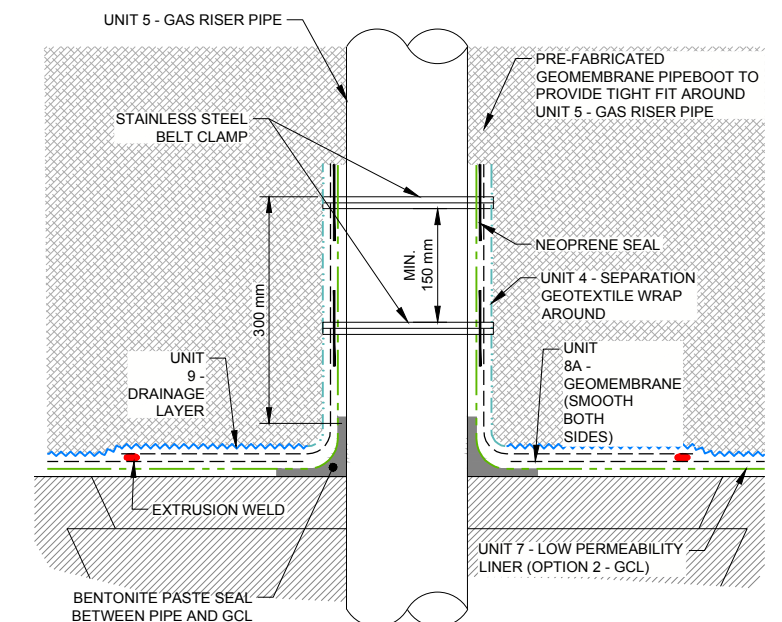
SCALE 1:20 9 GAS RISER PROTRUSION DETAIL (CAP OPTION 1)



SCALE 1:20 9 GAS RISER PROTRUSION DETAIL (CAP OPTION 2)



SCALE 1:20 **11** TYPICAL CONCRETE PIT AND GATIC COVER DETAIL

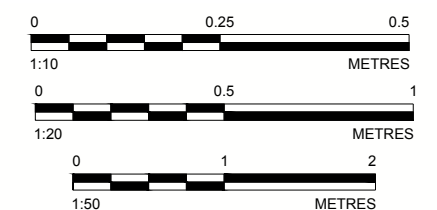


SCALE 1:10 10 GAS RISER PROTRUSION SEAL DETAIL (CAP OPTION 1)

SCALE 1:10 GAS RISER PROTRUSION SEAL DETAIL (CAP OPTION 2)

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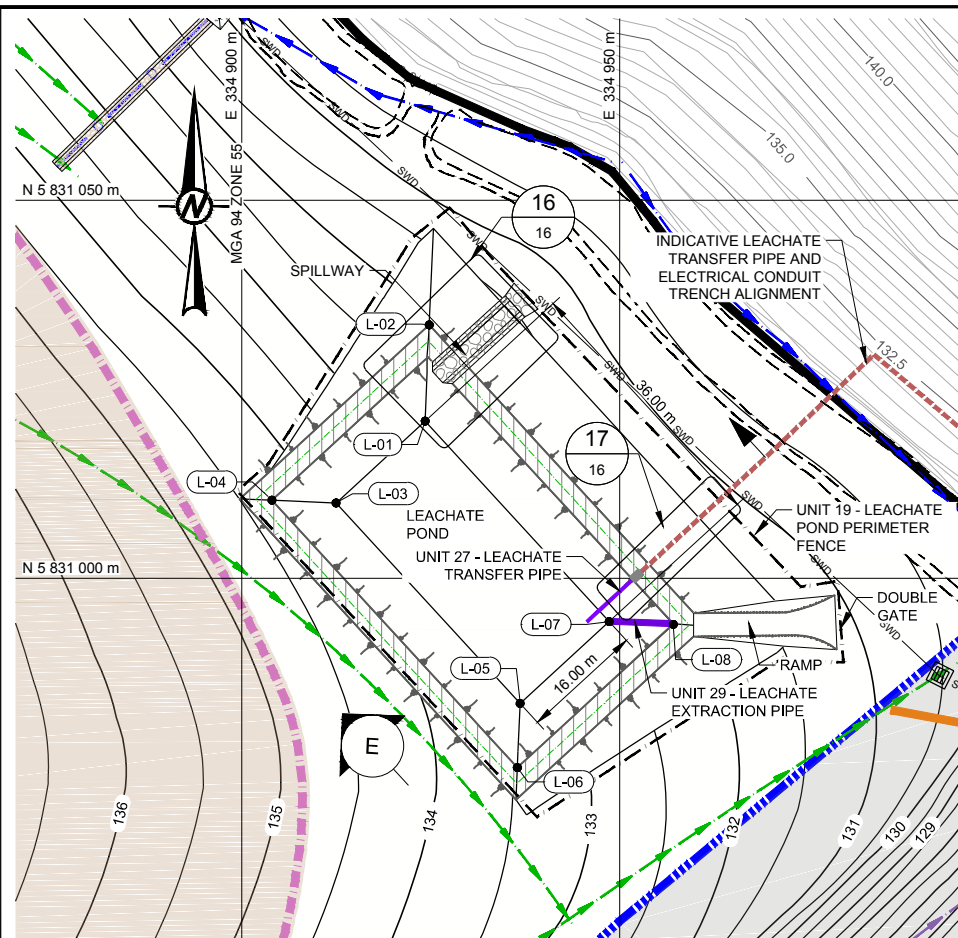


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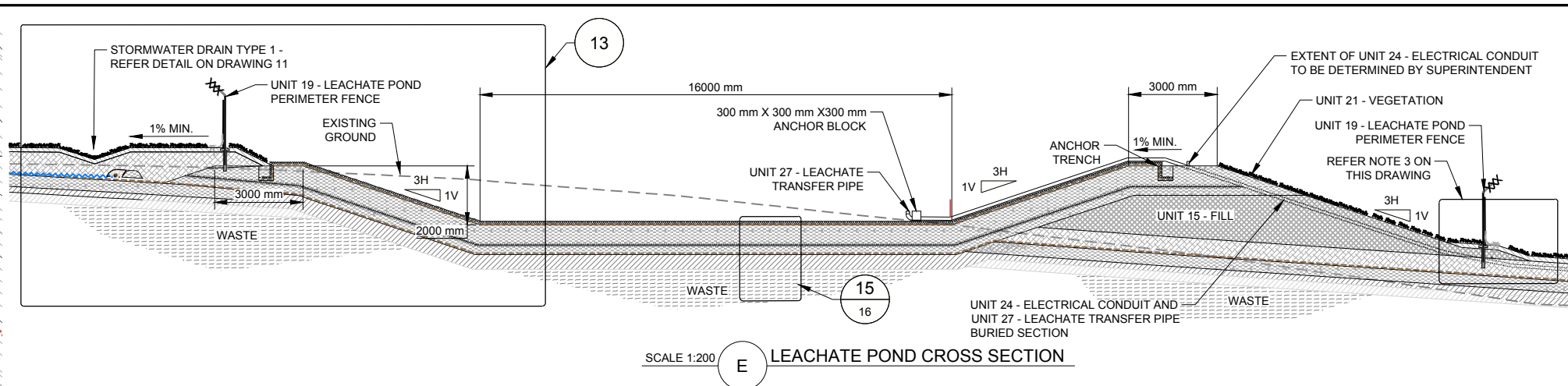
PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
GAS COLLECTION SYSTEM AND PENETRATION DETAILS
SHEET 1

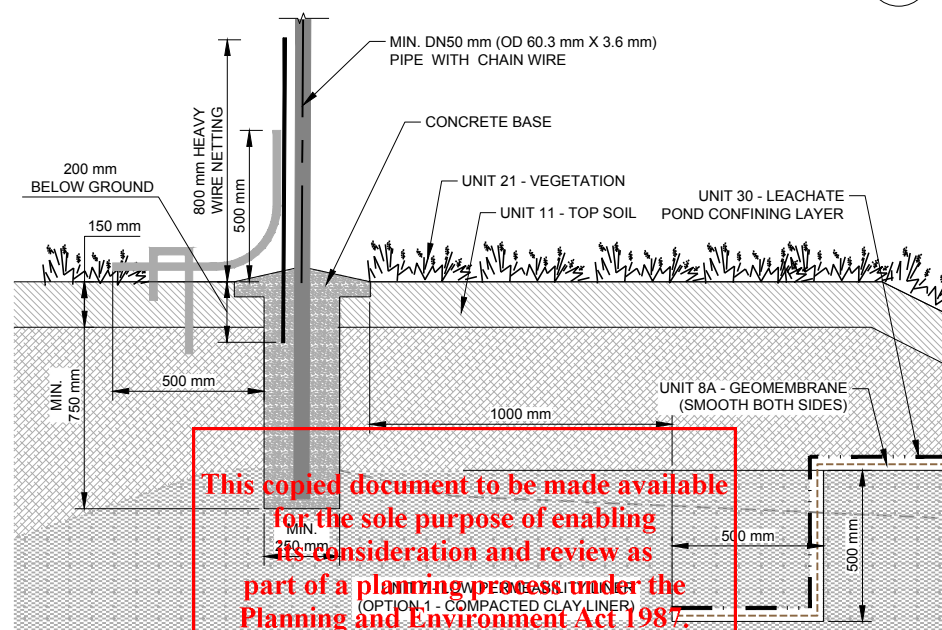
PROJECT No.	Doc. No.	Rev.	13 of 17	DRAWING
147615003	004-S	1		13



LEACHATE POND LAYOUT PLAN
SCALE 1:1,000



SCALE 1:200 E LEACHATE POND CROSS SECTION



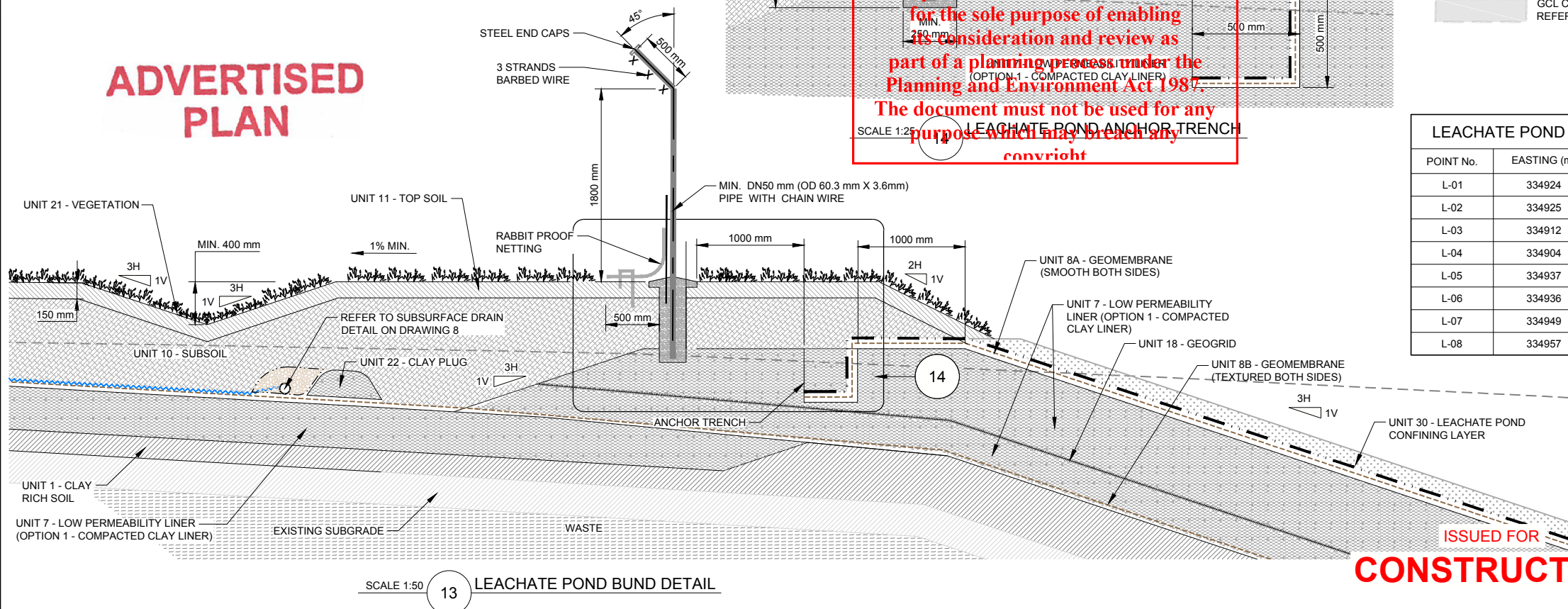
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LEGEND	
	APPROXIMATE EXTENT OF LANDFILL CAP
	EXISTING SURFACE CONTOURS AT 0.5 m INTERVALS
	BOUNDARY OF MOATS
	UNDERSIDE OF CAP CONTOURS AT 1 m INTERVALS
	INTERFACE BETWEEN UNIT 8A AND UNIT 8B GEOMEMBRANE
	UNIT 8A - GEOMEMBRANE (SMOOTH BOTH SIDES) ON UNIT 7 LOW PERMEABILITY LINER AND LDPE CAP - OPTION 1 OR 2 SHOWN IN THIS DRAWING
	UNIT 8B - GEOMEMBRANE (TEXTURED BOTH SIDES) ON UNIT 7 LOW PERMEABILITY LINER AND LDPE CAP - OPTION 1 OR 2 SHOWN IN THIS DRAWING
	GCL CAP ON PHASE 4 REFER DRAWING 9
	SWD
	EXISTING STORMWATER PIPE
	EXISTING UNDERGROUND PERIMETER STORMWATER DRAIN
	STORMWATER DRAIN TYPE 1 AT 2% SLOPE
	STORMWATER DRAIN TYPE 2 AT 2% SLOPE
	PERIMETER STORMWATER DRAIN TYPE 3 AT 2% SLOPE
	EXTENT OF CUT-OFF KEY (TYPE A)
	EXTENT OF CUT-OFF KEY (TYPE B)
	DROP STRUCTURE DRAIN
	PHASE 4 ANCHOR TRENCH
	ANCHOR TRENCH ALONG LEACHATE POND BUND
	UNIT 19 - LEACHATE POND PERIMETER FENCE
	INDICATIVE LEACHATE TRANSFER PIPE AND ELECTRICAL CONDUIT TRENCH ALIGNMENT

- NOTES**
- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
 - AREA UNDER LEACHATE POND AND 10 m OFFSET AROUND THE LEACHATE POND MUST COMPRISE OPTION 1 - COMPACTED CLAY LINER CAP.
 - MINIMUM 1000 mm THICK UNIT 15 - FILL BUND LOCALLY ALONG THE FENCE ALIGNMENT WITH 150 mm THICK UNIT 11 - TOP SOIL LAYER TO FACILITATE ANCHORAGE OF PERIMETER POST ABOVE UNIT 8A - GEOMEMBRANE (SMOOTH BOTH SIDES).

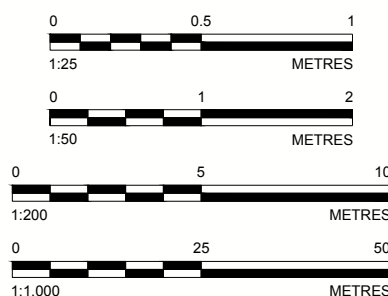
REFERENCE

SURVEY BASE PLAN SOURCE FROM LANDAIR SURVEY, NILLUMBIK SHIRE COUNCIL - FEATURE & SURVEY, DRG REF.: NILLUMBIK SHIRE COUNCIL FEATURE & LEVEL SURVEY - PLENTY LANDFILL SITE, PLENTY LANDFILL 240214 r.dwg, DATED 19 MARCH 2014



SCALE 1:50 13 LEACHATE POND BUND DETAIL

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1	2016-01-15	ISSUED FOR CONSTRUCTION	MLL	CW	ATG	ATG
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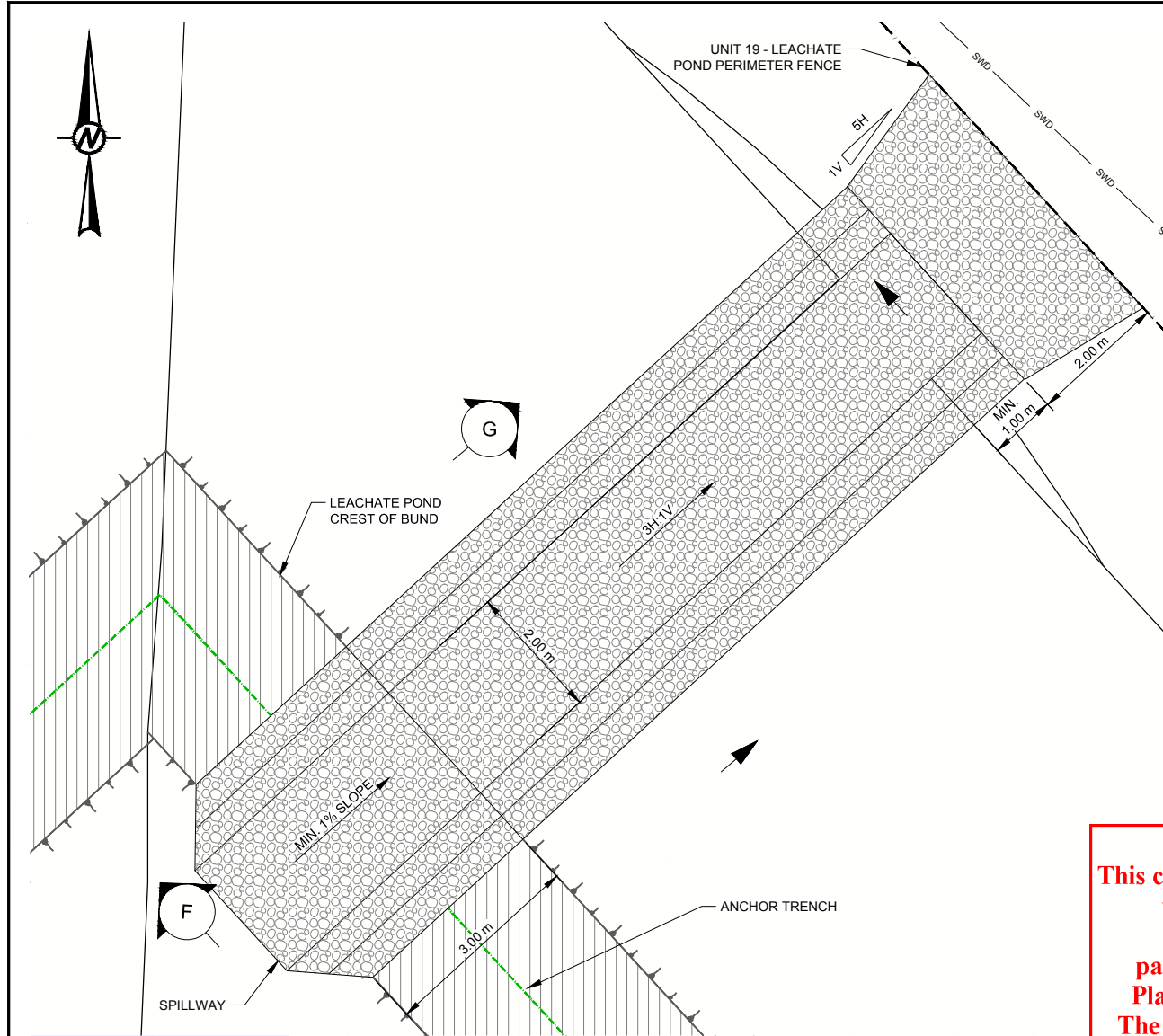


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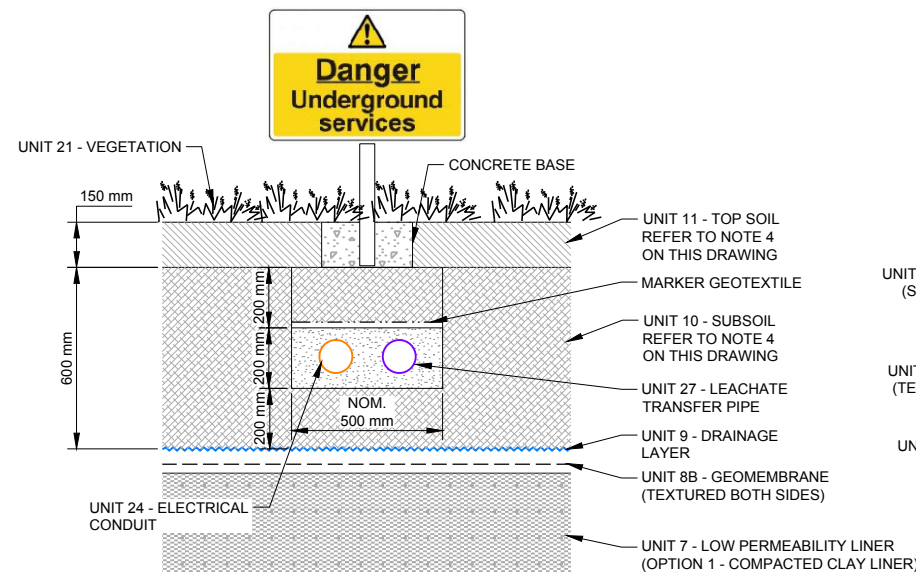
PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
**LEACHATE POND AND SPILLWAY LAYOUT PLAN
CROSS SECTION AND DETAILS - SHEET 1**

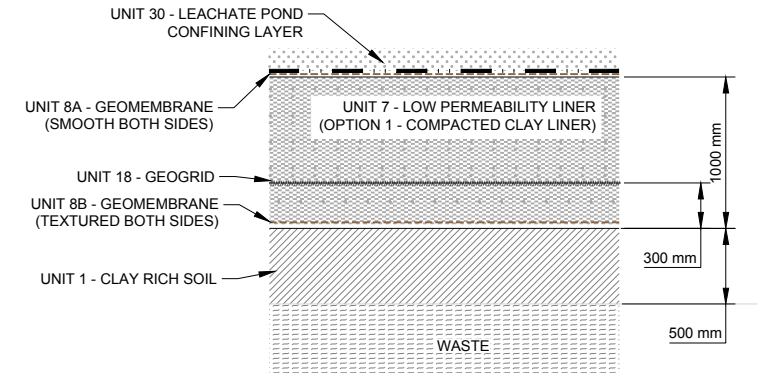
PROJECT No.	Doc. No.	Rev.	15 of 17	DRAWING
147615003	004-S	1		15



SCALE 1:100 16 SPILLWAY DETAIL



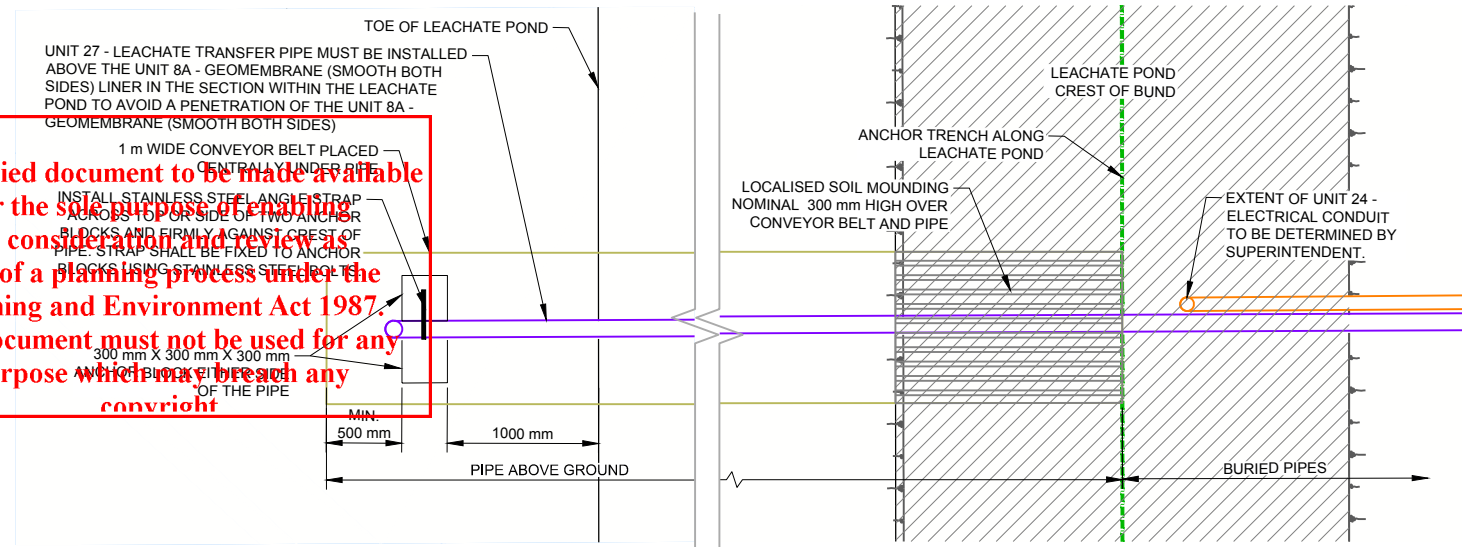
TYPICAL ELECTRICAL CONDUIT AND LEACHATE TRANSFER PIPE TRENCH OVER LANDFILL CAP
SCALE 1:25 m



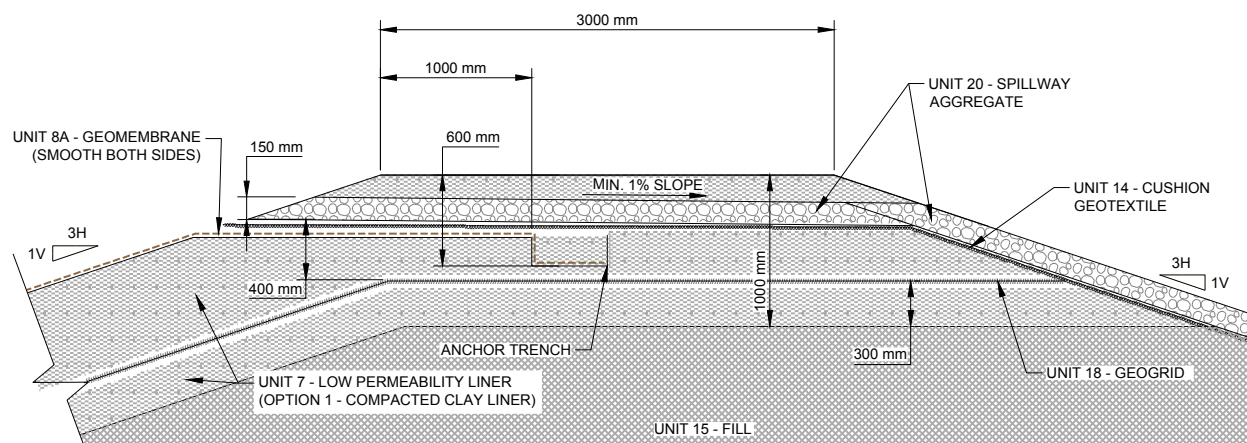
SCALE 1:50 15 LEACHATE POND FLOOR LINER

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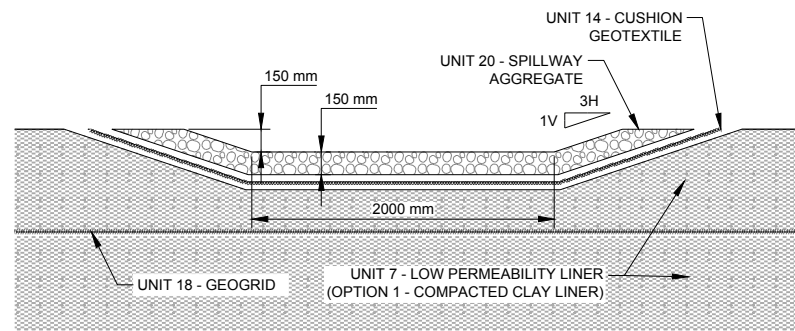
ADVERTISED PLAN



SCALE 1:50 17 LEACHATE TRANSFER PIPE PLAN VIEW

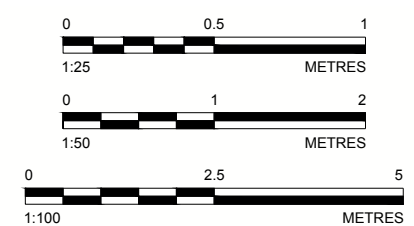


SCALE 1:50 m F SPILLWAY CROSS SECTION



SCALE 1:50 m G SPILLWAY CROSS SECTION

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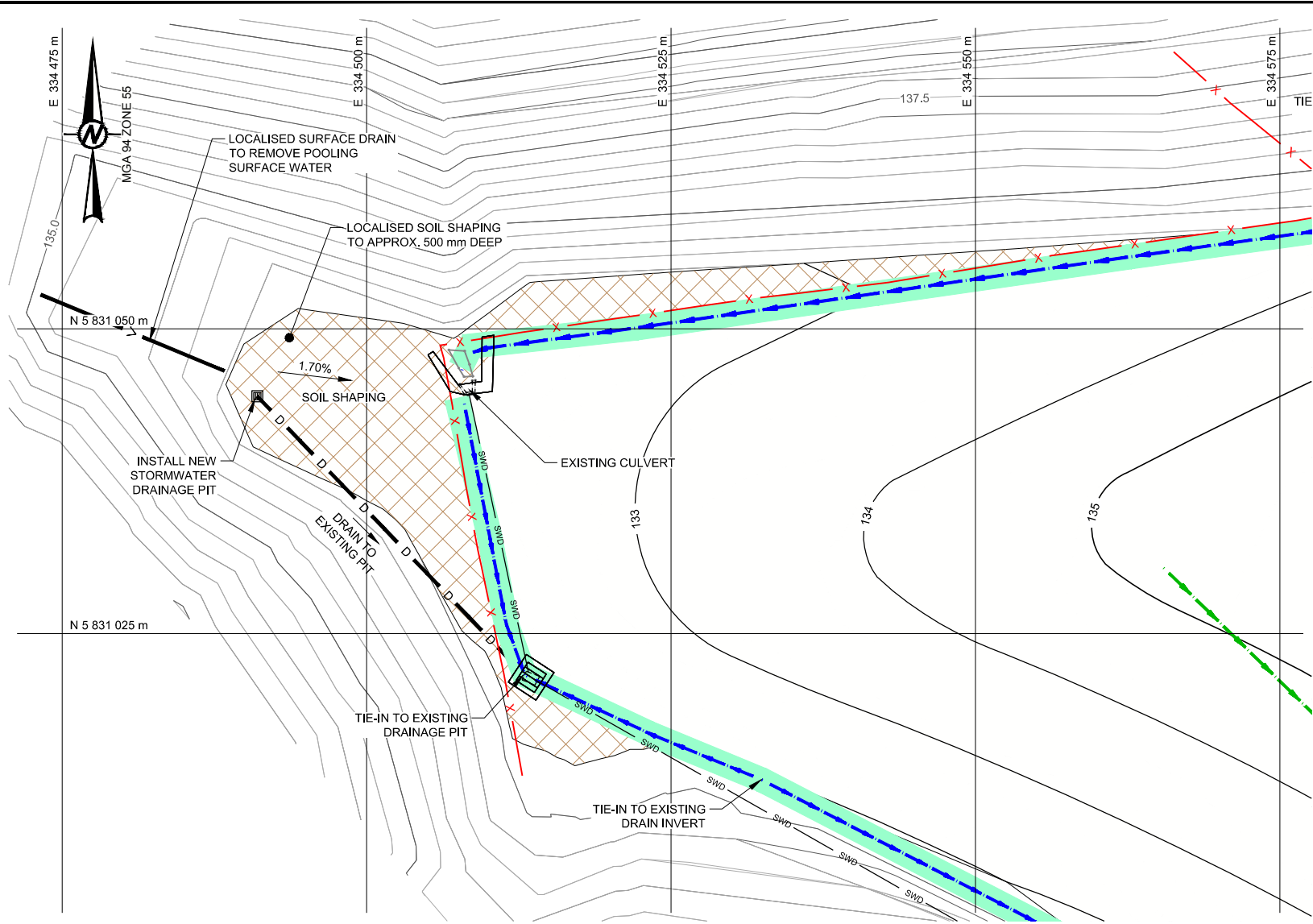


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PROJECT
PLENTY LANDFILL CAP DESIGN

TITLE
LEACHATE POND AND SPILLWAY LAYOUT PLAN
CROSS SECTION AND DETAILS - SHEET 2

PROJECT No.	Doc. No.	Rev.	16 of 17	DRAWING
147615003	004-S	1		16



SCALE 1:500 18 5 FILL AREA OF NORTH-WEST CORNER

LEGEND

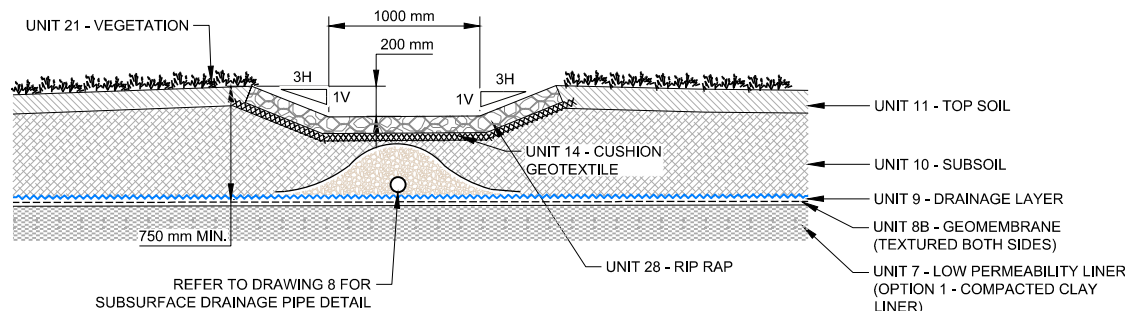
- EXISTING SURFACE CONTOURS AT 0.5 m INTERVALS
- UNDERSIDE OF CAP CONTOURS AT 1 m INTERVALS
- NEW FILLING AREA
- NEW DRAIN PIPE
- EXISTING STORMWATER PIPE
- PERIMETER STORMWATER DRAIN TYPE 3A AT 2% SLOPE

REFERENCE

BASE PLAN SHOWN FROM LANDAIR SURVEY DRG. PLENTY LANDFILL 240214 r.DWG, DATED 19 MARCH 2014.
EXISTING DRAINAGE FEATURES SHOWN FROM LANDAIR SURVEY DRG. NILLUMTT.DWG, RECEIVED 18 SEPTEMBER 2014.

NOTE

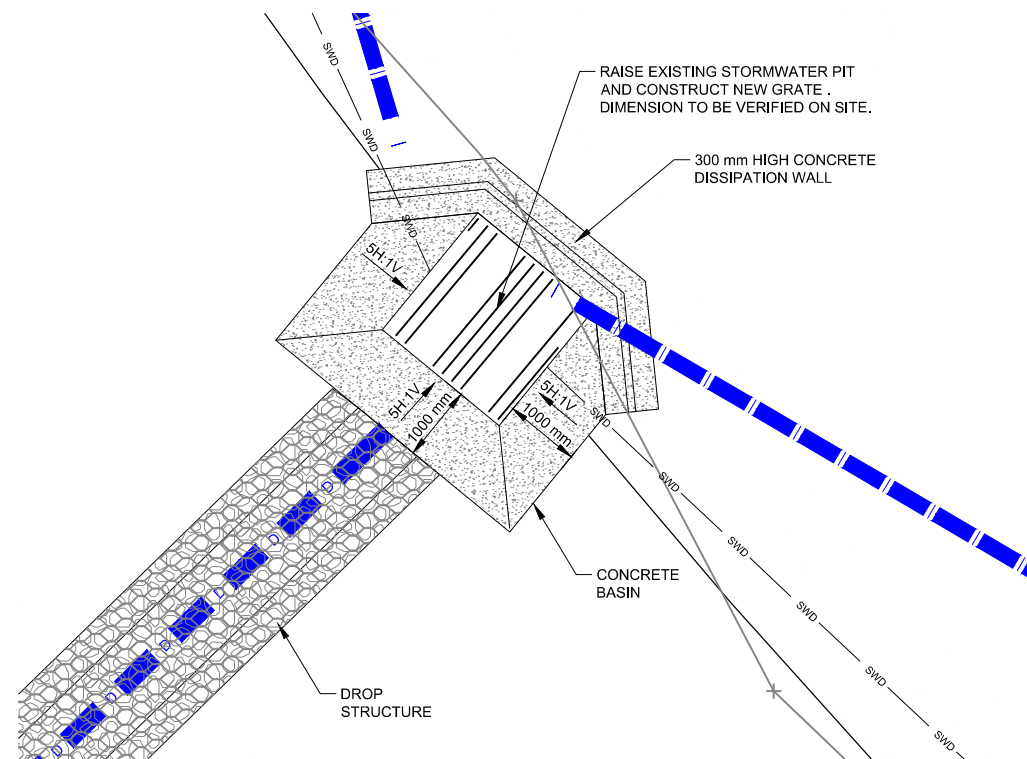
- FOR GENERAL NOTES AND MATERIAL LIST REFER TO DRAWING 1.
- TOP OF CAP SHALL BE IN ACCORDANCE WITH EITHER OPTION 1 OR OPTION 2.
- ALL LEVELS AND DIMENSION SHOWN ARE APPROXIMATE.



DROP STRUCTURE NUMBER 3 AND 4 SECTION

SCALE 1:50

ADVERTISED PLAN



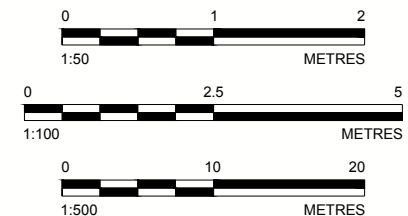
DROP STRUCTURE NUMBER 3 AND 4 DISCHARGE PLAN VIEW

SCALE 1:100

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TITLE
NORTH WEST CORNER FILL PLAN AND DROP STRUCTURE
SECTIONS AND DETAILS

PROJECT No. 147615003 Doc. No. 004-S Rev. 1 16 of 17 DRAWING 17

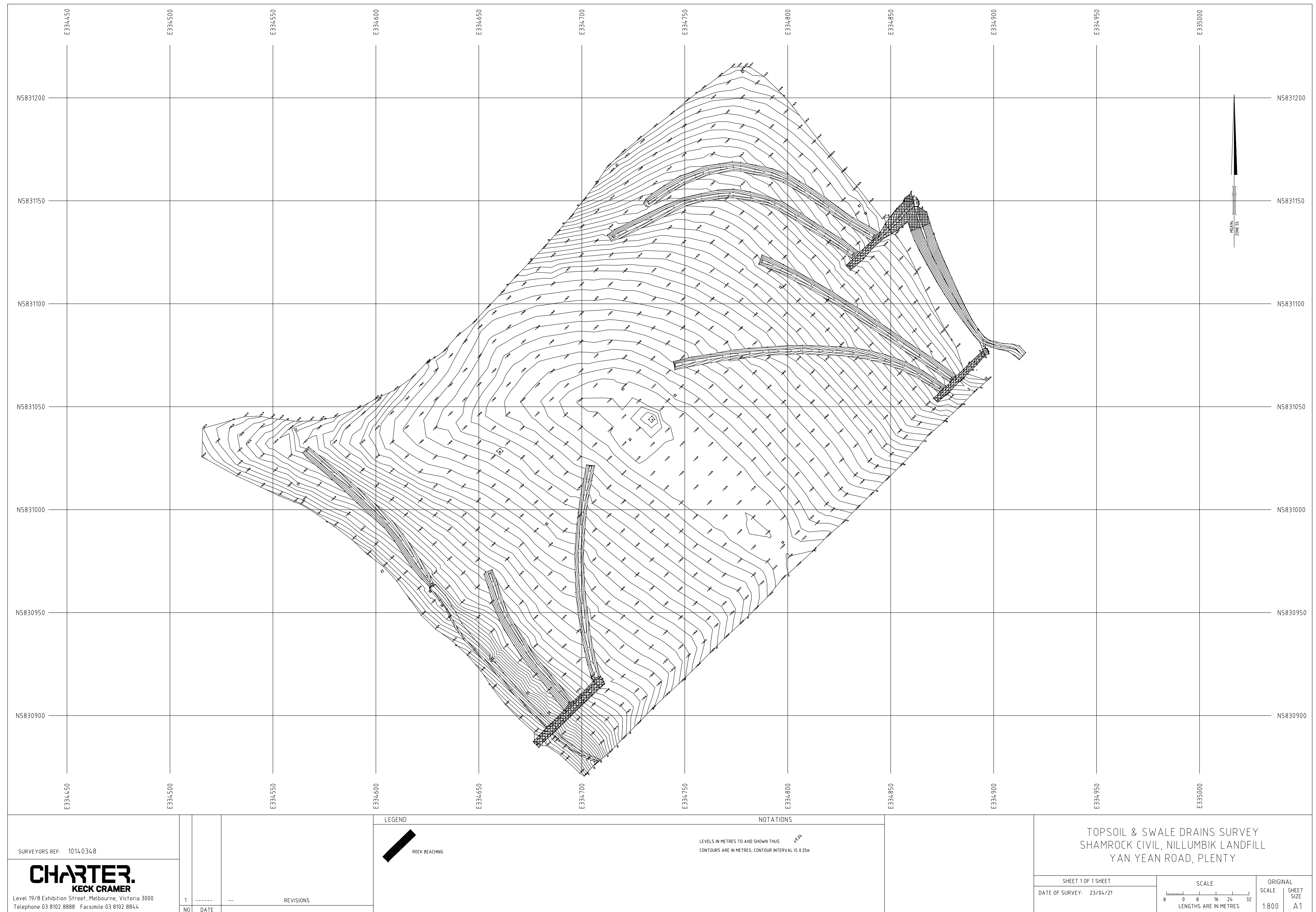
APPENDIX C

NILLUMBIK LANDFILL CAP – SURFACE PROFILE

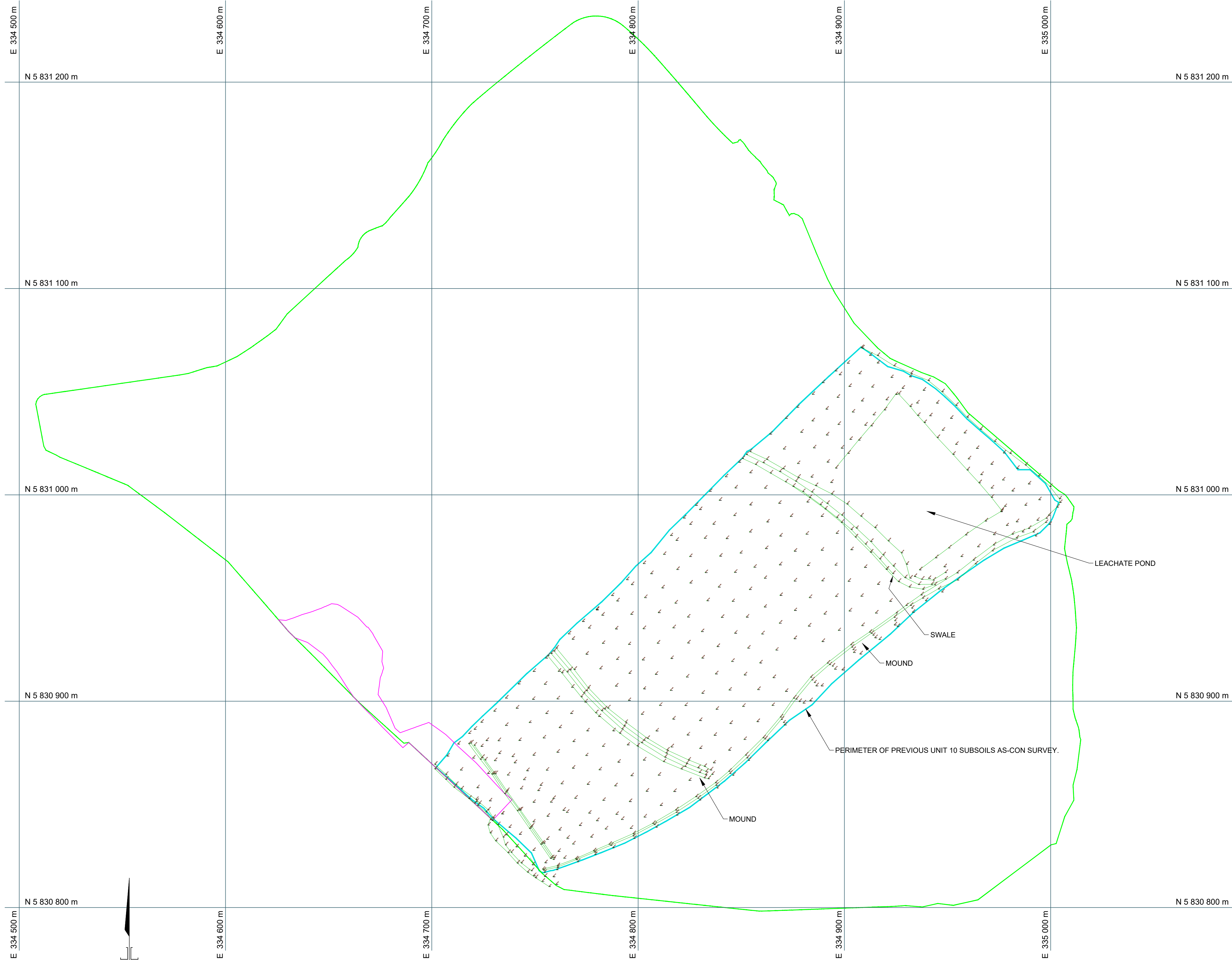
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SHIRE COUNCIL

PROJECT LOCATION

PLENTY LANDFILL
290 YAN YEAN ROAD
PLENTY

PROJECT WORK

PHASE 1
TOP OF TOPSOIL
AS-CONSTRUCTED LEVELS

PROJECT NOTES

SITE BOUNDARIES

THE SITE BOUNDARIES TITLE HAVE NOT BEEN DETERMINED BY THIS SURVEY AND FENCING OR STRUCTURES SHOWN ALONG BOUNDARIES ARE TO BE USED AS A GUIDE FOR LOCATION OF WORKS ONLY.

SERVICES

THE LOCATION OF SERVICES DID NOT FORM ANY PART OF THIS SURVEY.

SURVEY DETAILS

POSITION ACCURACY : HORIZONTAL 50mm (1/2) HEIGHT 20mm (1/2)
DATE OF FIELD SURVEY : 27.11.2019 11.12.2019
CONTOUR INTERVAL : 1m

DRAWING DETAILS

DRAWING REFERENCE NO. : PLENTY Phase1 Top o-Topsoil-03.dwg

NOTE : 3D TRIANGLES (TIN) FOR THE SURFACE SHOWN ARE LOCATED IN THE MODEL SPACE OF THIS DIGITAL DRAWING AND ARE CURRENTLY NOT DISPLAYED.

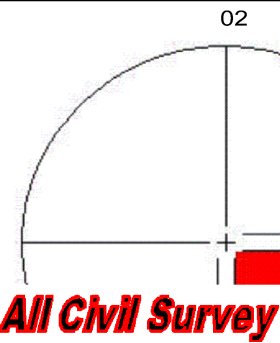
THE LEVELS SHOWN ARE A TRUE INDICATION OF THE SURFACE AT THE LOCATION OF THE MEASURED POINTS. NOTE THAT DUE TO THE MINOR (IRREGULAR) NATURE OF THE SURFACE, VARIATIONS MAY EXIST BETWEEN THE POINTS SHOWN.

137.196
LinePt145
28T1025
ASCON POINT
ELEVATION
ASCON POINT
IDENTIFIER
ASCON POINT
DESCRIPTION

DRAWINGS & AMENDMENTS

VERSION	DATE	DESCRIPTION
03	04.02.2020	NOTES AMENDED
02	20.01.2020	NOTES ADDED
01	06.01.2020	INITIAL ISSUE OF DRAWING

PROJECT	PLENTY	DATE	04.02.2020
DRAWN	BS	CHECKED	JB/MB
ORIGINAL	SCALE	1:1000	VERSION
	SHEET SIZE	A1	03
SHEET No	1 of 1		

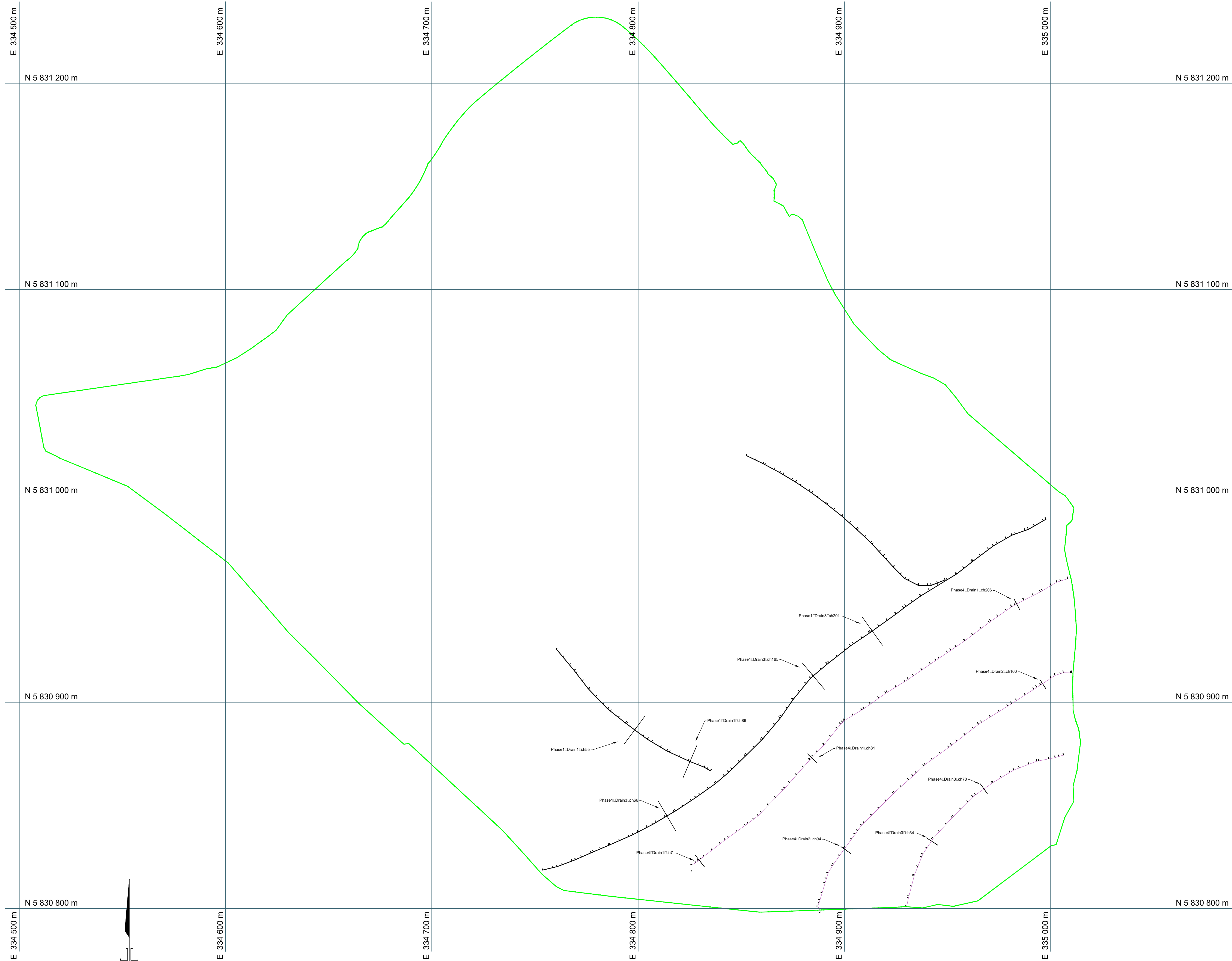


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SHIRE COUNCIL**

PROJECT LOCATION

**PLENTY LANDFILL
290 YAN YEAN ROAD
PLENTY**

PROJECT WORK

**PHASE 1 □ 4
SURFACE DRAIN SECTIONS**

PROJECT NOTES

SITE BOUNDARIES

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SERVICES

THE LOCATION OF SERVICES DID NOT FORM ANY PART OF THIS SURVEY.

SURVEY DETAILS

POSITION ACCURACY : HORIZONTAL 50mm (±) HEIGHT 20mm (±)
DATE OF FIELD SURVEY : Mar. 2020

DRAWING DETAILS

DRAWING REFERENCE NO. : PLENTY Phase1-4 surface drain sections (ar01.dwg)

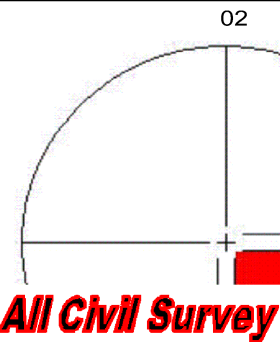
NOTE : 3D TRIANGLES (TIN) FOR THE SURFACE SHOWN ARE LOCATED IN THE MODEL SPACE OF THIS DIGITAL DRAWING AND ARE CURRENTLY NOT DISPLAYED.

THE LEVELS SHOWN ARE A TRUE INDICATION OF THE SURFACE AT THE LOCATION OF THE MEASURED POINTS. NOTE THAT DUE TO THE MINOR (IRREGULAR) NATURE OF THE SURFACE, VARIATIONS MAY EXIST BETWEEN THE POINTS SHOWN.

DRAWINGS & AMENDMENTS

VERSION	DATE	DESCRIPTION
01	27.05.2020	INITIAL ISSUE OF DRAWING

PROJECT	PLENTY	DATE	26.05.2020
DRAWN	BS	CHECKED	JB/MB
ORIGINAL	SCALE	1:1000	VERSION
	SHEET SIZE	A1	01
SHEET No	1 of 3		

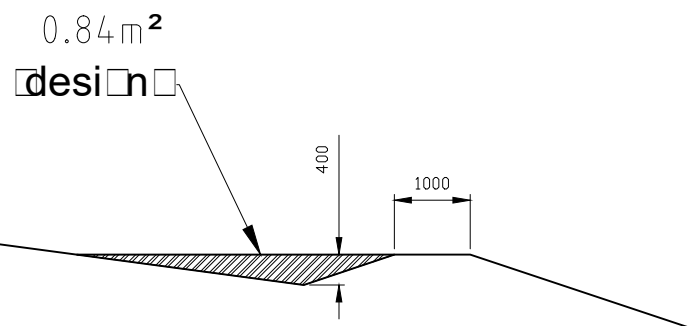


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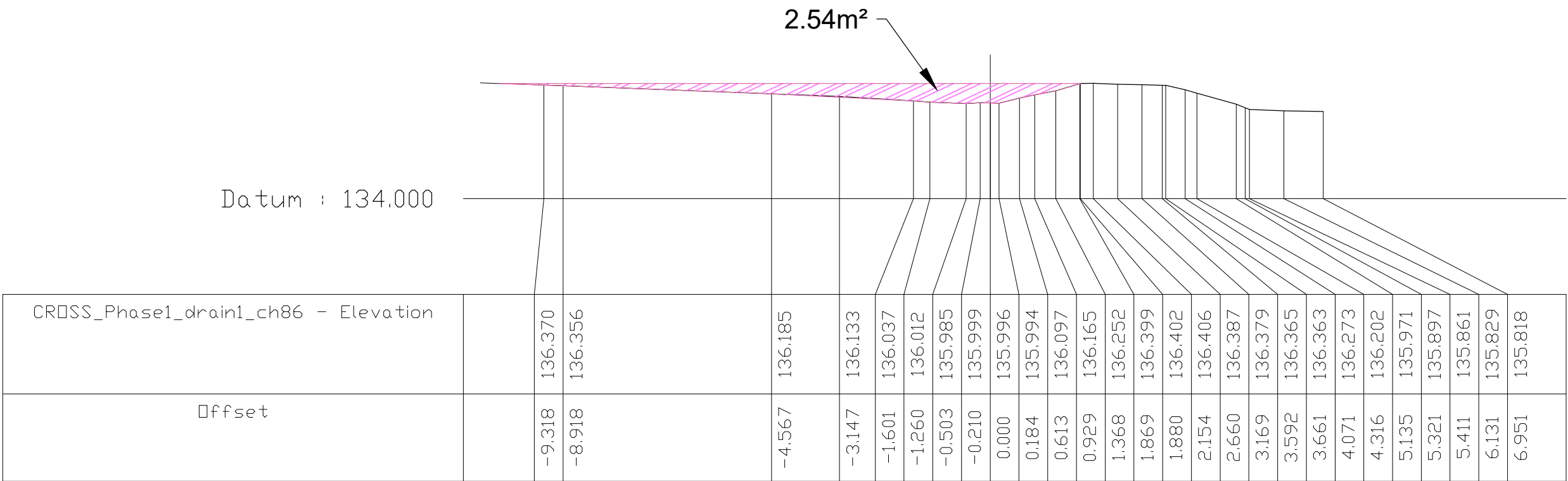


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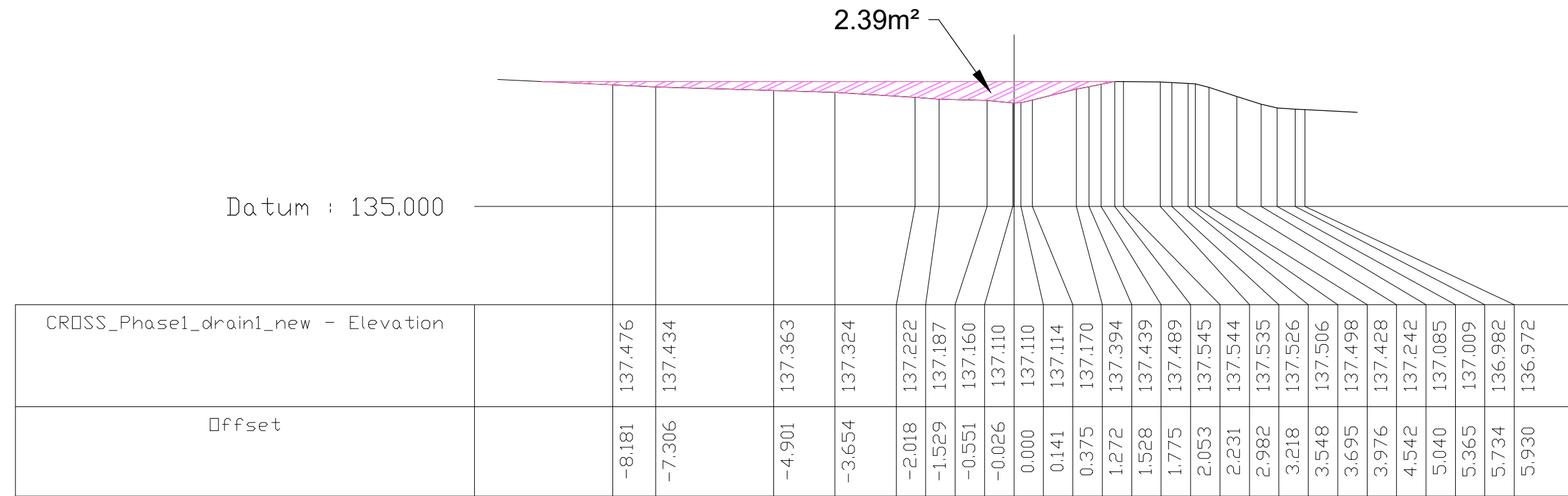
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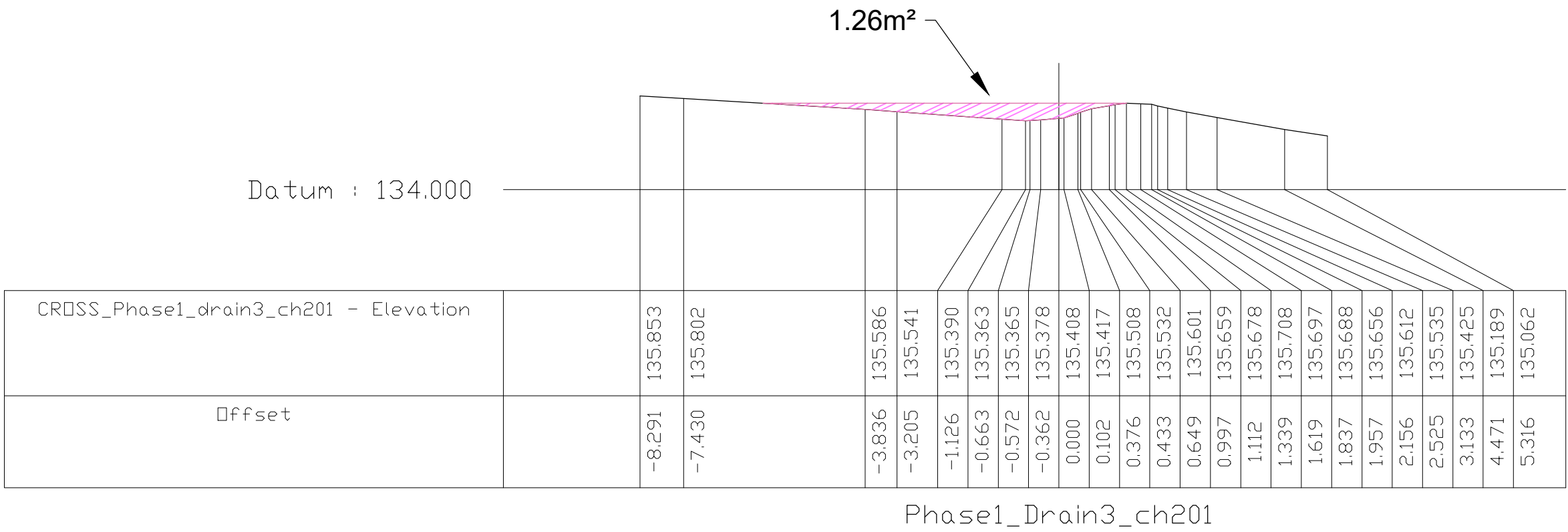
TYPICAL DESIGN SECTION



Phase1_Drain1_ch86



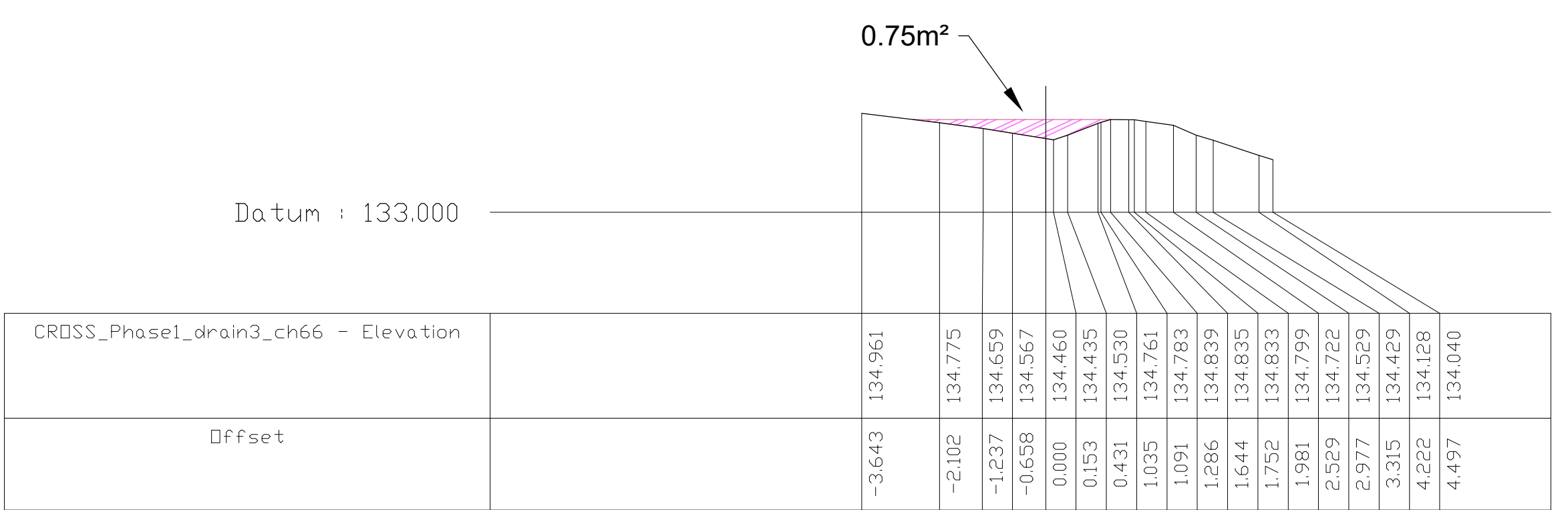
Phase1_Drain1_ch55



Phase1_Drain3_ch201



Phase1_Drain3_ch165



Phase1_Drain3_ch66

Horizontal Scale 1 : 100
Vertical Scale 1 : 100



CLIENT
**NILLUMBIK
SHIRE COUNCIL**

PROJECT LOCATION

**PLENTY LANDFILL
290 YAN YEAN ROAD
PLENTY**

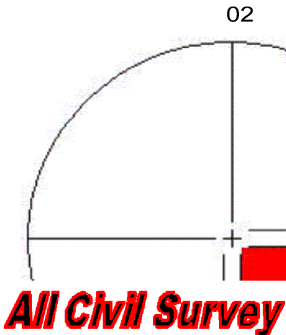
PROJECT WORK
**PHASE 1
SURFACE DRAIN SECTIONS**

PROJECT NOTES

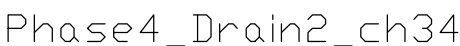
- SITE BOUNDARIES**
THE SITE BOUNDARIES TITLE HAVE NOT BEEN DETERMINED BY THIS SURVEY AND FENCING OR STRUCTURES SHOWN ALONG BOUNDARIES ARE TO BE USED AS A GUIDE FOR LOCATION OF WORKS ONLY.
- SERVICES**
THE LOCATION OF SERVICES DID NOT FORM ANY PART OF THIS SURVEY.
- SURVEY DETAILS**
POSITION ACCURACY : HORIZONTAL 50mm (±) HEIGHT 20mm (±)
DATE OF FIELD SURVEY : MAY 2020
- DRAWING DETAILS**
DRAWING REFERENCE NO. : PLENTY Phase1-4 surface drain sections (ar01.dwg)
NOTE : 3D TRIANGLES (TIN) FOR THE SURFACE SHOWN ARE LOCATED IN THE MODEL SPACE OF THIS DIGITAL DRAWING AND ARE CURRENTLY NOT DISPLAYED.
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DRAWINGS & AMENDMENTS

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DESCRIPTION			
PROJECT	PLENTY	DATE	26.05.2020
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ORIGINAL	SCALE	1:1000	VERSION
	SHEET SIZE	A1	01
SHEET No	2 of 3		



mob. 0412 633 903
ABN 73 807 578 302



ADVERTISED PLAN

Horizontal Scale 1 : 100
Vertical Scale 1 : 100

**NILLUMBIK
SHIRE COUNCIL**

**PLENTY LANDFILL
290 YAN YEAN ROAD
PLENTY**

PROJECT WORK

PHASE 4


SURFACE DRAIN SECTIONS

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01	27.05.2020	INITIAL ISSUE OF DRAWING
----	------------	--------------------------

02



All Civil Survey

mob. 0412 633 903
ABN 73 807 578 302

MAXBRIGHT
& SONS

APPENDIX D

DRAINAGE AND STORMWATER PLAN

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The *Drainage and Stormwater Plan* is provided in Appendix H of the *Nillumbik Solar Farm – Updated Town Planning Report* dated 11 March 2022.

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APPENDIX E

GLINT AND GLARE IMPACT ASSESSMENT

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The *Glint and Glare* Impact Assessment is provided in Appendix D of the *Nillumbik Solar Farm – Updated Town Planning Report* dated 11 March 2022.

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APPENDIX F

CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN

The *Construction Environment Management Plan* is provided in Appendix H of the *Nillumbik Solar Farm – Updated Town Planning Report* dated 11 March 2022.

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APPENDIX G

COMPLAINTS HANDLING POLICY

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Complaint Handling Policy

**ADVERTISED
PLAN**

MARCH 2020

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1.Introduction

Nillumbik Shire Council is committed to delivering an excellent customer experience. The Nillumbik Customer First Strategy identifies the requirement to have customer feedback mechanisms to inform continuous improvement in how we deliver great service to our customers. We aim to be a Council that delivers customer service that is:

- empathetic,
- consistent,
- effective
- simple to deal with.

Customer satisfaction at any point of contact is paramount in building a positive reputation, delivering value, reducing customer complaints and achieving our customer focus commitments. This policy outlines Council's commitment to providing an effective first line response to our customers and improving the customer experience.

2. Objectives

The Complaint Handling Policy outlines how Council will effectively manage complaints and feedback from our customers. The policy will guide staff in handling complaints effectively and appropriately. Council recognises that at times it is not possible to meet customer expectations due to policy position, resource constraints or legislative requirements.

However, Council is committed to ensuring that customers are satisfied with their interaction with Council every time they make contact, and are able to communicate feedback on their experience through the provision of easy to access complaint handling processes. The purpose of this policy is to improve Council's customer service and ensure that we are:

- Continually improving.
- Helping to address our failures and learn from them.
- Understanding and measuring our performance across the organisation.
- Reinforcing our commitment to our customers by:
 - respectful interactions,
 - actively listening to them,
 - understanding their needs and concerns,
 - providing them with accurate information,
 - providing consistent service across all of council's services,
 - providing quality service and outcomes,
 - reducing duplication and repetition,
 - providing service that is uncomplicated, and
 - customer interactions that are smooth and seamless.

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3.Relevant Policy and Legislation

Victorian Charter of Human Rights and Responsibilities Act

This policy should be read in conjunction with other relevant legislation. In developing this policy, the subject matter has been considered to determine if it raises any human rights issues. In particular, whether the scope of any human right established under the *Charter of Human Rights and Responsibilities Act 2006* (Victoria) is in any way limited, restricted or interfered with by the contents of this policy.

The Public Interest Disclosures Procedures are consistent with, and advances rights outlined in the Charter. The human rights most relevant to this policy are the rights to:

- Recognition and equality before the law (section 8)
- Freedom of expression (section 15)
- Taking part in Public Life (section 18)

Other References

- Staff Code of Conduct
- Nillumbik Customer First Strategy 2019–2022

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4. Guiding Principles

This policy is based on seven principles:

1. *Commitment*

We are committed to resolving all of the complaints that we receive and to learn and improve our processes from them. Our culture recognises people's right to make a complaint and considers complaint handling to be part of our core business of serving the community and improving service delivery. We aim to achieve frontline resolution, resolving complaints for the public as quickly as possible. Where complaints cannot be addressed in the first instance, ensuring they are dealt with through appropriate, more formal channels.

2. *Accessibility*

We aim to make the Complaint Management Policy accessible to the public so people can easily find out how to make a complaint and how we can support them through the complaint process. We understand the diverse needs of the community and therefore provide a range of ways for people to lodge a complaint.

3. *Transparency*

The complaint handling system clearly defines how to make a complaint and how that complaint will be handled. It also ensures all of the steps taken to respond to a complaint are recorded and will stand up to scrutiny. We report on overall complaints in our Annual Report.

4. *Objectivity and fairness*

We resolve complaints fairly, with respect and courtesy, and complaints are considered on merit and fact. We maintain impartiality, confidentiality and transparency when we manage complaints and proactively represent the best interests of our community.

5. *Confidentiality and Privacy*

The complaint handling system protects the personal information of people making a complaint, and our staff are only informed on a 'need to know' basis. We will handle all records in accordance with the Privacy & Data Protection Act 2013.

6. *Accountability*

We are accountable for our decision-making and complaint handling performance both internally and externally. We provide explanations and reasons for decisions, and ensure our decisions are subject to appropriate review processes. We advise customers of alternative options to have a decision or outcome reviewed by an external regulatory body such as the ombudsman, Local Government Victoria or the Human Rights Commission.

7. *Continuous improvement*

We are committed to working with the community to improve our services and regularly analyse complaint data to find ways to improve how we operate and deliver our services. By

reviewing past complaints, we are able to address our failures, adjust our processes accordingly and thereby improve our overall customer experience. This is the process of continuous improvement.

5. Definitions

For the purpose of this policy, a complaint is a defined term:

Complaint - *an expression of dissatisfaction about a service, procedure, practice, staff conduct, quality of service or a policy or decision made by a council or a member of council staff or a contractor engaged by the council that is otherwise subject to statutory review.*

Complaint includes the communication, whether orally or in writing, to the Council by a person of their dissatisfaction with:

- the quality of an action taken, decision made or service provided by a member of Council staff or a contractor engaged by the Council; or
- the delay by a member of Council staff or a contractor engaged by the Council in taking an action, making a decision or providing a service

Councillor complaints about the Mayor or other Councillors are formally included as part of the Councillor Code of Conduct and do not form part of this policy.

Feedback - reaction to a process or activity, or the information obtained from such a reaction. Complaints and feedback are not defined as;

- An initial request for service
- An insurance claim
- A request for information or explanation of policies or procedures
- Reports of damaged or faulty infrastructure (i.e. potholes)
- Reports of hazards (e.g. fallen trees)
- Disputes concerning neighbours
- The lodging of an appeal or request to review a decision

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Formal complaints can be put in writing and submitted via the Council website, email or post. Customers who wish to provide us with other feedback are able to do so via the Council website, by telephone, by email, by post or by visiting us at the Shire Offices. Complaints or feedback communicated to Councillors will be referred to the organisation for appropriate action and response.

Public Interest Disclosure – a disclosure made in accordance with the *Public Interest Disclosures Act 2012* and assessed as a public interest disclosure under that Act.

In the event that a complaint alleges misconduct or corruption against a Council Officer, other than a Councillor, the complaint should be referred immediately to the Public Interest Disclosure Coordinator personally, to be handled confidentially, following the Public Interest Disclosures Procedures. In these circumstances, the identity of the complainant must not be disclosed to anyone other than the Public Interest Disclosure Co-ordinator personally. (A complaint about the conduct of a Councillor must be referred immediately to the Independent Broad-based Anti-corruption Commission).

Process – a series of actions or steps taken in order to achieve a particular result.

Policy – a course or principle of action adopted or proposed by an organisation or individual.

System – a set of things working together as parts of a mechanism or an interconnecting network; a complex whole.

Guideline – a general rule, principle, or piece of advice.

Service Delivery – a formal service request from a customer for information, advice, works to be completed or an investigation to be completed within an agreed timeframe.

6. Scope

This policy applies to all Council staff, Council contractors, consultants, work place students, interns and volunteers. Councillors also play a role in the customer service delivery for Nillumbik by setting policy and strategy, and referring requests for service and complaints to the organisation for appropriate action. This is inclusive of complaints and feedback from customer which are referred to the organisation to address.

7. Roles and Responsibilities

The Executive Team, Department Managers and Coordinators have a significant role in promoting the Customer Complaint Policy to staff to ensure they feel supported in dealing with difficult situations and understand the escalation process is designed to also minimise complaints. The Executive Team and Department Managers via their role are responsible for adhering to the complaint handling process and monitoring, evaluating and reviewing processes.

The Executive Manager Business Transformation & Performance and the Customer Experience Lead are responsible for providing advice in relation to this policy, overseeing the operation of systems and processes that support the policy and ensuring the policy is adhered to internally. It is recognised that customers will contact Councillors with complaints and feedback. The role of Councillors is to advise the Council administration of the complaint/feedback and for the Council administration to take appropriate action as per the policy.

8. How to make a Complaint

There are many ways to provide feedback or make a complaint:

Online	www.nillumbik.vic.gov.au
Email Council	Nillumbik@nillumbik.vic.gov.au
Telephone Council	9433 3111
Mail	Nillumbik Shire Council PO Box 476 GREENSBOROUGH VIC 3088
In person	32 Civic Drive GREENSBOROUGH VIC 3088

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The person receiving or managing the complaint will provide the customer with the help they need to make the complaint, including if necessary, providing an interpreter. We also accept and respond to anonymous complaints if we have received enough information to do so.

9. Accessibility

Council recognises that our customers may wish to access Council services in a variety of ways and are committed to providing choice. Operational enquiries and requests communicated to Councillors will be referred to the organisation for appropriate action and response.

10. Complaint Handling Procedure

Scope

A complaint is a statement that something is unsatisfactory or unacceptable. The complaints handling procedure, is a step by step process outlining how complaints at Council will be handled.

Overview

Nillumbik's four-tiered approach to handling complaints:

1. Frontline resolution: frontline staff receive the complaint and resolve it immediately, if possible.
2. Investigation: if frontline staff cannot resolve the complaint, they will refer it to the most appropriate council officer for investigation.
3. Internal review: if the complainant is not satisfied with the outcome of the investigation, they can request an internal review. The internal review will be independent of the person who took the action, made the decision and provided the service.
4. Access to external review: if the complainant is not satisfied with the process or outcome of the internal review, they are informed of any external avenues where they can pursue their complaint.

Council retains an express *discretion* to refuse to deal with a complaint that is otherwise subject to statutory review. In exercising this discretion, council will consider whether it is reasonable in the circumstances to expect the complainant to exercise their rights under the relevant statutory review process.

We acknowledge a complainant by mail or email within ten working days or by phone within the same day, informing the complainant of the name and department of the staff member who is handling their complaint, and advising them of a timeframe for progressing and/or completing the enquiry where relevant.

If you are not satisfied with the outcome of a matter, you will be able to use our internal review process, which is free and easy to use. Please call 9433 3111 to make an appointment to discuss your concerns with the relevant manager of the department involved.

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Complaint resolution process

Stage 1	When we receive feedback or a complaint, we will record it and try to resolve it immediately, where possible.
Stage 2	When a complaint cannot be resolved immediately, the complaint will be referred to an appropriate council officer. If you are not satisfied with the response or the way in which your feedback or complaint has been handled, you can ask for your complaint to be referred for an internal review.
Stage 3	Internal Review: An internal review will be carried out by a panel of senior managers. If you remain dissatisfied with the result, you can refer your complaint to an external agency for an independent review.
Stage 4	<p>External review: If you are not satisfied with Council's final response, you can contact the Ombudsman's Office and/or other external agencies (refer to section 13) to request an independent review. The Ombudsman's Office can be contacted by:</p> <ul style="list-style-type: none"> - <u>Telephone</u>: 9613 6222 - <u>Toll Free</u>: 1800 806 314 (regional only) - <u>Text Telephone (TTY)</u> – <i>a device that lets people who are deaf, hard of hearing, or speech-impaired use the telephone to communicate, allowing them to type messages back and forth to one another</i>: 133 677 or 1300 555 727 - <u>Interpreter service via telephone</u>: 131 450 - <u>On-site Interpreter</u>: 1300 655 082 - <u>Email</u>: ombudvic@ombudsman.vic.gov.au - <u>Writing to</u>: Ombudsman Victoria Level 2, 570 Bourke Street Melbourne Victoria 3000

11. Reporting and Improvement

The importance of reviewing escalations, complaints and feedback to identify root causes for service failure and finding appropriate treatments is recognised. The establishment of this Complaint Handling Policy is designed to provide a guideline for staff to follow to ensure that complaints and feedback are logged, investigated, actioned and responded to appropriately. It also regulates a review process which involves identifying and analysing root causes and implementing treatment plans to decrease future customer dissatisfaction. Root causes to escalations and complaints will be categorised for reporting and review purposes:

- **People** – customer dissatisfied with interaction with staff member, which is inclusive of staff failing to escalate (as per the Customer Escalation Procedure) resulting in the customer's enquiry/request for service not being resolved.
- **Process** – Customer dissatisfied with a process.
- **Policy** – Customer dissatisfied with council policy.
- **Service Delivery** – Non-compliance to Council's Customer Service Standards, service not meeting customer expectations due to quality of delivery.

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12. Unreasonable Complainant Conduct

Unreasonable behaviour is that which because of its nature raises substantial health, safety, resource or equity issues for our organisation, our staff, other services users, and/or the complainant themselves

Vexatious - causing or tending to cause annoyance, frustration, or worry. The Victorian Ombudsman has released a policy and guide to assist workers, dealing with complaints of this nature. When complainants behave in this way, we consider their conduct to be unreasonable.

Categories of unreasonable complainant conduct can be grouped into five categories:

- Unreasonable persistence
- Unreasonable demands
- Unreasonable lack of cooperation
- Unreasonable arguments
- Unreasonable behaviour.

Dealing with unreasonable behaviour is based on the understanding that:

- Every complainant deserves to be treated with respect.
- Every complainant, regardless of how much time and effort is taken up in responding to their complaint, should have their complaint properly and appropriately dealt with.
- A complainant whose conduct is unreasonable may still have a legitimate complaint, however their inappropriate behaviour must be effectively managed.
- The substance of a complaint dictates the level of resources allocated to it, not the complainant's wishes, demands or behaviour.

When managing unreasonable behaviour we try to ensure that:

- The complainant's expectations are clear and realistic, something which can be determined when contact is made after receiving a complaint.
- We maintain regular, firm and clear communication with the complainant, either in writing and/or verbally.
- The complainant understands what Council can do in relation to their complaint and where they are able to go for further assistance.
- We provide clear reasons for our decisions. We avoid unnecessary delays.
- We provide clear guidance and procedures for staff to deal with complaints.

13. External Agencies

Victorian Ombudsman

The Ombudsman can help when your complaint is about an administrative action taken by a council employee, but not those of a councillor acting in the role of a councillor or a council acting as a decision making body.

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In person/ by Post: Ombudsman Victoria Level 2, 570 Bourke Street MELBOURNE VIC 3000

DX: 210174 MELBOURNE

Phone: 9613 6222

Toll Free: 1800 806 314 (regional only)

Text Telephone (TTY): 133 677 or 1300 555 727

Phone interpreter service: 131 450

On-site interpreter: 1300 655 082

Email: ombudvic@ombudsman.vic.gov.au

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Local Government Victoria

Complaints about councils which cannot be resolved by negotiating with the Council itself, and which are not within other jurisdictions, can be directed, in writing, to Local Government Victoria.

By post: PO Box 500, East Melbourne VIC 8002

Phone: 03 9208 3333

Switchboard: 1300 366 356

Victorian Government Contact Centre Email: local.government@delwp.vic.gov.au

Local Government Investigations and Compliance Inspectorate

The Local Government Investigations and Compliance Inspectorate investigation team is responsible for investigating allegations of offences under the Local Government Act 1989 (Act).

By post: PO Box 2392, MELBOURNE VIC 3001

Complaints hotline: 1800 469 359 8am–5pm weekdays

Email: inspectorate@dtpli.vic.gov.au

Victorian Civil and Administrative Tribunal (VCAT)

VCAT deals with a range of disputes between people and government in areas of:

- Planning and environment,
- land valuation &
- many other government decisions.

In person: 55 King Street MELBOURNE VIC 3000

By post: PO Box 5408 CC, MELBOURNE VIC 3001

Phone: 03 9628 9777

Email: vcat-admin@justice.vic.gov.au

Fines Victoria – Magistrates' Court of Victoria

Fines Victoria is part of the Magistrates' Court, which deals with processing and enforcing infringement notices and penalties, such as speed camera and parking fines.

In person/ by post: Ground Floor, 277 William Street MELBOURNE VIC 3001

Phone: 03 9200 8222

Elect to go to court

If you receive an infringement notice, you can exercise your right to take your infringement matter to the Magistrates' Court to be determined at a formal hearing.

In person/ by post: Civic Compliance Victoria Ground Floor, 277 William Street, MELBOURNE VIC 3001.

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Victorian Equal Opportunity and Human Rights Commission (VEOHRC)

Provides an impartial, fast, flexible, and free dispute resolution process to help people resolve discrimination complaints and complaints of sexual harassment, and racial and religious vilification.

In person/ by post: Level 3, 204 Lygon Street, CARLTON VIC 3053

Phone: 1300 292 153

Email: information@veohrc.vic.gov.au

Text Telephone (TTY): 1300 289 621

Interpreters: 1300 152 494

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