



REPORT

Erskine Park Landfill Environmental Management Plan

Submitted to:

Enviroguard Pty Ltd

Quarry Road
Erskine Park
NSW, 2759

Submitted by:

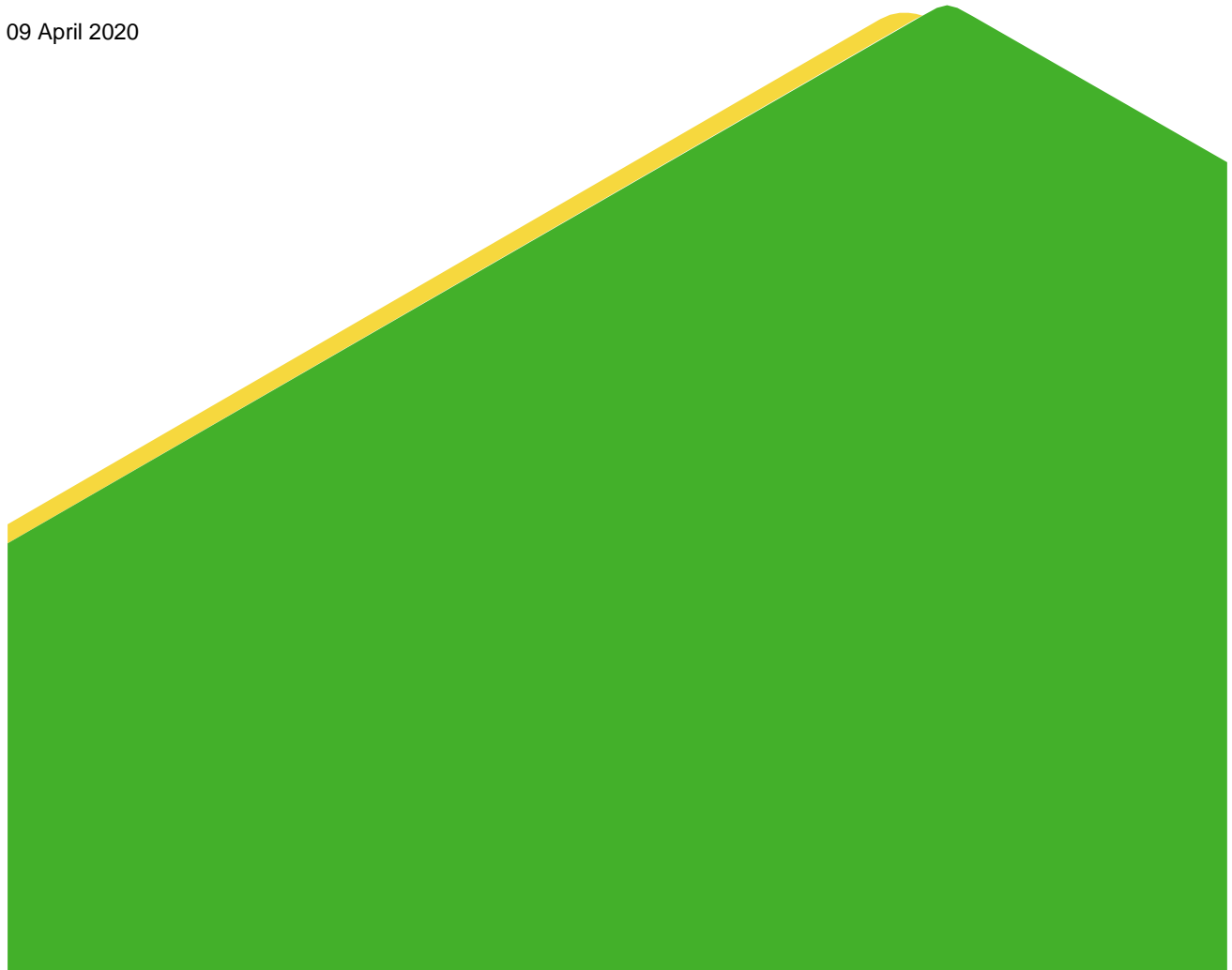
Golder Associates Pty Ltd

Level 8, 40 Mount Street, North Sydney, New South Wales 2060, Australia

+61 2 9478 3900

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Important Information

1.0 INTRODUCTION

1.1 Purpose

Enviroguard Pty Ltd (Enviroguard) operates a Solid Waste Class 2 Landfill at Erskine Park, NSW and is licensed to receive suitable non-putrescible wastes from domestic and commercial sources. Activities on the site include the receipt of waste, use of cover material and waste compaction. Non-putrescible waste is currently received at a rate not exceeding approximately 1 Million Tonnes per Annum (Mtpa).

The site operates in accordance with the requirements of Development Consent (DA 05/1740) as amended on 8 August 2019 (DA 05/1740.01) (refer Appendix A) and Environment Protection Licence (EPL) No 4865 issued by the NSW Environmental Protection Authority (EPA) (refer Appendix B).

The site was granted development consent in December 2010 (DA 10/0429) for a landfill gas management system at the Site. In addition, the site also had development consent granted in 2011 (DA11/0063) for construction and operation of a leachate treatment plant, providing a treatment solution for landfill leachate during ongoing operations and during the post-closure period.

In 2014 development consent was granted (DA13/0655) for the installation of a 4.7km gas pipeline between the site to the Austral brick manufacturing plant at Horsley Park. The pipeline recovers all landfill gas from the Erskine Park landfill and is utilized to fire kilns used for brick manufacturing. It should be noted that this development consent was not issued for the site but to the Austral Brick site at Horsley Park.

This Environmental Management Plan (EMP) has been prepared to meet the requirements of Development Consents DA05/1740, DA05/1740.01 and EPL 4865.

The EMP has been prepared to specifically meet the requirement of Condition of Consent No 6 (refer DA05/1740.01):

An amended Site Rehabilitation and Environmental Management Plan (the plan) is to be submitted to Penrith City Council and prepared to Council's satisfaction prior to the commencement of the development. The Plan is to be consistent with the EPA/DEC approved Landfill Environmental Management Plan (LEMP), is to address the environmental aspects of the development and is to include details of the environmental management practices and controls to be implemented on site. The Plan must be prepared by a suitably qualified person/s, in consultation with the relevant authorities and agencies (eg Department of Environment and Conservation and the Department of Natural Resources) and is to address but is not limited to the following:

- Water quality;
- Wastewater management;
- Stormwater management and drainage;
- Noise control;
- Waste management including solid and liquid waste;
- Vehicle movements;
- Chemical storage, transport, spill contingency and response;
- Erosion and sediment control;
- Air quality including odour and dust control;

- Environmental monitoring; and
- Site rehabilitation.

All activities on the site are to be implemented and managed in accordance with the Plan. The Plan is to incorporate a review process that involves the consultation of Penrith City Council and other relevant authorities to ensure that it reflects current environmental best practice, standards and legislation. Penrith City council must be satisfied with any changes prior to the amendment of the Plan. The Plan shall be submitted every 12 months.

This EMP has also been prepared to meet the requirements of the General Terms of Approval issued by the the DEC and Department of Natural Resources (DNR), which are incorporated into the Development Consent and meet the requirements of an LEMP.

The structure of the EMP has been developed so that it meets the above requirements and identifies the operating and management procedures for the Erskine Park Landfill. It is a tool for efficient site management through documenting procedures that ensure site operations run effectively and that potential environmental harm is reduced. The EMP provides access to information concerning the procedures established to control environmental emissions and efficient site operation.

The requirements of Condition of Consent 6 have been addressed as follows:

Table 1: EMP Structure

Aspect	Emp Section
Water quality	Section 3.1, 3.2
Wastewater management	Section 3.4
Stormwater management and drainage	Section 3.1
Noise control	Section 3.10
Waste management including solid and liquid waste	Section 2.5 and 3.12
Vehicle movement	Section 3.15
Chemical storage, transport, spill contingency and response	Section 3.17
Erosion and sediment control	Section 3.1
Air quality including odour and dust control	Section 3.5, 3.6, 3.8
Environmental monitoring	Section 3.18
Site rehabilitation	Section 2.6

The EMP is updated regularly in response to emerging technology and new standards for environmental management of landfill waste and in accordance with the requirements of Condition of Consent No 6 (DA05/1740.01). It is kept on-site and copies are provided to the NSW EPA and Penrith City Council.

An Environmental Performance Report is to be submitted annually to Penrith City Council at the end of June each year in accordance with Condition of Consent No 7. An Annual Environmental Monitoring Report is provided to the NSW EPA in accordance with the requirements of the EPL 4865.

1.2 Legal and Regulatory Requirements

Penrith City Council

The Erskine Park Landfill is governed by the Penrith City Council Development Consent DA05/1740.01 issued under the *Environmental Planning and Assessment Act 1979* (refer Appendix A).

EPA

Licensing is governed by the *Protection of the Environment Operations (Waste) Regulations 2014* (POEO regulation). The relevant provisions of the POEO regulation commenced on 1 November 2014. Operation of the Erskine Park Landfill is controlled by the NSW EPA Environmental Protection Licence Number 4865 which is issued under Section 55 of the *Protection of the Environment Operations Act 1997*. A copy of the licence is kept on site (refer Appendix B).

Operations on the site must also be in accordance with EPA Environmental Guidelines: Solid Waste Landfills 2016.

Other Legislation

The following NSW legislation applies to the operations of the Erskine Park Landfill:

- *Occupational Health and Safety Amendment (Dangerous Goods) Act 2003;*
- *Biodiversity Conservation Act 2016;*
- *Environmental Planning and Assessment Act 1979;*
- *Environmentally Hazardous Chemicals Act 1985;*
- *Heritage Act 1977;*
- *Local Government Act 1993;*
- *National Parks and Wildlife Act 1974;*
- *Occupational Health and Safety Act 2000;*
- *Ozone Protection Act 1989;*
- *Protection of the Environment Operations Act 1997;*
- *Public Health Act 2010;*
- *Soil Conservation Act 1938;*
- *Waste Recycling and Processing Corporation (Authorised Transaction) Act 2010;* and
- *Waste Avoidance and Resource Recovery Act 2001.*

2.0 SITE OVERVIEW

2.1 Background

The Erskine Park Landfill has been operating since 1994. It operates on land comprising (refer Figure 1):

- Lot 4 - DP 1094504 in the Erskine Business Park (formerly known as the Erskine Park Employment Area – EPEA). This area comprises the non-putrescible landfill;

The Erskine Park Landfill is part of the original Erskine Park Quarry site, previously owned by CSR. The Erskine Park Quarry commenced excavation in the 1920s and continued until 1994. The rock resource was located in a volcanic neck which formed a prominent hill. The hill was approximately 500 m long and 300 m wide. It rose to a height of about 50 m above the adjacent creek level with steep slopes on the southern and western sides. The quarry was operated from 1961 onwards by Readymix Concrete Industries.

The Erskine Park Landfill site covers approximately 22 hectares (ha) with a landfill area of 17 ha. The landfill commenced operations under development consent (DA No 163/92) issued by Penrith Council on 11 November 1992. Landfilling operations over subsequent years have filled the former quarry to above ground level. Filling will continue to create a hill that reflects the shape and size of the original landform.

2.2 Environmental Setting

Location and Surrounding Land Use

The Erskine Park Landfill lies within the Penrith City Council Local Government Area (LGA) in Western Sydney. It is located in the suburb of Erskine Park. The Erskine Park Landfill lies within a designated industrial zone created by Penrith City Council as part of the Erskine Business Park.

Site Topography

The Erskine Park Landfill site is characterised by gently undulating slopes rising from an elevation of 35 m AHD near Mamre Road to 67 m AHD at the eastern boundary. The present day landfill is situated on a former volcanic diatreme, which formed a prominent hill. The summit was approximately 50 m above the nearest creek line. This hill was quarried using open-cut techniques resulting in a benched quarry with a floor level approximately 100 m below the rim. Since 1994 the quarry has been used as a non-putrescible landfill. Slopes surrounding the quarry are between 7 % and 13 % and the rim is 15 to 30 m higher than the surrounding landform due to the quarry overburden mounds surrounding the quarry rim.

Climate

The Penrith region is located within a broad rain shadow, which is created by the high lying coastal plateau to the east capturing rain from the prevailing south-east winds.

The average annual rainfall is 759 mm with the majority of rain falling in the summer months. The temperature ranges from 15 to 29°C in summer and 2 to 17°C in winter while extremes as low as -5°C in winter and above 40°C in summer have been recorded. Winds are predominantly from the south or north-east during summer and west to south-west during winter. Severe frosts occur in July with 33 days per year the average recording. Fogs occur on average 12 days per year with the majority occurring during winter.

Site Geology and Soils

In a regional context, the Erskine Park Landfill is situated near the central portion of the Sydney Basin, which is a broad geological province formed by Permian and Triassic sedimentation. It is located within the centre of the Cumberland Plain which is a low-lying undulating shale landscape.

In the past the predominant feature of the local area was the volcanic diatreme hill which was quarried from the 1920s. This is now the location of the landfill site.

The general geological succession at the Erskine Park Landfill comprises the Triassic Hawkesbury Sandstone, overlain by the Wianamatta Group (approximately 115 to 120 m thick). The Wianamatta Group comprises, in ascending order, the Ashfield Shale (approximately 50 m thick), the Minchinbury Sandstone (approximately 3 m thick) and the Bringelly Shale (approximately 50 to 60 m thick). The flat terrain adjacent to the landfill was formed by Bringelly Shale.

The topsoil has been disturbed due to past quarrying activities and the present landfill operation. The quarry overburden stockpiles are created of various soil materials. Virgin topsoil is also present mixed in the overburden material.

Hydrogeology

The Hawkesbury Sandstone and Wianamatta Group rocks occurring in this region are low in permeability and the groundwater is of varying quality.

The Bringelly Shale has a very low permeability, with results typically exceeding the Landfill Guidelines leachate barrier recompacted clay or modified soil liner in-situ coefficient of permeability requirement of less than 1×10^{-9} m/s.

Rates of groundwater movement are likely to be low as a result of low relief, low altitude (approximately 50 mAHD) and low permeability of the Wianamatta Shale and volcanic breccia in which the landfill is constructed (Herbert, 1980).

Groundwater associated with the Wianamatta Shale is characterised by high salinity (Wooley, 1980; Krumins et al., 1998) and high ammonia concentrations (>10 mg L⁻¹, Old, 1942). Naturally occurring high levels of these parameters reflect the deposition of organic-rich sediment in low energy coastal environments and may be incorrectly attributed to leachate contamination. Perched groundwater is often evident within the interspersed sandstone horizons and laminite within the Bringelly Shale.

Groundwater has been monitored at the site since 1993.

Hydrology

The landfill is located in the catchment of South Creek which flows into the Hawkesbury River at Windsor.

Two detention basins are located on the site with one dam located in the south-east corner of the site and the other in the north-west corner. Both dams collect uncontaminated runoff from the unfilled areas. These dams currently collect sediments from peripheral stockpiles and storage areas outside the void, but will ultimately collect sediments from the rehabilitated final landform.

Ongoing landfilling operations will be undertaken to the final approved landform. Surface water drainage from the final landform shall be intercepted by drains at the perimeter surface water drains at the toe of the landform. The toe drain shall direct the surface water run-off around the landfill to the two existing sedimentation dams.

Flora and Fauna

The Erskine Business Park is classed as Cumberland Plain Woodland with a large area of Forest Red Gum / Grey Box regrowth woodland adjacent to the landfill site. The regionally significant species *Grevillea juniperina* ssp *juniperina* and *Pultenaea microphylla* were recorded during a vegetation survey in 2004 (HLA) in the land surrounding the Erskine Park Landfill. The Erskine Park Landfill is a highly disturbed site and little original vegetation remains in the area. Some regenerating vegetation has established on the overburden mounds.

No native fauna species are present at the Erskine Park Landfill due to the high level of disturbance at the site.

A Biodiversity Management Plan has been prepared for the Erskine Business Park and the final rehabilitation of the site will be consistent with the objectives of this plan. A Landscape Plan has been prepared for the final landform in accordance with the requirements of Condition of Consent No 4 (DA 05/1740.01) (Refer Appendix C). In addition a Vegetation Management Plan has been prepared for the outlet of the North West Dam in accordance with Condition of Consent No 8. Any removal of vegetation on the site is to be undertaken in accordance with the Vegetation Management Plan (Refer Appendix D).

Archaeology and Heritage

Drawing upon the findings of archaeological studies at the site completed by Jo McDonald CHM (1998) and HLA Envirosiences (2004), an Aboriginal heritage assessment completed in 2005 by Navin Officer Consultants for DA 05/1740 identifies the site has a low archaeological significance as the site is a highly disturbed area due to previous land use.

Since European settlement in the area, there has been a significant change to the flora and fauna dynamics due to the introduction of agriculture and subsequent land development for urban and industrial purposes and its associated infrastructure.

A house was located on top of the former hill that currently comprises the landfill area. This was demolished and the hill quarried from the 1920s to produce the quarry pit which was subsequently filled with landfill waste material.

The surrounding area was agricultural land until urban development commenced in the Erskine Park area to the north and rural residential west of Mamre Road and south of the water supply pipeline. The immediate area has been designed as the Erskine Business Park and is zoned for industrial purposes.

2.3 Site Facilities and Infrastructure

The entrance to the site on Quarry Road, is accessed from Mamre Road and James Erskine Drive. Site facilities include:

- Weighbridge building with two weighbridges;
- Amenities and office buildings;
- Truck wheel wash facility;
- Workshop;
- Leachate Treatment Plant; and
- Landfill Gas Flare.

The site is connected to water, sewer-onsite disposal and electricity and telephone services.

Figure 2 provides current site layout.

Access Roads

Access to the landfill site is via James Erskine Drive to Quarry Road which is located off Mamre Road. The junction of James Erskine Drive and Mamre Road is a signalised intersection. Quarry Road leads to a two-arm roundabout onto to the Landfill which is accessed via a weighbridge. A secondary road provides access to the main amenities building. The access road from the rim of the landfill to the disposal area is unsealed due to the filling operation progressively moving within the landfill area.

Signs

The requirements regarding signs are governed by Penrith City Council and the NSW EPA. Signs are maintained and upgraded as required. Signs provide information regarding access, operating hours and the type of waste accepted and are located at the entrance. Signs relating to environmental or occupational health and safety issues are displayed in prominent areas within the site.

Stormwater Drainage

The existing drainage system comprises of stormwater and surface water draining to two detention basins in the south-east and north-east corners of the landfill site.

Leachate Treatment Plant

A Leachate Treatment Plant (LTP) was constructed onsite in June 2011 to treat leachate as per DA 11/0063.

The LTP has an average treatment capacity of 750 m³ per day. The LTP has a maximum allowable discharge of 1036 m³ per day as per Sydney Water Trade Waste Agreement Consent No: 35835, Property Number: 5360639 (maximum discharge rate of 12 L/s).

The LTP consists of the following;

- Equalisation Tank
- Sequencing Batch Reactors (SBRs)
- Final Equalisation Tank
- Aerobic Digester (Sludge Thickening Tank)
- Chemical Dosing System

Landfill Gas Extraction System and Flare

Gas is extracted via vertical extraction wells, associated manifolds and flow lines and header pipe and condensate traps are located in the landfill.

A landfill gas collection pipe along the southern boundary of the site transfers gas to the Austral Brick facility for reuse.

An enclosed flare and compound is located to the west of the landfill.

Fencing

The site is surrounded by a 1.8 m high fence of chain wire with gates enclosing the access points. The perimeter of the waste management/landfill area has additional fencing with gates where necessary in order to restrict private vehicular access to the landfill and the cover material excavation areas.

A 10 m high litter fence has been constructed along the eastern boundary of the landfill site for the control of wind blown litter from the landfill operations. The fence is approximately 400m in length.

2.4 Site Operations

Operational Conditions

The landfill is managed by Enviroguard. On site, there are approximately 7 staff members.

The Erskine Park Landfill is currently open from 7 am to 4 pm Monday to Friday. The Erskine Park Landfill is permitted to open 7 am to 4 pm on Sundays and Public Holidays.

Maintenance/Operation of Plant and Equipment

All plant and equipment have routine scheduled maintenance and are operated in a proper and efficient manner by competent operators. The dedicated equipment at the Erskine Park Landfill includes:

PLANT	DESCRIPTION	USE
Caterpillar D9R	Dozer	Waste movement and covering
Komatsu D65	Dozer	Waste movement and covering
Caterpillar 836H	Compactor	Waste compaction
Caterpillar 826C	Compactor	Waste compaction
Mack W/C	Water Cart	Dust suppression/fire fighting
PC300-5	Excavator	Cover Loading, general earthworks
Caterpillar 980	Loader	Cover loading
Grader	Grader	Site and road maintenance
IT28F	Integrated Tool Carrier	Maintenance
Fuel Cart	Fuel Cart	Equipment refuelling
Cat 725	Dump truck	Cover material haulage
Hiab	Flatbed truck	General purpose

2.4.1 Staffing and Training Requirements

Staff training should be adequate for environmentally responsible and safe management of the facility.

Enviroguard is responsible for the provision of sufficiently qualified staff on site to meet all the requirements described in this EMP.

All staff are suitably qualified when employed by Enviroguard, for their various positions.

Further appropriate information, instruction, education and training in occupational health and safety and environmental management and relevant legislation is provided for all staff. The OH&S Supervisor updates a training matrix as required.

Training incorporates four elements as summarised below:

- Position competency requirements;
- General induction training;
- Site specific induction training; and

- Ongoing training.

Assurance of Quality

Quality assurance is necessary to ensure completed components meet project design criteria, plans and specifications. This involves monitoring and documenting the quality of materials, methods used and how the materials are placed. Landfill operators can detect any variations from design and provide corrective action.

Enviroguard uses a Construction Quality Assurance (CQA) system as a feature of site construction and operation activities. Enviroguard also ensures that site construction and testing is of a high standard and documentation is employed. This is achieved by the following actions:

- Giving preference to firms that are accredited under AS 3 900, ISO 9 000 or ISO 14 000;
- Using standard specification in contracts with construction activities;
- Employing third party consultants to test and document site activities;
- Ensuring that when testing is necessary only standard test procedures (*ie* Australian Standard, British Standard, American Society for Testing and Materials, DIN) are employed;
- Effective record management system which ensures activities are appropriately documented;
- Construction Quality Plans are implemented during construction of major engineering works, for example, cell liner, leachate collection systems; and
- Quality assured organisations are used to perform and report on environmental monitoring and to undertake the design of engineering works.

2.5 Waste Management

Permitted Wastes

The Erskine Park Landfill is permitted to accept waste that is classified as inert or solid class 2 non-putrescible waste, asbestos waste and waste tyres that is so specified in Schedule 1 of the *Protection of the Environment Operations Act 1997*.

Immobilised waste that has been assessed as inert or solid waste is also accepted. Whole loads of tyres are not accepted, only a load containing less than 5 whole tyres are accepted at Erskine Park Landfill. However shredded tyres are accepted and landfilled along with general waste.

Conditions of Consent Nos 12 and 13 (DA05/1740.01) stipulate that no fill material is imported to the site without approval by Council issue of a Validation Certificate.

Screening of Wastes Received

The purpose of screening is to ensure Enviroguard only landfills the waste it is licensed to receive. Signs at the site entrance state which types of waste are accepted. Brochures are provided to commercial waste hauling companies explaining the types of waste accepted. Staff at the weighbridge and tipping supervisors are trained to identify liquid, hazardous and sludge wastes. Truck unloading is monitored while the gatehouse supervisor inspects all open loads and rejects liquid, sludges and hazardous wastes. Cameras at the weighbridge allow the Weighbridge Operator to visually inspect all open loads. If a load looks or smells suspect, it is dumped separately and individually inspected. If the Plant Operator is not satisfied he will contact the Landfill Supervisor. Additional measures, including questioning the transporter and where considered necessary, the generator, are employed to more thoroughly identify the load and its source. Only when completely satisfied will the load be landfilled. Vehicles with unacceptable waste will be turned away.

As some quantities of biodegradable waste can be included within commercial waste, the landfilling supervisor monitors waste unloading. If such waste is found the company concerned is contacted and requested to take the waste to another facility. Re-offenders can be banned from the site to prevent the recurrence of illegal disposal.

Information gathered from vehicles entering the site is collected electronically and is archived for a minimum of four years.

If vehicles are carrying contaminated soil, entry will only be permitted if the Contaminated Soils Acceptance Procedure has been followed and the load is accompanied by a delivery note and Enviroguard Approval Number. Contaminated soil loads undergo random sampling and testing by Enviroguard.

Measurement and Recording of Wastes Quantities, Types and Sources Received

In accordance with the DA and EPL the total tonnage of waste disposed of will not exceed 1 Mtpa (1 January to 31 December).

Enviroguard previously operated two Department of Fair Trading accredited weighbridges to record the incoming and tare weight of vehicles entering and exiting the site. These were decommissioned with new weighbridges installed for the Cleanaway Transfer Station. An EPA exemption to use the Transfer Station weighbridges for the Site was obtained from the EPA in 2019. The data received is necessary for accurate reporting for payment, environmental maintenance provisions, compaction level assessment and as data input for projected landfill life expectancy modelling. The weighbridges are serviced every 6 months.

A monthly report on the amount, type and source of waste detailed by the National Waste Classification System is provided to the NSW EPA and a summary of wastes accepted is provided in the annual report.

A twice-yearly volumetric survey is undertaken to measure the consumption of air space throughout the year. This is to assist in the preparation of accurate annual reports required for payment under Section 88 of the *Protection of Environment Operations Act 1997*, to assess the compaction levels and to generate an accurate estimate of projected landfill life expectancy.

No waste will be placed above the approved elevation as approved in DA (05/1740.01).

Large vehicles are directed to the landfill working face where the landfill supervisor or plant operators directs them to where to unload.

Landfilling Strategy

Regular surveys are undertaken to measure changes to the site layout and to calculate the remaining capacity of the site. It is estimated that one million tonnes of landfill per year will be accepted at the Erskine Park Landfill.

The objective of the filling program is to ensure that the landfill contours are systematically managed.

The tipping face is currently operated using a 4 to 5 m lift, with the working face typically being 50 m wide and 30 m deep. Waste is either deposited at the toe and pushed into the face, or deposited at the top of the face and pushed, along the full length of the face. Haul roads link the sealed road to the active filling areas. These roads are unsealed as they are temporary roads due to the working face constantly changing position.

The facility targets a compaction rate of approximately 1350 kg/m³ including cover material utilised. A survey is then taken to measure/confirm the volume of waste emplacement and rate of compaction. More recently, the incoming waste is 90% contaminated soil, which has resulted in an average of 1.8t/m³ on the active area.

The Site Manager is responsible for the landfill layout and reconciling differences between the proposed landform and the actual filling program. On a daily basis it is the responsibility of the Landfill Manager to assess the progress of the filling program and any necessary modifications.

Cover

The objectives for waste covering are:

- Limits run-on and infiltration of water;
- Controls and minimises the risk of fire;
- Minimises landfill gas emission;
- Suppresses site odour;
- Reduces fly and rodent infestations; and
- Decreases litter generation.

A two week supply of cover material is always available on site.

Excavated material (not topsoil) is to be used only in emergency situations. It is estimated that cover constitutes between 15% and 20% of the total volume of material contained within the landfill.

The sources and uses of cover material include:

- *Source of Cover* – this includes virgin excavated natural material (VENM). In the event of a shortage of imported VENM, the overburden surrounding the site, which is in itself VENM, can be utilised. This is generally avoided as it is intended to use the overburden during the closure and capping of the site.
- *Daily Cover* – this consists of a cover of 150 mm over the waste on the tipping floor applied at the end of the working day. VENM, mixed cleanfill, inert contaminated soil and Envirocover, a non-reusable geo-synthetic is currently used.
- *Intermediate Cover* – this type of cover is applied to a depth of 300 mm on areas that would otherwise be exposed for more than 90 days. Intermediate cover consists of VENM, mixed cleanfill, inert contaminated soil, spoil, hard material and ballast.
- *Cover Material Stockpile* – this consists of VENM which is stockpiled next to the landfill.

The Plant Operators are responsible for the cover material and that the day's working face is compacted and covered by the close of business.

The Landfill Supervisor is responsible for the type of waste to be used as cover material and provision of enough material, overseeing the effectiveness of the daily cover and to maintain a minimum working face.

Waste Disposal

To optimise landfill space, the waste is compacted to conserve air space, generate increased revenues and minimise settlement. As waste is received it is spread, consolidated and compacted. The increasing surcharge of overlaying waste layers aids in consolidating and compacting waste.

Guidelines recommend that the maximum compaction is achieved. This will minimise the amount of landfill space required and extend the life of the landfill, it will also minimise spaces that may encourage vermin, fires or leachate to excessively be created. The Erskine Park Landfill target compaction rate is 1350 kg/m³ including cover material.

The Landfill Supervisor is responsible for ensuring that the specified landfill compaction rate is consistently being achieved; while the Plant Operators are responsible for pushing the waste onto compacting areas, spreading and compacting waste.

2.6 Site Rehabilitation

The Site Final Capping and Rehabilitation Landfill Closure Plan, SLR June 2017 was approved by the NSW EPA in 2017.

This Site Final Capping and Rehabilitation Landfill Closure Plan has been subsequently updated and included as APPENDIX F.

In summary the key aspects of the Site Rehabilitation Plan include:

Proposed Final Landform

Enviroguard obtained approval from Penrith City Council for the final landform under DA 05/1740.01. An updated final landform is included in APPENDIX F.

Capping

During a meeting between Enviroguard and EPA on 1 June 2016, it was agreed that Section 9.1 of the Landfill Guidelines did not apply to the site, because the site is not:

- Classified as a restricted solid waste landfill; or
- A general solid waste (putrescible) landfill receiving more than 20,000 tonnes of waste per year.

As such, it was agreed that Section 9.3 *Justification of alternative capping* of the Guidelines would apply to the design for the final cap for the site. The alternative capping and rehabilitation profile for the site comprises:

- A minimum 300mm-thick seal bearing layer, comprising of materials presently in situ in the landfill mound;
- A minimum 500mm-thick sealing layer, comprising clay from on-site sources;
- A minimum 900mm-thick revegetation infiltration layer, comprising Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM);
- A minimum 100mm-thick revegetation topsoil layer.

A gas drainage layer is excluded due to the provision of a landfill gas collection and treatment system.

Surface Water

Swales constructed upon the rehabilitated landform, will connect to a perimeter drainage channel at the toe of the landfill to collect surface water runoff and direct to two sediment basins, one in the SE corner and the other in NW corner of the site. At the completion of landfilling and during rehabilitation runoff from the basins will be used for irrigation of rehabilitated areas.

Leachate

The management of leachate will continue at the landfill well into post-closure of the site until the waste has stabilised. Management will include continued collection, treatment and disposal.

Landfill Gas

The management of landfill gas will continue at the landfill well into the post-closure period until such time that the production of methane has been demonstrated to consistently fall within acceptable levels. The active gas control system (including the export to Austral Bricks) currently in place shall remain operational as necessary during periods when high volumes and concentrations of landfill gas are detected at the site.

Revegetation

A Landscape Plan for the final landform has been prepared in accordance with the requirements of the Landscape Development Control Plan (Penrith City Council 2014) and the Biodiversity Restoration Plan 2005 and Management Plan 2006 for the Erskine Park Employment Area (refer Appendix C).

The site has been divided into four distinct areas that require different vegetation management approaches. The areas are:

- Zone 1 – Rim of the Quarry;
- Zone 2 – Cap of the Landfill (approximately 17 ha);
- Zone 3 – Peak of the Landfill – Two 1 hectare areas; and
- Zone 4 – Wet areas associated with the sediment basins.

It is noted that in Zone 1, along the alignment of the wall, Cumberland Woodland Mix would not be planted on the wall structure or facing, however would be retained south of the wall.

Post Closure Monitoring and Maintenance

Post closure maintenance and monitoring would be undertaken to ensure that the landfill is non-polluting and does not contribute to environmental harm. Monitoring of water pollution, air pollution and protection of land use and local amenity must continue until it is demonstrated that the landfill has stabilised.

A certificate of completion may then be submitted to the NSW EPA showing that remediation work has been carried out and further environmental management is not required. The statement would include:

- Gas concentrations levels in all perimeter gas wells have fallen to less than 1 % methane (v/v) and less than 1.5 % carbon dioxide for a period of 24 months;
- Waste stabilisation has been completed, documented by the composition of the leachate changing to a low level of contamination, and posing no hazard to the environment;
- Groundwater monitoring has indicated no failure of the landfill liner that would pose a threat to groundwater quality;
- The landfill capping has been assessed over some years and found to be stable with acceptable surface water drainage; and
- Documentation to demonstrate that all functions in the closure planning segment of the LEMP and the written confirmation of procedures have been completed.

3.0 ENVIRONMENTAL MANAGEMENT

This section of the EMP outlines the management system in place for the following aspects of site operations:

- Surface water;
- Groundwater;
- Water containment remediation;
- Leachate;
- Landfill gas;
- Odour;
- Dust;
- Litter;
- Noise;
- Pest, vermin and noxious weeds;
- Waste;
- Fire;
- Fire fighting capacity and emergency response;
- Security
- Traffic Control
- Hazardous Materials
- Staff and Training; and
- Environmental Monitoring.

3.1 Surface Water Management

Environmental Objectives

The objectives of surface water management are to:

- Avoid excessive leachate generation;
- Avoid cover material or landfill waste erosion;
- Prevent surface water mixing with waste/leachate:
- Prevent sediment or contaminants being carried off site;
- Provide detention basins to prevent impacts on downstream flooding;
- Provide sediment control for the final landform; and
- Ensure that controlled discharges from the site are in accordance with the appropriate guidelines.

Management Strategy

Stormwater management is based on the following principles:

- Diversion of 'clean' runoff around landfill and hardstand areas, to prevent clean stormwater from flowing into the landfill area;
- Runoff from disturbed areas is directed to the sedimentation dams;
- All water that has been in contact with waste is handled and treated as leachate;
- Reuse of water that has been in contact with waste is used for dust suppression on the landfill;
- Reducing erosion of external surfaces through the use of mulch and cover crops as appropriate;
- Reduction in the volume of 'sediment-laden' or 'dirty' stormwater through the retention of vegetation on overburden stockpiles and peripheral areas outside the void;
- The capacity of sedimentation dams is to be restored within 14 days of the cessation of rainfall.
- Stormwater held in the sedimentation dams may be treated chemically prior to off-site discharge if the retained water fails to meet the specified discharge criteria within 14 days after the cessation of rainfall.
- Reduction in the volume of retained stormwater through on-site re-use for dust suppression.
- Treatment is reduced by using the poorest quality water acceptable for each task; and
- Drainage and sediment control designs are operated and maintained out in accordance with the Stormwater Management Plan Appendix E in accordance with DA 05/1740.01
- Each settlement basin has a perimeter bund to prevent direct surface runoff from entering the storage areas and an overflow clean water outlet pipe.

There are two existing stormwater/sedimentation basins operating on the site. These are located in the north west and south east corners of the site. The water management strategy and infrastructure has been developed and sized based on what is considered to be the worst case scenario which is once the final form of the landfill is completed but before it is fully revegetated. Infrastructure consists of combined sedimentation and stormwater detention basins, with water being collected at the base of the landform and transported to the basins via swales.

A surface water monitoring network has been established to check if storm water is contaminated. Two monitoring points (Figure 3) are tested quarterly. Refer Section 3.18 for Environmental Monitoring.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Evaluation of sedimentation dams	Annually	Environmental Officer & Landfill Manager
Sampling and testing of surface waters in accordance with EPL	Quarterly	Environmental Officer
Collection and treatment of surface runoff from active landfill areas and stockpiles	As required	Landfill Manager
Maintain / desilt sediment traps	As required	Landfill Supervisor -> Landfill Manager
Maintain / desilt wheel wash facility	As required	Landfill Supervisor

ACTIVITY	FREQUENCY	RESPONSIBILITY
Inspection of drains	Quarterly	Environmental Officer & Landfill Manager
Inspection of dams and maintenance as requires	Quarterly	Environmental Officer & Landfill Manager

Performance Indicators/Targets

Surface water discharge must not exceed the limit conditions set out by the EPL:

- Total suspended solids of 50 mg/L;
- Ammonia 1 mg/L; and
- pH 6.5-8.5.

Reporting and Review

Analytical results are reported in the Annual Return and the Annual Report.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.2 Groundwater Management

Environmental Objectives

The objective of groundwater management is to prevent pollution of groundwater by leachate.

The objective of the groundwater monitoring program is to effectively monitor and report groundwater character, and ensure early detection and reporting of possible pollution of groundwater.

Management Strategy

Leachate is extracted from LP003. The base of LP003 is understood to be at approximately RL 35 mAHD (Senversa, 2019). LP003 has been extracting approximately 60 m³/day.

A hydrogeological assessment was undertaken by Senversa, 2019 reference *Hydrogeological Assessment, Erskine Park Landfill, Quarry Road, Erskine Park, NSW, Senversa, 2019*.

The Site conceptual site model is described by Senversa 2019 as follows:

- *Stratified waste and leachate quality, with high strength leachate present at depth, and low strength leachate at shallower depths, due to dilution from infiltrating rainfall.*
- *Sub-watertable setting, but with leachate mounding within landfill boundaries.*
- *Low permeability (10⁻⁸ m/s to 10⁻⁹ m/s) and low effective porosity aquifer characteristics.*
- *An overall westerly groundwater flow, with localised variations to the north and south.*
- *Generally low to very low groundwater seepage rates (<1 m/year)*
- *Reducing groundwater conditions, due to the naturally high organic content of Wiannamatta shales*
- *Naturally occurring ammonia in groundwater, which persist due to the highly reducing conditions in connate, saline (>5000 mg/L TDS) groundwater. Any leachate would be superimposed over this background ammonia.*

- *Possible localised influence on groundwater quality due to preferential infiltration around poorly compacted edges of landfill waste and adjacent unquarried brecciated rock*
- The Senversa 2019 report presents site characterisation, analytical fate and transport modelling, assessment of the provenance of ammonia, and risk assessment and concludes in summary:
 - The current monitoring network is generally suitable.
 - Over the course of leachate monitoring since 2016 there has only been one exceedance of the EPL ammonia reporting compliance concentration of 15 mg/L at BH17D. It is noted that BH17D may either be showing signs of damage or may be influenced by landfill surface water runoff.
 - The groundwater beneficial uses surrounding the landfill are very limited, due to low to very low aquifer yield and high salinity and there are no sensitive receptors within 1 km of the landfill.
 - Various lines of evidence indicate that ammonia in surrounding groundwater is predominantly naturally occurring.
 - There are increasing ammonia trends in some groundwater wells, albeit at concentrations less than 15 mg/L, however this may reflect a gradual equilibration of well water with surrounding formation groundwater.
 - Time of travel and solute transport screening modelling, results indicate travel times for ammonia are very long in the order of 1,000 years for ammonia to migrate 250 m downgradient.
 - It is concluded that the Erskine Park Landfill, even without active leachate extractions and continued leachate mounding, presents a low risk to surrounding and onsite groundwater quality and beneficial use.

A groundwater monitoring network is in place to monitor for migration of leachate (refer Figure 3). The bores employed for the groundwater network have been located to intercept potential discharge from the landfill and to be representative samples of groundwater when monitored. Assessment of groundwater over time will determine if the landfill operations are having any measurable effect on the surrounding environment.

The NSW EPA has approved the design of the intermediate and deep bore groundwater monitoring network and the aquifer contamination program (Refer APPENDIX G– Consulting Earth Scientists 16 October 2006 and DECC approval 31 October 2006).

Four intermediate and 5 deep bores are tested quarterly. From five shallow bores 1 is tested annually and the others quarterly for analytes listed in EPL. Water level measurement is also undertaken per the EPL. Refer Section 3.18 for Environmental Monitoring.

The licensee must prepare and submit a report to the EPA within two months of any groundwater monitoring at the premises that detects ammonia at a concentration above 15 mg/L in any groundwater monitoring bore. The report must propose actions which the licensee will implement (including timeframes) to prevent contaminated groundwater migrating from the premises.

If an anomaly in concentrations is observed compared to historical concentrations, an assessment monitoring will be carried out to monitor main analytes for a minimum of one sample from the down gradient monitoring wells. The assessment program and results will be sent to the NSW EPA.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Installation and maintenance of groundwater monitoring bores	Ongoing	Landfill Manager & Environmental Officer
Conduct of groundwater monitoring programme in accordance with EPL	Quarterly/annually as required	Environmental Officer & Landfill Manager
If ammonia concentration is above 15mg/L a report is to be submitted to the NSW EPA	As required	Environmental Officer & Landfill Manager

Performance Indicators/Targets

Performance indicators include:

- The groundwater parameters at the time of monitoring.

Reporting and Review

Analytical results are reviewed quarterly and are compared on an annual basis. The annual report is sent to both the NSW EPA and the Penrith City Council.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

The licensee must prepare and submit a report to the EPA within two months of any groundwater monitoring at the premises that detects ammonia at a concentration above 15 mg/L in any groundwater monitoring bore. The report must propose actions which the licensee will implement (including timeframes) to prevent contaminated groundwater migrating from the premises.

3.3 Water Containment Remediation Management

Environmental Goals and Principles

The objective of the water contamination remediation plan is to describe the process to protect the water from further contamination and nominate a means to return the water to the original quality down hydraulic gradient of the landfill.

Management Strategy

Groundwater and surface water contamination remediation plans are developed on an individual basis, depending on the nature and degree of contamination. Rather than include a plan for any groundwater or surface water contingency, it is more important to define the concept and highlight responsibilities and likely actions. The specific plan can then be developed to suit the event.

Groundwater

The need to develop a groundwater contingency plan will flow from the groundwater assessment program (Section 3.2). The assessment program will define the nature and general extent of contamination.

A remediation plan will utilise the information obtained in the assessment program. There will need to be a formal determination if sufficient information was obtained in that assessment. Should a groundwater specialist determine that there are data gaps, it will be necessary to fill these before developing the plan.

There are three general options for controlling groundwater contamination in an aquifer. These options include:

- Installation of groundwater extraction wells;
- Installation of interception trenches; and
- Use of bentonite slurry to encapsulate and contain the contaminants.

Groundwater extraction wells and interception trenches would be the primary means for controlling the movement of contaminants in most plausible incidents at the site.

The contaminants would need to be treated at the surface following extraction prior to discharge. The treatment system would be dependent on the nature of contamination and allowable discharge limits.

Surface Water

Surface water monitoring results and/or visual observations may indicate the need to manage surface water discharge to the environment. If monitoring results indicate that the limit concentrations have been exceeded, the source of contamination will be examined. This would require the development of a testing plan commencing at the point of detection and moving upstream until the source of the pollution is identified. Management methods may require flow restrictions such as blocking the contaminated plume with clean fill or through mechanical measures. Containment and treatment of the contamination in storage dams is a management plan available onsite. If not, contaminants could be transported offsite to a appropriately licenced facility.

Activities/Frequency/ Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Review monitoring results to identify if containment plan required	Quarterly	Environmental Officer & Landfill Manager
Develop Containment Plan and send to NSW EPA for approval.	As required	Environmental Officer & Landfill Manager & Regional Manager

Performance Indicators/Targets

The amount of time between discovery and establishment of successful control actions would indicate the performance of the contingency plan. This time would vary due to factors such as the severity of the incident.

Reporting and Review

Specific contingency plans are not needed until an uncontrolled release of pollutants to the environment occurs. Review and reporting will be necessary to demonstrate that the situation is under control after implementation of a tailored water containment remediation plan.

3.4 Leachate Management

Environmental Goals and Principles

The objective of leachate management is to prevent pollution of groundwater and surface water by leachate.

Management Strategy

Leachate is extracted from LP003 the 'Auxillary riser'. The base of LP003 is understood to be at approximately RL 35 mAHD. LP003 has been extracting approximately 60 m³/day.

A Leachate Treatment Plant (LTP) was constructed onsite in June 2011 to treat leachate as per DA 11/0063.

The LTP has an average treatment capacity of 750 m³ per day. The LTP has a maximum allowable discharge of 1036 m³ per day as per Sydney Water Trade Waste Agreement (maximum discharge rate of 12 L/s).

The LTP consists of the following;

- Equalisation Tank
- Sequencing Batch Reactors (SBRs)
- Final Equalisation Tank
- Aerobic Digester (Sludge Thickening Tank)
- Chemical Dosing System

Levels and quality of the leachate are monitored quarterly at the treatment plant (LP002) and in the auxiliary leachate riser (LP003) which feeds to the LTP and an online ammonia analyser. (refer Figure 3). Refer Section 3.18 for Environmental Monitoring.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Inspection for leachate seepages	Weekly	Landfill Supervisor
Ensure the leachate riser is working and is maintained	Daily	Landfill Supervisor -> Maintenance Supervisor
The waste compaction and use of cover material is sufficient to reduce infiltration into the landfill.	Daily	Landfill Supervisor
Groundwater level monitoring	Quarterly	Environmental Officer
Leachate levels to be monitored	Quarterly	Environmental Officer
Operation and Maintenance of Leachate Riser Pumping and LTP in accordance with LTP OEMP	As required	Landfill Supervisor & Maintenance Supervisor
Monitoring of the leachate treatment plant discharge in accordance with the Sydney Water Trade Waste Agreement	As required by the TWA	Landfill Supervisor & Maintenance Supervisor

Performance Indicators/Targets

Performance indicators include:

- Groundwater quality, which is indicated by the quarterly groundwater monitoring records.

- Trade Waste Monitoring compared to criteria for discharge to sewer.

Reporting and Review

Leachate monitoring is reported in the Annual Report and Annual Return.

Trade waste reporting is undertaken in accordance with the Sydney Water Trade Waste Agreement.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.5 Landfill Gas Management

Environmental Objectives

The objectives for the landfill gas management system are:

- To ensure that the emission of landfill gases are controlled such that the risk of explosion or fire is reduced;
- To lower the levels of toxic compounds emitted; and
- To reduce greenhouse gas emissions.

Specifically landfill gas management is required to ensure:

- Surface gas methane concentrations are less than 500 ppm v/v;
- Subsurface methane concentrations are less than 1% v/v.
- Building Accumulation concentrations are less than 1% v/v

Management Strategy

EPL 4865 permits the receipt of non-putrescible general solid waste at the site. The acceptance of only non-putrescible waste reduces the amount of landfill gas production typically associated with putrescible organic based wastes. Landfill gas is, however, being produced at the site at levels which require the implementation of a management strategy in order to minimise venting to atmosphere and subsurface migration to nearby receptors, such as structures or utilities.

Management measures of landfill management gas at the site include compaction and covering of the landfilled waste (daily and intermediate cover layers) which reduces rainfall infiltration and landfill gas generation. Furthermore, placement of intermediate cover limits emission of landfill gas to the atmosphere.

The site was granted development consent in December 2010 (DA 10/0429) for a landfill gas management system at the Site.

In 2014 development consent was granted (DA13/0655) for the installation of a 4.7km gas pipeline between the site to the Austral brick manufacturing plant at Horsley Park. The pipeline recovers all landfill gas from the Erskine Park landfill and is utilized to fire kilns used for brick manufacturing. It should be noted that this development consent was not issued for the site but to the Austral Brick site at Horsley Park

Landfill gas collected from the landfill is directed via a solid HDPE collection ring main pipe along the southern boundary of the site to the Austral Brick facility where it is used as a partial fossil fuel substitute in the production of bricks and tiles etc. It is noted that maximum quantity of landfill gas produced is below the maximum requirement of Austral site.

Any gas drawn from the landfill not directed to the Austral site is delivered to the flare for burning. Should the supply to Austral Brick be interrupted or during periods of shut down or maintenance, the system reverts to the flare unit.

As per the EPL subsurface, surface and building accumulation landfill gas is monitored quarterly. A total of 8 subsurface gas monitoring wells are located in the perimeter and outside of the landfill (refer Figure 3). Refer Section 3.18 for Environmental Monitoring.

Activity/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Surface, subsurface gas and building accumulation monitoring	Quarterly	Environment Officer Landfill Manager
Odour observation & management	Daily and as required	Landfill Supervisor Landfill Manager
Records of installation of subsurface gas monitoring wells	On installation	Landfill Manager
Gas extraction system operation and maintenance in accordance with the landfill gas OEMP	Ongoing	Landfill Supervisor Landfill Manager
Extension & modification of gas management system.	As required	Landfill Manager Regional Manager
Waste compacted and covered.	Daily	Plant operator Landfill Supervisor Landfill Manager
Recording and resolution of odour complaints.	As required	Environment Officer Landfill Manager

Performance Indicators/Targets

Performance indicators include:

- Methane is to remain below 1 % (v/v) subsurface and within buildings and structures within 250 m of the landfill;
- Surface gas methane concentrations are to remain below 500 ppm.
- Odour at the perimeter of the landfill or odour complaints.

Reporting and Review

Reporting of gas concentrations of methane greater than 1%v/v in subsurface wells and buildings and greater than 500 ppm on the surface to EPA within 24 hours.

Landfill gas monitoring is reported in the Annual Return and Annual Report.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.6 Remediation of Uncontrolled landfill Gas

Environmental Objectives

The purpose of remediating uncontrolled landfill gas emissions is to prevent further emissions from occurring.

Management strategy

Management controls to remediate uncontrolled landfill gas emissions are developed on an individual basis dependent on the nature and degree of emissions detected. Rather than include a plan for any landfill gas contingency, it is more important to define the concept and highlight responsibilities and likely actions. The specific plan can then be developed to suit the event, if required.

Surface gas emissions

Corrective actions in the event of excessive landfill gas emissions from the landfill surface may include:

- A review of waste screening procedures to ensure unacceptable waste is not being accepted at the site;
- Repair cover material;
- Providing a thicker cover or changing the material used as cover, such as use of materials with greater cohesive properties;
- Adjustment of landfill gas controls to extract gas;
- Installation of passive or gas extraction wells within the waste mass;
- Installation of perimeter gas collection trenches.

If these measures are not successful in controlling gaseous emissions, an assessment will be made as to the need to adopt engineering solutions.

Subsurface landfill gas

Should the monitoring program demonstrate lateral migration of landfill gas through soil or rock, the extent of the lateral migration will be established by increased monitoring and installation of additional monitoring wells, if required. Contingency measures will be developed on a risk basis and may include:

- Increased monitoring;
- Install additional monitoring wells and risk assessment;
- Installation of landfill gas controls at source/receptors ie Extraction bores, Subsurface extraction drains; subsurface cut-off walls.

Building accumulation

Should the monitoring program demonstrate that corrective actions are necessary these may take the form of improving the ventilation within the buildings, continuous methane measurements or, in the short term, evacuation.

Performance indicators

The results of monitoring are the key indicators for determining the effectiveness of the remediation.

Reporting

Specific contingency plans and reporting activities are not necessary until uncontrolled release of pollutants have been identified.

Review and reporting will be necessary to demonstrate that the situation is addressed.

3.7 Odour Control Environmental Objectives

The objectives of odour control are:

- Preventing degradation of local amenity;
- Preventing landfill gas emissions; and
- Achieving no detectable odours at the site boundary.

Management Strategy

The following principles are adopted for odour control on site:

- Installation and operation of a weather station that monitors wind speed and wind direction to allow correlation of odour complaints with weather conditions and assist in rectifying any problem;
- Odours are limited at the site as the waste is non putrescible;
- Fast identification and attention to odorous waste loads discovered, including immediate burying of odorous loads or removed from site as per Section 3.12 Waste Control;
- Daily covering procedures to keep the amount of exposed waste to a minimum;
- Application of intermediate cover for any waste to be exposed for longer periods of time; and
- Implementation of the Landfill Gas Management Strategy as outlined in Section 3.5 to control the emission of landfill gas from the site and reduce odour levels from this source.

Activity/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Screening of waste	Continually	Weighbridge Operator Plant Operator Landfill Supervisor
Odour observation and management	Daily	Landfill Supervisor Landfill Manager
Waste compacted and covered	Daily	Plant Operator Landfill Supervisor Landfill Manager
Resolution of odour complaints	As required	Environment Officer Landfill Manager

Performance Indicators/Targets

Performance indicators include:

- Complaints.

Reporting and Review

A complaints register and follow-up form is held in the Landfill Manager's Office and are included in the Annual Return.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.8 Dust Control

Environmental Goals and Principles

The objectives of dust control are to:

- Prevent air pollution; and
- Prevent degradation of local amenity.

Management Strategy

Strategies to suppress dust include:

- Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading (DA 05/1740);
- Dust suppression with leachate on the landfill footprint and dust suppression with clean stormwater outside the landfill footprint. Polymers may be added to this irrigation to areas that will not be touched for a period. This forms a crust that prevents dust generation;
- Restricting vehicle movements to specified routes in unsealed areas;
- Unsealed roads are sprayed with water cart to control dust generation, the frequency is increased in windy conditions;
- Controlling vehicle speeds and making sure trucks are covered at all times (except during loading/unloading) and tailgates are securely fixed (DA 05/1740);
- Use of the mechanical sweeper on sealed roads;
- All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises (EPL condition O3.1); and
- Leachate is applied to dust suppression on the landfill (EPL condition O5.5).

Dust deposition monitoring is carried out monthly using six dust gauges in accordance with the EPL condition M 2.1 and Australian Standards AS 3580.10.1-1991 (refer Figure 3). Refer Section 3.18 Environmental Monitoring.

Activity/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Dust observation and management	Daily	Landfill Supervisor Landfill Manager
Dust monitoring	Monthly	Environment Officer Landfill Manager
Dust suppression unsealed roads	As required	Plant Operator

ACTIVITY	FREQUENCY	RESPONSIBILITY
		Landfill Supervisor
Dust suppression landfill	As required	Plant Operator Landfill Supervisor
Recording and resolution of dust complaints.	As required	Environment Officer Landfill Manager

Performance Indicators/Targets

Performance indicators include:

- Complaints received.
- Dust monitoring results, compared to the assessment criterion of $4 \text{ gm}^{-2}\text{month}^{-1}$.

Reporting and Review

Monthly dust monitoring reports are included in the Annual Return and the Annual Report.

Complaints are recorded in a register and this information is also included in the Annual Return.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.9 Litter Control

Environmental Goals and Principles

The objectives of litter management are:

- To prevent the degradation of local amenity due to windblown litter in the vicinity of the landfill; and
- Prevent surface water contamination.

Management Strategy

Litter control is maintained through:

- The minimisation of the active cell area by applying daily cover to the waste;
- Use of a systematic tipping program;
- Mobile fencing located around the tipping face and in particular down wind of the tipping face;
- Use of the chain wire perimeter boundary fence as an additional litter fence;
- Permanent 10m high fence constructed along the eastern boundary;
- Regular litter patrols and retrieval along the litter and perimeter boundary fences. Windy conditions require the increase of litter patrols.;
- Wheel wash facility to remove any mud and litter from transport vehicles;
- Trucks transporting material must be covered and have tailgates securely fixed;
- Implementation of a customer awareness campaign for covering loads using signs and brochures; and
- Rapid cover placement over the waste with continuous waste compaction.

Activity/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Screening of waste	Continually	Weighbridge Operator Plant Operator Landfill Supervisor
Relocate moveable litter fences	As required when windy	Plant Operator Landfill Supervisor
Litter patrol and retrieval	As required when windy	Landfill Supervisor
Waste compacted and covered	Daily	Plant Operator Landfill Supervisor
Site inspections for litter and general cleanliness	Daily	All staff
Resolution of litter complaints	As required	Environment Officer Landfill Manager
Documentation of site boundary monitoring	Monthly	Environment Officer Landfill Manager
Recording and resolution of complaints	As required	Environmental Officer Landfill Manager

Performance Indicators/Targets

Performance indicators include:

- On and off site to be free of wind-blown litter from site activities.
- Complaints.

Reporting and Review

Litter complaints are recorded in the complaints register.

Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

If litter becomes an issue then corrective actions such as installation of a specific litter fence around the tipping area may be implemented.

3.10 Noise Control

Environmental Goals

Noise control is aimed at:

- Preventing noise pollution; and
- Preventing degradation of the local amenity.

Management Strategy

Noise associated with landfill development generally comes from the operating of heavy plant and equipment and from waste vehicles entering and leaving the site. Noise control activities are aimed at the appropriate management of noise emissions in order to minimise environmental impacts .

The following measures are undertaken to minimise noise:

- Plant and machinery are operated and maintained in accordance with manufacturers instructions.
- Operations are within the specified business hours.
- Schedule noisy activities and vehicle movements to minimise noise impacts.

Noise monitoring is been undertaken at two sites referred to as “Mamre Road residence” and the “Erskine Park Road residence” in accordance with the EPL. Refer Section 3.18 Environmental Monitoring.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Recording and resolution of complaints	As required – Immediately	Environmental Officer Landfill Manager
Implementation of maintenance programme for all equipment on site	Ongoing	Maintenance Supervisor
Investigate excessive noise generation	Ongoing	Environmental Officer Landfill Manager
Use of high performance exhaust silencers and acoustic engine enclosures if required to meet performance indicators/targets	As required	Maintenance Supervisor Landfill Manager
Noise monitoring	As per EPL	Environmental Officer

Performance Indicators/Targets

Performance indicators include:

- Complaints
- Compliance with NSW EPA Noise Goals. D05/1740 includes the following noise limits that specify:
 - Noise generated at the premises must not exceed the following noise limits.
 - Mamre Road Residence (refer NIA) Daytime LAeq (15 minutes) 45 dBA.
 - Erskine Park Road Residence (refer NIA) Daytime LAeq (15 minutes) 54 dBA.

Reporting and Review

- Noise complaints are recorded in the complaints register;
- Any additional machinery brought on to site will be recorded in the daily activities register and the electronic site diary;

- Records will be reviewed as part of an annual review, by the Landfill Manager; and
- Noise monitoring results are reported in the Annual Report and Annual Return.

3.11 Pest, Vermin and Noxious Weed Control

Environmental Goals

Pest, vermin and noxious weed control on site is aimed at preventing degradation to local amenity. Control of pests, vermin and noxious weeds is based on the following principles:

- Minimising sources of food and habitat; and
- Employing professional exterminators if an outbreak is detected.

Management Strategy

There is little incentive for feral animal encroachment as the waste that is received at the landfill does not rapidly biodegrade and would not provide a possible food source. Although animal and plant pest species do not form a significant issue at the site, controls are:

- Compacting and covering waste, keeping exposed volumes to a minimum;
- Adequate drainage of the site, to prevent ponds of water forming;
- Undertaking inspection for pests, vermin and declared noxious weeds; and
- During rehabilitation of the site and implementation of the Vegetation Management Plan (Appendix D) and Landscape Plan (refer APPENDIX B) will include management of weed species.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Site inspections for pests, vermin and noxious weeds	Quarterly	Landfill Supervisor
Record observations in electronic site diary	Quarterly	Landfill Supervisor
Pest control around buildings on site	Quarterly	Contract pest controller Landfill Manager
Undertake rodent trapping	As required	Contract pest controller Landfill Supervisor
Inspection of waste loads	Ongoing	Weighbridge Operator Plant Operators Landfill Supervisor

Performance Indicators/Targets

Performance indicators include:

- No evidence of pest, vermin or noxious weed outbreaks.

Reporting and Review

Records are kept on site. These reports will be used to identify when the population of pests appears to be increasing.

Records will be reviewed as part of an annual review, by the Landfill Manager.

3.12 Waste Management

Environmental Objectives

Waste control on site is aimed at:

- Monitoring the type of incoming waste;
- Optimising landfill space; and
- Preventing degradation of local amenity.

Management Strategy

The following management strategies are adopted at the site:

- Signs are displayed indicating the type of waste that is, and is not, accepted at the landfill;
- Screening of all incoming waste, all waste that enters the site is screened by the Weighbridge Operator;
- Weighing and recording the types and quantities of wastes received;
- Supervision of tipping;
- Exclusion of unacceptable wastes; and
- The Weighbridge Operator, Plant Operators and the Landfill Supervisor are trained to detect waste that is not in accordance with Enviroguard's acceptance criteria.

If such waste is identified at the weighbridge the vehicle is refused entry by the weighbridge operator. However if such waste is identified at the working face by plant operators or management then the material is segregated, and made secure until the unacceptable waste is removed from site.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Record all types of incoming loads	Ongoing	Weighbridge Operator
Manage the incoming waste stream to ensure compliance with waste acceptance criteria excluding those that don't comply	Ongoing	Weighbridge and Plant Operators Landfill Supervisor Landfill Manager
Supervision of the tipping face	Ongoing	Plant Operator Landfill Supervisor
Maintain staffing levels in accordance with contractual requirements	Ongoing	Landfill Manager

Performance Indicators/Targets

- Waste that is accepted complies with the licence conditions.

Reporting and Review

- Monthly reporting of the amount, type and source of waste. A copy is provided to the NSW EPA;
- Six monthly volumetric surveys to measure consumption of airspace. A copy is provided to the NSW EPA;
- Annual Report provide a summary of waste received;
- Rejected waste is recorded in the site diary;
- Incident Reporting refer Section 3.19; and
- Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.13 Fire Management

Environmental Objectives

Fire management is aimed at:

- Ensuring that landfill staff and clients work in a safe environment; and
- Risk of fire at the site must be minimised and the site must be adequately prepared in the event of fire.

Burning is prohibited at the Erskine Park Landfill and therefore, there are no goals or principles related to control burning in the EMP.

Management Strategy

Management strategies aimed at preventing fires include:

- A pollution incident response management plan (PIRMP) (APPENDIX H) has been developed for the landfill site.
- Signs clearly inform the general public that flammable liquids are not permitted on the site.
- Emergency contacts list at the site entrance.
- Stockpiles of approved amounts of combustibles for recycling and composting (such as tyres, wood or vegetation) should be divided into small piles or windrows so that any burning material can be isolated from additional fuel.
- Tyre stockpiles should not exceed 50 tonnes at any one time and should be located in a clearly defined area away from the tipping face. All sealed or contaminated drums should be banned from the landfill unless they are delivered as a specific consignment, the contents of which are clearly identified and suitable for acceptance.
- All fuels or flammable solvents for operational use should be stored in an appropriately ventilated and secure store located on unfilled land. All flammable liquids should be stored within a bund that has a capacity of 110% of the volume of the flammable liquids so that any release of raw or burning fuel will not cause a fire in the filled waste or affect stormwater.
- Flammable solid wastes must not be stockpiled at the premises in excess of the quantity limits imposed on the licence.

- Landfill staff should be trained in all of the above fire-prevention techniques.
- Fire breaks should be constructed and maintained around all filled areas, stockpiles of combustibles, gas extraction equipment and site buildings.
- In the event that a “hot load” is brought to the facility, this is to be diverted away from the tipping face and into an area in which the load can be handled safely and the potential for environmental harm can be minimised.

In the event that a fire starts, the site may utilise any of the following measures for the control and management of the fire:

- A water truck and two water dams permanently filled onsite;
- The sedimentation basins are ready supplies of large volumes of water;
- Fire extinguishers strategically located on plant and machinery throughout the site;
- Storage of cover material and access to overburden; and
- Implement smothering technique using onsite excavator and dozer.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Maintaining signs in working order	Ongoing	Landfill Supervisor
Evaluation of signs, site operations, stockpiles and fuel storage.	Monthly	Landfill Supervisor Landfill Manager
Where appropriate remedial measures are identified and implemented	Ongoing	Landfill Supervisor Landfill Manager
Water truck and water dams are always left filled for an emergency	Ongoing	Plant Operator Landfill Supervisor

Performance Indicators/Targets

- No fire at the site.

Reporting and Review

- Any fire related incidents are recorded in the monthly report prepared by the Landfill Manager; and
- Any fire related incidents are reported to the NSW EPA refer Incident Reporting refer Section 3.19.
- Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.14 Fire Fighting Capacity and Emergency Response

Environmental Objectives

The primary objectives of firefighting are:

- To minimise the risk to human health during an Emergency Situation;
- To control any incident and minimise damage to plant, equipment, property and the environment

Management Strategy

A Site Emergency Plan and PIRMP (Appendix H) have been developed for the landfill site. It identifies the procedure for all emergencies that occur including but not limited to fire, explosion and medical events.

Fire-fighting and other emergency response mechanisms are maintained through capability, operational controls, staff training and equipment maintenance.

Management Strategies include:

- Fire-fighting equipment should be installed at the site, including at flammable waste storage areas.
- Landfill staff should be trained in fire-fighting techniques.
- A Site Emergency Management plan (SEMP) is in place which details relevant emergency protocols and information.

Activities/Frequency/Responsibility

ACTIVITY	FREQUENCY	RESPONSIBILITY
Training of all site personnel in relation to implementation of the PIRMP and Site Emergency Management Plan	Ongoing	OH&S Advisor -> Landfill Manager
Implementation and testing of the PIRMP and Site Emergency Management Plan on an as needs basis	Ongoing	Landfill Manager
Fire extinguishers are inspected and located in the main office, lunch room, transfer station and all vehicles	Quarterly	Contractor OH&S Advisor
Update and review of PIRMP and Site Emergency Management Plan	Annual	OH&S Advisor Regional Manager

Performance Indicators/Targets

Performance indicators include:

- No incidence of fires or other situations that would require firefighting or other emergency responses.

Reporting and Review

- All records relating to the maintenance of equipment, staff training and incident reports are kept at the site refer Section 3.19 Reporting;
- These records and the incidents will be subject to an annual review, conducted by the Landfill Manager.

3.15 Traffic Control

Environmental Objectives

The objective of traffic control is to ensure the safety of clients, visitors and staff.

Management Strategy

- All vehicles entering the site which have the intent to dispose of material within the landfill are recorded at the weighbridge.

- Vehicle numbers are collated to monitor daily, weekly and annual traffic levels at the Erskine Park Landfill.
- Vehicles are directed to different areas of the landfill according to vehicle size and all waste unloading is monitored by staff.
- The Landfill Supervisor ensures that the vehicles are adhering to the speed limit and that the separate vehicle areas are maintained.
- In the event of a traffic accident, the Landfill Supervisor is responsible for taking corrective action.

Performance indicators

- Number of accidents or incidents involving vehicular traffic.

Activities/Frequency/Responsibility

Action	Frequency	Responsibility
Traffic flow and speed	Continuous	Landfill Manager

Reporting and Review

- If traffic incidents commonly occur at the site, the traffic management should be reviewed. This may include construction of speed humps or stricter enforcement and signposting of speed limits if speeding is a significant problem.
- Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.16 Security

Objectives

The objective of the security at the site is to prevent unauthorised entry at the facility. Unauthorised entry to landfills can lead to waste dumping, fires and vandalism of pollution control devices, as well as loss of amenity.

Management Strategy

- The site is enclosed by a 1.8m high chain wire fence with lockable gates at the entrance.
- Gates are locked outside operating hours and people who have access to a key are identified on a key holder list. The last person to leave locks the access gates.
- Site visitors are screened at the weighbridge by the weighbridge operator and visitors “sign in” to the Visitor Register at the Front Office and are managed as per the visitor and contractor induction procedure.
- An alarm system is connected to the office complex, the workshop and the weighbridge building. A forced entry or power failure will trigger the alarm and the Landfill Manager or Supervisor is notified.
- Operational cameras are located around the weighbridge area. A security gate / boom has been installed to regulate access between the site office and operation areas.
- A monthly inspection of the security facilities is prepared and filed. The fences are regularly checked by Enviroguard staff and reported information is recorded on site. The gates are locked outside of operating

hours and the key-holders are identified on a record. New locks and keys are issued when this list is breached. A perimeter inspection is carried out monthly.

Activities/Frequency/Responsibility

Action	Frequency	Responsibility
Perimeter condition inspection of fence	Monthly	Landfill Manager

Performance indicators

- Number of intruders found.
- Any waste illegally disposed.
- Number of complaints with regard to access to the depot.
- Number of reports detailing damage or vandalism.
- Weekly inspections of the perimeter fence conditions.

Reporting

- Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.17 Hazardous Materials

Objectives

The objective of hazardous material management is to ensure no contamination of air, land or water through spill.

Management Strategy

Materials stored and used on site which are of a hazardous nature include:

- Oils and greases – up to 500 Litres;
- Diesel – up to 2000 Litres;
- Sodium Hydroxide Solution – 100 litres
- Petrol – up to 10 Litres; and
- Small quantities of acetylene, compressed oxygen, cleaners, automotive products, paints and primers.

Most of these are stored at the workshop with the exception of Sodium Hydroxide which is stored at the Leachate Treatment Plant.

Storage and Transport of all Hazardous Materials is undertaken in accordance with Australian Standards

Spill Response

Spills kits are stored near all work areas using and storing and transferring hazardous materials.

Spills will be managed in accordance with the site PIRMP (refer APPENDIX H). In summary:

- Isolation and containment of spill
 - Raise alarm

- Stop the source of the spill
- In all situations the priority is to isolate the spill using the appropriate spill containment equipment from appropriate spill kits.
- During the isolation and containment, appropriate personal protective equipment is to be worn to handle the substance
- Ensure the scene has been secured especially if the spill is located close to stormwater drain
- Clean up and disposal of spill
 - All spills will be cleaned up using the appropriate material such as a spill kit, absorbent rags, or sand. Cleanup material shall be collected and removed to an appropriately licensed disposal facility.

Performance Indicators

Performance indicators include

Reporting

- Incident reporting per Section 3.19
- Records are maintained on site and reviewed as part of the Annual Review by the Landfill Manager.

3.18 Environmental Monitoring

Local Meteorological Conditions

In 2007, Enviroguard installed a meteorological station on site in accordance with the DA and EPL requirements.

Weather monitoring is undertaken in accordance with the EPL. The EPL specifies the monitoring requirements in relation to the following parameters:

- Air Temperature;
- Wind direction;
- Wind Speed;
- Rainfall; and
- Evaporation.

Environmental Monitoring

Sampling is undertaken in accordance with quality assurance and quality control measures to ensure appropriate procedures and to enable an assessment of the precision and accuracy of reported data.

Surface Water Monitoring

Surface water samples are manual grab samples and are taken on a quarterly frequency. Samples are taken at EPA Identification No. 1, 16 and 17 (Enviroguard Reference SD004, SD003 and SD002 refer Figure 3) in accordance with the EPL.

Groundwater Monitoring

Samples of groundwater are collected on a quarterly basis where some analytes are tested on a quarterly basis and some analytes tested on a yearly basis. Before sampling, the static groundwater and total depth of each monitoring well is measured.

The samples are analysed in accordance with the EPL at EPA Identification No. 9, 10, 11, 12, 13, 14, 15, 19, 20, 21, 22, 28 and 30 (Enviroguard Reference BH18, BH15A, BH15B, BH16A, BH16B, BH17E, BH17D, BH19, BH21, BH22, BH23, BH 24 and BH20 refer Figure 3).

Leachate Monitoring

Leachate monitoring is undertaken on a yearly frequency except for conductivity and pH tested on a quarterly basis. The samples are analysed in accordance with the EPL at EPA Identification No. 2 (LP002) and 33 (LP003). At LP003 leachate is extracted from the landfill via the auxiliary leachate riser and the monitoring results are read through online ammonia analyser through the operation of the Leachate Treatment Plant.

Landfill Gas Surface, Subsurface and Building Accumulation Monitoring

Building Accumulation Monitoring

Gas accumulation monitoring is undertaken quarterly in accordance with the EPL. The Erskine Park Landfill on-site buildings which are located within 250 m of the landfill (refer Figure 3).

Subsurface Gas Monitoring

Subsurface gas monitoring is undertaken at 8 gas wells (refer Figure 3) within and outside the landfill perimeter in accordance with the EPL.

Surface Gas Monitoring

Surface gas monitoring is undertaken quarterly in accordance with the EPL. Monitoring is performed in a series of traverses at 25 m intervals across the landfill and at the gas wells and leachate riser.

Odour

Odour complaints are logged and are followed up to determine the source of the odour for resolution.

Dust Deposition

Dust deposition is monitored monthly at six dust deposition gauges (EPA Identification No. 3, 4, 5, 6, 7 and 8 and Enviroguard Reference D1, D2, D8, D4, D7 and D6 refer Figure 3) that are equally spaced around the landfill boundary.

Noise

Noise monitoring is been undertaken at two sites referred to as “Mamre Road residence” and the “Erskine Park Road residence” in accordance with the EPL.

3.19 Reporting

Incident Reporting

The following licence conditions relate to incident reporting:

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the environment line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R2.3 *The licensee must notify the EPA within 24 hours in accordance with condition R2.1 if surface monitoring detects methane above 1.0% (v/v), and increase the frequency of monitoring to daily, until the EPA determines otherwise.*

R3 Written report

R3.1 *Where an authorised officer of the EPA suspects on reasonable grounds that:*

(a) where this licence applies to premises, an event has occurred at the premises; or

(b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 *The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.*

R3.3 *The request may require a report which includes any or all of the following information:*

(a) the cause, time and duration of the event;

(b) the type, volume and concentration of every pollutant discharged as a result of the event;

(c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;

(d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;

(e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;

(f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and

(g) any other relevant matters.

R3.4 *The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.*

Telephone reporting

Initial contact can be made via the EPA's 24 hour pollution line when an incident is identified. The pollution line can be reached on 131 555, or 02 9995 5555, if calling from outside NSW.

Written reporting

A written notice of any incidents as defined above should be made to the NSW EPA within 7 days of the incident occurring.

Trade Waste (Sydney Water)

A trade waste agreement (TWA) for the leachate treatment plant of the site has been issued by Sydney Water. The TWA specifies load limits and concentrations for ammonia, biochemical oxygen demand (BOD), suspended solids (SS) and total dissolved solids (TDS) for the discharge of treated leachate as well as sampling and reporting requirements.

Monthly Reporting (EPA)

The Landfill Guidelines (EPA 2016) require the landfill operator to submit to the EPA a monthly report on waste data.

Half-yearly Reporting (EPA)

The Landfill Guidelines (EPA 2016) require the landfill operator to submit to the EPA a 6-monthly report on volumetric surveys documenting how the waste has been filled.

Annual Return (EPA)

Enviroguard must complete an Annual Return and submit it to NSW EPA, certifying that all monitoring requirements and other licence conditions have been complied with during the reporting period.

The Annual Return should detail: the monitoring results as required by the Environment Protection Licence; the nature of and reasons for any non-compliance, and the actions taken to mitigate and prevent the recurrence of any non-compliance.

Annual Reporting (EPA and Penrith Council)

The following licence conditions relate to annual reporting

- R1.8 The annual return must be accompanied by/or include an annual report which must contain an assessment of environmental performance relevant to licence conditions including:*
- a) tabulated results of all monitoring data required to be collected by this licence;*
 - b) a graphical presentation of data from at least the last three years (if available) in order to show variability/and or trends. Any statistically significant variations or anomalies should be highlighted and explained;*
 - c) an analysis and interpretation of all monitoring data;*
 - d) an analysis of and response to any complaints received;*
 - e) identification of any deficiencies in environmental performance identified by the monitoring data, trends or incidents and of remedial action taken or proposed to be taken to address these deficiencies; and*
 - f) recommendations on improving the environmental performance of the facility.*
- 'M6.2 the licensee must make available to the EPA the results of monthly trade waste monitoring of leachate and include these results in the annual report.*

An Environmental Performance Report is to be submitted annually to Penrith City Council at the end of June each year in accordance with Condition of Consent No 7.

Copies of the annual monitoring report are provided to the NSW EPA and also Penrith City Council.

Record Keeping

Monitoring Records

As per the EPL Condition M1.2, *All records required to be kept by this licence must be:*

- a) in a legible form, or in a form that can readily be reduced to a legible form;*
- b) kept for at least 4 years after the monitoring or event to which they relate took place; and*
- c) produced in a legible form to any authorised officer of the EPA who asks to see them.*

Environmental Monitoring

When any sample required by the site Environment Protection Licence is collected, the following information must be recorded:

- a) *The date(s) on which the sample was taken;*
- d) *The time(s) at which the sample was collected;*
- e) *The point at which the sample was taken; and*
- f) *The name of the person who collected the sample.*

Records of Pollution Complaints

The records of complaints received are registered in an electronic complaints database.

The records include:

- a) Date and time of the complaint;
- g) Method by which the complaint was made;
- h) Details of the complainant which were provided by the complainant, or if no such details were provided, a note to that effect;
- i) Nature of the complaint;
- j) The action taken in relation to the complaint, including any follow-up contact with the complainant; and
- k) If no action was taken, the reasons why no action was taken.

The record of each complaint must be kept for at least four years after the complaint was received and must be made available, on request, to any authorised officer of the NSW EPA.

Telephone complaints line

As per the EPL

- *M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises of by the vehicle or mobile plant, unless otherwise specified in the licence.*
- *M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is complaints line so that the impacted community knows how to make a complaint.*
- *M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.*

Fire

The licensee must record the following data for every fire at the premises:

- a) *Time and date that the fire started;*
- b) *Time and date that the fire was either burnt out or extinguished;*
- c) *Location of the fire (eg, clean timber stockpile, putrescible garbage cell etc.);*
- d) *Prevailing weather conditions; and*
- e) *Observations made in regard to smoke direction and dispersion.*

3.20 Environmental Review

Enviroguard evaluates the success of its environmental management approach on a regular basis. While individual components of the monitoring program are reviewed at set intervals as required by the NSW EPA, an overall evaluation of the environmental performance of the Erskine Park Landfill is conducted on an annual basis.

The EMP is updated regularly in response to emerging technology, new standards and guidelines and based on the annual environmental review in accordance with the requirements of Condition of Consent No 6 (DA05/1740.01).

The EMP is kept on-site and copies are provided to the NSW EPA and Penrith City Council.

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Signature Page

Golder Associates Pty Ltd



Udeshini Pathirage
Geo-environmental Engineer



Jacinta McMahon
Principal Environmental Engineer

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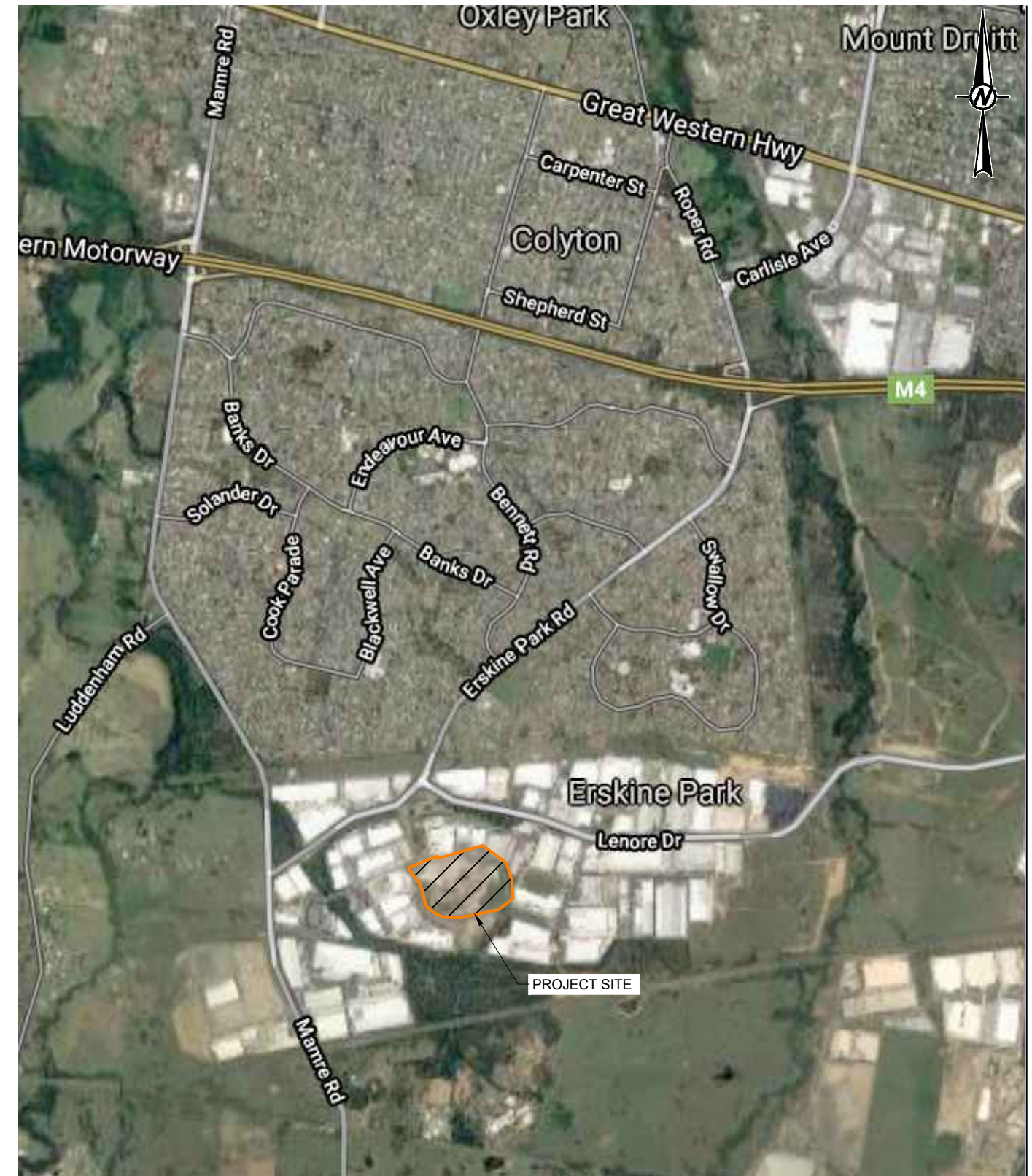
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Figures

REGION



SITE LOCATION



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PROJECT
ERSKINE PARK LANDFILL

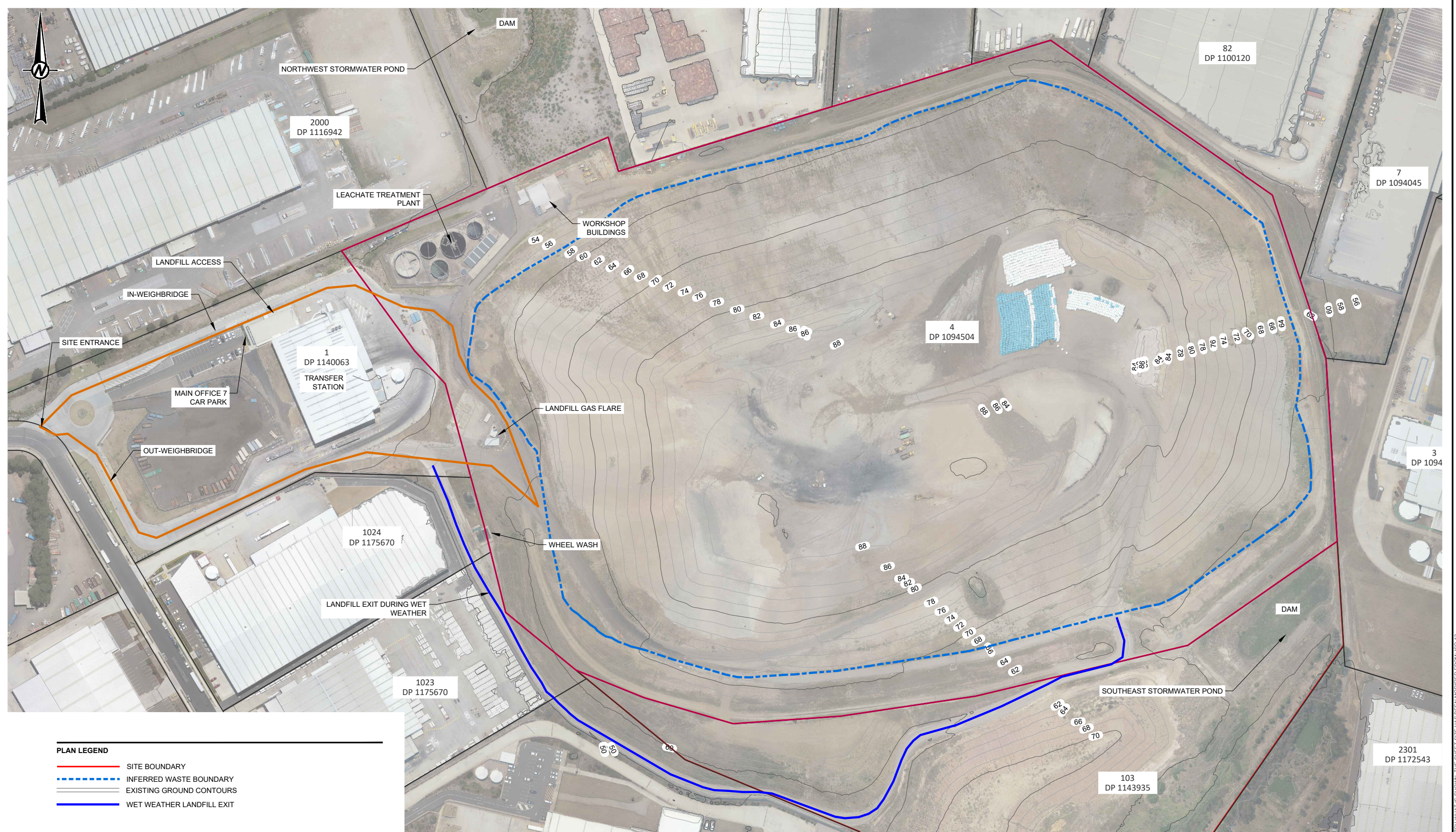
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TITLE
SITE LOCATION

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- PLAN LEGEND**
- SITE BOUNDARY
 - - - INFERRED WASTE BOUNDARY
 - EXISTING GROUND CONTOURS
 - WET WEATHER LANDFILL EXIT



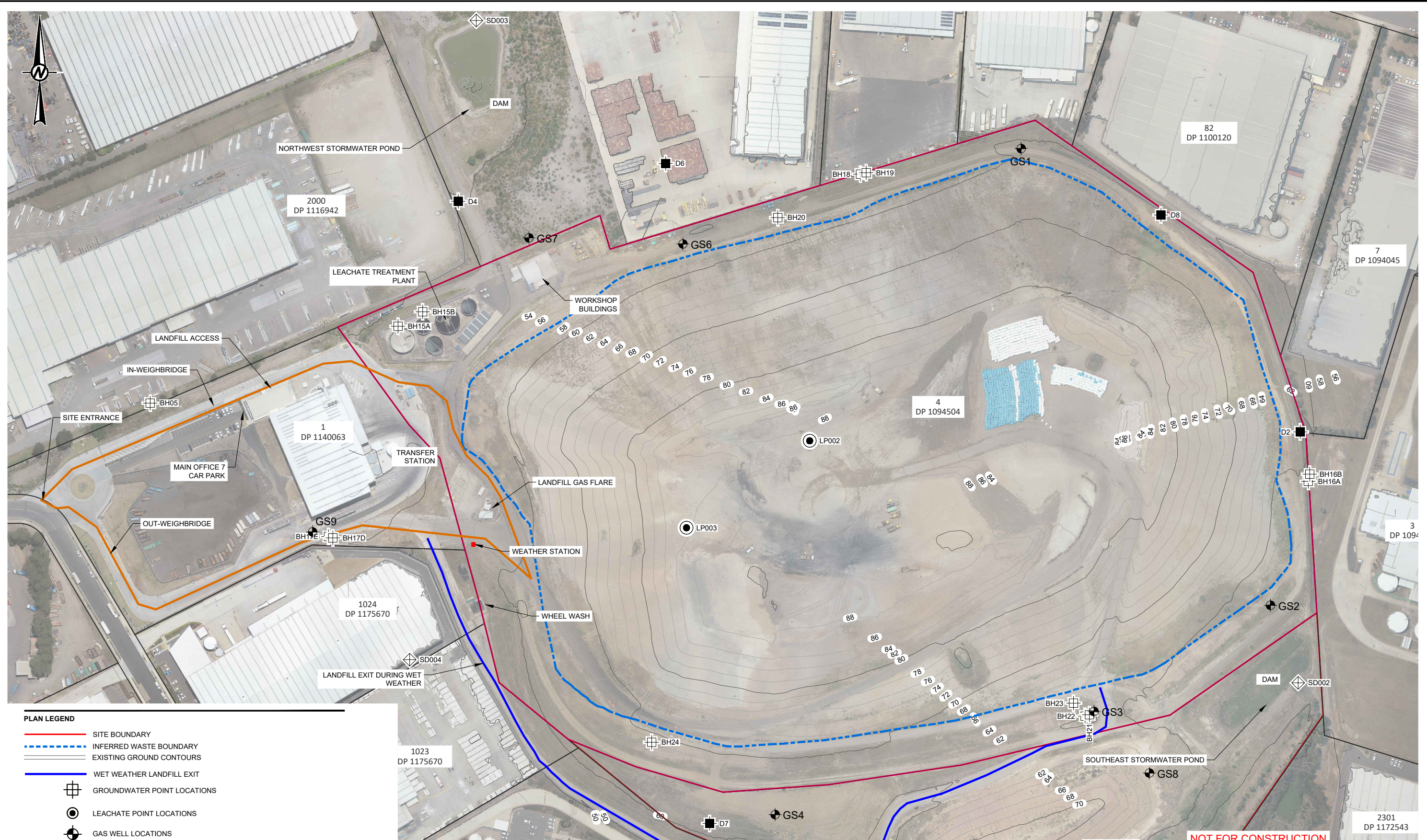
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	CONSULTANT	TITLE EXISTING SITE LAYOUT
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PLAN LEGEND

- SITE BOUNDARY
- - - INFERRED WASTE BOUNDARY
- EXISTING GROUND CONTOURS
- WET WEATHER LANDFILL EXIT
- + GROUNDWATER POINT LOCATIONS
- LEACHATE POINT LOCATIONS
- ⊕ GAS WELL LOCATIONS
- ◇ SURFACE WATER POINT LOCATIONS
- DUST GAUGE POINT LOCATIONS

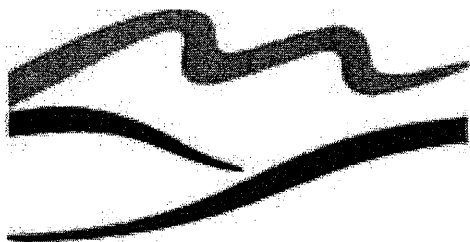
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25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

APPENDIX A

Consent Conditions



PENRITH CITY COUNCIL

Serving Our Community

DETERMINATION OF DEVELOPMENT APPLICATION

P E N R I T H C I T Y C O U N C I L

DESCRIPTION OF DEVELOPMENT

DA No.	DA05/1740
Description of development	PROPOSED REVISED FINAL LANDFORM - ENVIROGUARD ERSKINE PARK LANDFILL
Classification of development	The classification of the building(s) forming part of this consent is as follows: <ul style="list-style-type: none">▪ N/A

DETAILS OF THE APPLICANT

Name & Address	Enviroguard Pty Ltd PO Box 804 ST MARYS NSW 1790
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NOTES

1. Your attention is drawn to the attached conditions of consent in attachment 1.
2. You should also check if this type of development requires a construction certificate in addition to this development consent.
3. It is recommended that you read the Advisory Note enclosed with this consent.

DETAILS OF THE LAND TO BE DEVELOPED

Legal Description: Lot 91 DP 838541
Lot 92 DP 838541
Part Lot 93 DP 838541
Property Address: 562b Mamre Road ERSKINE PARK NSW 2759

DECISION OF CONSENT AUTHORITY

In accordance with Section 81(1)(a) of the Environmental Planning and Assessment Act 1979, consent is granted subject to the conditions listed in attachment 1.

Date the consent expires 25/05/2008
Date of this decision 25/05/2006

Please note that this consent will lapse on the expiry date unless the development has commenced in that time.

OTHER APPROVALS

APPROVAL BODIES:

APPROVAL BODY NAME	DATE OF GENERAL TERMS OF APPROVAL	REF. NO.	NO. OF PAGES	RELEVANT LEGISLATION
Department of Environment and Conservation	10 February 2006, as amended on 17 February 2006	Notice No. 1053732	7	Protection of the Environment Operations Act 1997
Department of Natural Resources	1 December 2005	ERM 05/06309	11	Rivers and Foreshores Improvement Act 1948

The approval bodies listed above have provided General Terms of Approval for this development in accordance with the relevant legislation. A copy of these General Terms of Approval is provided with this development consent notice. Compliance with the relevant State Government departments' General Terms of Approval are required in conjunction with the following conditions listed in Attachment 1: Conditions of Consent issued by Penrith City Council.

RIGHTS OF APPEAL

1. The applicant can appeal against this decision in the Land and Environment Court within 12 months of receiving this notice. The applicant cannot appeal if a Commission of Inquiry was held, or the development is State Significant Development.
2. If a written objection was made in respect to the Application for Designated Development, the objector can appeal against Council's decision to the Land and Environment Court within 28 days after the date of this Notice. The objector cannot appeal if a Commission of Inquiry was held.

3. If the applicant appeals against Council's decision, objector(s) will be given a notice of the appeal and the objector(s) can apply to the Land and Environment Court within 28 days after the date of this appeal notice to attend the appeal and make submissions at that appeal.
4. An appeal to the Land and Environment Court is made by lodging an application to the Court in accordance with the Rules of the Court.

REASONS

The conditions in the attached schedule have been imposed for the following reasons:

- To ensure compliance with the terms of the relevant Planning Instrument.
- To ensure that no injury is caused to the existing and likely future amenity of the neighbourhood.
- Due to the circumstances of the case and the public interest.
- To ensure that adequate road and drainage works are provided.
- To ensure that satisfactory arrangements are made to satisfy the increased demand for public recreation facilities.
- To ensure that access, parking and loading arrangements will be made to satisfy the demands created by the development.
- To ensure the structural integrity of the development.
- To ensure the protection of the health and safety of the occupants of the development.

POINT OF CONTACT

If you have any questions regarding this consent you should contact:

Assessing officer	Warwick Stimson
Contact telephone number	(02) 4732 7960

SIGNATURE

Name	Warwick Stimson
Signature	Senior Environmental Planner 

For the Development Services Manager

ATTACHMENT 1: CONDITIONS OF CONSENT

GENERAL

- 1 The development must be implemented substantially in accordance with the Environmental Impact Statement Volumes 1 - 4, undertaken by NECS Pty Ltd and dated 17 October 2005, the General Terms of Approval as provided by the Department of Natural Resources, the General Terms of Approval as provided by the Department of Environment and Conservation, the application form and any supporting information received with the application, except as may be amended in red on the attached plans and by the following conditions.
- 2 A copy of the approval issued by the Department of Natural Resources and the Department of Environment and Conservation shall be submitted to the Principal Certifying Authority, **before the Construction Certificate can be issued** for the same development. A copy of the approvals shall be submitted to Penrith City Council with the copy of the Construction Certificate, if Council is not the Principal Certifying Authority.
- 3 The development shall comply with those conditions set down by the Department of Environment and Conservation and the Department of Natural Resources.
- 4 A Landscape Plan, drawn by an appropriately qualified person and strictly in accordance with Council's 'Landscape Development Control Plan' and the 'Biodiversity Restoration Plan for Erskine Park Release Area', prepared by Greening Australia, shall be submitted to Council for written approval of the Manager Development Assessment, within 12 months from the date of this consent.

At the time of approval of the Landscape Plan, a monetary bond shall be lodged with Penrith City Council for an amount equivalent to the cost of implementing the approved Landscape Plan and maintenance for a period of 12 months after planting.

- 5 Those areas used, or previously used, for the storage of concrete and bitumen shall be remediated strictly in accordance with State Environmental Policy No.55 - Remediation of Land.
- 6 An amended Site Rehabilitation and Environmental Management Plan (the Plan) is to be submitted to Penrith City Council and prepared to Council's satisfaction prior to the commencement of the development. The Plan is to be consistent with the EPA/DEC approved Landfill Environmental Management Plan, is to address the environmental aspects of the development and is to include details on the environmental management practices and controls to be implemented on site. The Plan must be prepared by a suitably qualified person/s, in consultation with the relevant authorities and agencies (e.g. Department of Environment and Conservation and the Department of Natural Resources) and is to address but is not limited to the following:
 - Water quality
 - Wastewater management
 - Stormwater management and drainage
 - Noise control
 - Waste management including solid and liquid waste
 - Vehicle movements

- Chemical storage, transport, spill contingency and response
- Erosion and sediment control
- Air quality including odour and dust control
- Environmental monitoring
- Site rehabilitation

All activities on the site are to be implemented and managed in accordance with the Plan. The Plan is to incorporate a review process that involves the consultation of Penrith City Council and other relevant authorities to ensure that it reflects current environmental best practice, standards and legislation. Penrith City Council must be satisfied with any changes prior to the amendment of the Plan. The Plan shall be submitted every 12 months.

- 7 An annual environmental performance report is to be prepared and a copy submitted to Penrith City Council for consideration at the end of June each year (the first report is due at the end of June 2007). The report shall address the environmental issues, implemented pollution control strategies and monitoring programmes as outlined in the Site Rehabilitation and Environmental Management Plan. The report is also to address compliance with the conditions of this consent
- 8 A copy of the Vegetation Management Plan (VMP) and Soil and Water Management Plan (SWMP) approved by the Department of Natural Resources (DNR) is to be provided to Council prior to the commencement of the development. The VMP and SWMP are to be implemented to the satisfaction of DNR and Council.
- 9 A copy of the Landfill Environmental Management Plan (LEMP) approved by the Environment Protection Authority (part of the Department of Environment and Conservation) is to be provided to Council prior to the commencement of the development. Copies of future revised and approved LEMP's are to be provided to Penrith City Council.
- 10 All conditions of consent from DA 163/92 shall be complied with throughout the lifetime of the operations and until such time as a Statement of Completion is issued for the site by the Department of Environment and Conservation.

ENVIRONMENTAL MATTERS

- 11 Erosion and sediment control measures shall be installed **prior to the commencement of works on site** including approved clearing of site vegetation. The erosion and sediment control measures are to be maintained in accordance with the approved erosion and sediment control plan(s) for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.

(Note: To obtain a copy of the publication, you should contact Landcom on (02) 98418600).

Certification that the erosion and sediment control measures have been installed in accordance with the approved erosion and sediment control plan (s) for the development and "Managing Urban Stormwater: Soils and Construction 2004" shall be obtained and issued a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.

The approved sediment and erosion control measures are to be installed **prior to and maintained throughout the construction phase of the development until the land, that**

was subject to the works, have been stabilised. These measures shall ensure that mud and soil from vehicular movements to and from the site does not occur during the construction of the development.

- 12 No fill material is to be imported to the site without the prior approval of Penrith City Council in accordance with Sydney Regional Environmental Plan No.20 (Hawkesbury-Nepean River) (No.2-1997). No recycling of material for use as fill material shall be carried out on the site without the prior approval of Council.
- 13 **No fill material shall be imported to the site until such time as a Validation Certificate (with a copy of any report forming the basis for the validation) for the fill material has been submitted to Council.** The Validation Certificate shall:
- state the legal property description of the fill material source site,
 - be prepared by an appropriately qualified person (as defined in Penrith Contaminated Land Development Control Plan) with consideration of all relevant guidelines (e.g. EPA, ANZECC, NH&MRC), standards, planning instruments and legislation,
 - clearly indicate the legal property description of the fill material source site,
 - provide details of the volume of fill material to be used in the filling operations,
 - provide a classification of the fill material to be imported to the site in accordance with the Environment Protection Authority's "Environmental Guidelines: Assessment, Classification & Management of Non-Liquid Wastes" 1997, and
 - (based on the fill classification) determine whether the fill material is suitable for its intended purpose and land use and whether the fill material will or will not pose an unacceptable risk to human health or the environment.

An appropriately qualified person/s (as defined in the Penrith City Council Contaminated Land Development Control Plan) shall:

- Supervise the filling works,
- (On completion of filling works) carry out an independent review of all documentation relating to the filling of the site, and shall submit a review findings report to Council and any Principal Certifying Authority,
- Certify by way of certificate or written documentation that fill materials have been placed on the site in accordance with all conditions of this consent and that the site will not pose an unacceptable risk to human health or the environment. A copy of the Certificate or other documentation shall be submitted to Council and any Principal Certifying Authority.

The contact details of any appropriately qualified person/s engaged for the works shall be provided with the Notice of Commencement.

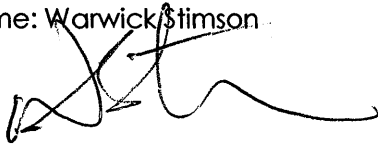
If the Principal Certifying Authority or Penrith City Council is not satisfied that suitable fill materials have been used on the site, further site investigations or remediation works may be requested. In these circumstances the works shall be carried out prior to any further approved works.

{Note: Penrith Contaminated Land Development Control Plan defines an appropriately qualified person as "a person who, in the opinion of Council, has a demonstrated experience, or access to experience in hydrology, environmental chemistry, soil science, eco-toxicology, sampling and analytical procedures, risk evaluation and remediation technologies. In addition, the person will be required to have appropriate professional indemnity and public risk insurance."}

LANDSCAPING

- 14 All trees that are required to be retained as part of the development are to be protected in accordance with the minimum tree protection standards prescribed in section F4 of Councils Landscape Development Control Plan.
 - 15 No trees are to be removed, ringbarked, cut, topped or lopped or wilfully destroyed (other than those within the proposed building footprint or as shown on the approved plans) without the prior consent of Penrith City Council and in accordance with Council's Tree Preservation Order and Policy.
-

Name: Warwick Stimson



Signature:
For the Development Services Manager

ADMINISTRATIVE CONDITIONS

1. Information supplied to the EPA

- 1.1 Except as expressly provided by these general terms of approval, works and activities must be carried out in accordance with the proposal contained in:
- The development application (DA 05/1740) received by the DEC on 26 October 2005 and provided by Penrith City Council;
 - the document "Environmental Impact Statement – Enviroguard - Erskine Park Landfill – Revised Final Profile Volumes 1, 2, 3 and 4, NECS – National Environmental Consulting Services" (the EIS);
 - all additional documents supplied to the EPA in relation to the development, including additional information supplied to the EPA in letters and emails dated:
 - a) 12 December 2005 (letter) in relation to groundwater protection, leachate management and sediment and erosion control; and
 - b) 2 February 2006 (email) titled, FW: Erskine Park Landfill – Addition Info 1, 2 and 3.

2. Fit and Proper Person

- 2.1 The applicant must, in the opinion of the EPA, be a fit and proper person to hold a licence under the Protection of the Environment Operations Act 1997, having regard to the matters in s.83 of that Act.

3. Administrative Licensing Requirements

- 3.1 The applicant must apply for and receive a variation to its environment protection licence (No. 4865) from the EPA prior to commencing any activity associated with DA 05/1740.
- 3.2 Waste must not be disposed of at the landfill on any surface outside the quarry rim (depicted on Figure 5.5 in volume 1 of the EIS) other than those areas where waste has been placed as of 1 January 2006, until the EPA had provided the applicant with written approval in the form of licence conditions permitting the disposal of waste external to the quarry rim at the premises.
- 3.3 The application referred to in condition 3.1 of this instrument must be accompanied by an amended Landfill Environmental Management Plan (LEMP) which provides:
- i) drawings "for construction," specifications, design details, and justification thereof, as well as an implementation and commissioning schedule, for the proposed:
 - a) liner system for the surface outside the quarry rim including the preparation of its sub grade (other than for the south east corner where works have already been completed);
 - b) leachate drainage layer (other than for the south east corner where works have already been completed);
 - c) capping and revegetation works, including landfill gas (methane) oxidation works. The design of the capping works must be based on the concept design detailed in figure 5.1 in the Final Report Erskine Park Landfill Concept Plan, prepared for Enviroguard Pty Ltd by URS contained in volume 2 of the EIS. The plants' root depth should be stated, taking into account that their roots should not interfere with the integrity of the sealing layer;
 - ii) a proposal to install and undertake subsurface gas monitoring at the premises, taking into account benchmark techniques 15 and 16 of the *Environmental Guidelines: Solid Waste Landfills*;

General Terms of Approval

- iii) a proposal to install at least three groundwater monitoring bores within 10 m of the landfill's intended footprint which are screened from near the surface to about 20 m AHD, unless it can be demonstrated (with existing bores logs and their construction details) that existing bores can be used to monitor groundwater quality within this upper zone;
- iv) a proposal to install a groundwater monitoring bore on the southern side of the landfill screened from near the land's surface to - 40 m AHD;
- v) a weather monitoring station which can measure and record wind speed, and wind direction, temperature, rainfall and evaporation, taking into account the EPA's *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*.
- vi) a proposed Quality Assurance and Testing Program (QATP) that ensures that the measures referred to in i) a), b) and c) of this condition will be installed in a manner to achieve their design specifications.
- vii) proposed measures which can be undertaken to maintain the leachate level in the landfill to below 30 m AHD and a timetable for installing and implementing the measures. The proposal should include full details for the design, construction, operation and monitoring of the proposed measures.

Note: The leachate level has exceeded 30 m AHD several times over the past 24 months and by placing more waste in the landfill it will reduce the waste's pore space with the likely consequence being the increase in leachate level which would increase the risk of leachate polluting groundwater, unless leachate is extracted and the level lowered below 30 m AHD and suitably managed.

3.4 The design of the liner system referred to in i) a) in condition 3.3 must be:

- i) 900mm thick compacted clay with an insitu permeability of less than 10^{-9} m/s and extend across the entire surface external to the quarry rim where waste is to be placed and its upper surface with a gradient to ensure that leachate drains into the quarried void. The gradient must be such that the leachate would still drain into the quarry void in the event that the predicted maximum settlement of the liner's subgrade occurs; or
- ii) an alternative liner system approved in writing by the EPA.

3.5 The design of the leachate drainage layer referred to in i) b) of condition 3.3 of this instrument must:

- i) extend across the entire surface of the liner system referred to in i) a) of condition 3.3 and must be 300 mm in thickness and have a permeability of greater than 10^{-3} m/s and must meet the specifications for gravel detailed in benchmark technique 2 of the *Environmental Guidelines: Solid Waste Landfills*; or
- ii) be an alternative system approved in writing by the EPA.

Note 1:

The EPA will review the amended LEMP with a view to attaching conditions to the applicant's environment protection licence:

- i) requiring the installation of the measures referred to and in i) of condition 3.3 of this instrument;
- ii) requiring the applicant to provide a report prepared by a suitably qualified person that demonstrates that the control measures referred to in i) a) b) and c) of condition 3.3 of this instrument have been installed in accordance with their approved design and EPA requirements;
- iii) requiring the applicant to provided a report on the implementation and results of the QATP referred to in vi) of condition 3.3 of this instrument;
- iv) requiring the applicant to provide "as constructed" drawings of the installed liner and leachate drainage layer and capping works; and

- v) prohibiting disposal of waste in the landfill (other than those areas where waste has been placed as of 1 January 2006) without the EPA's written approval, which will be based on the receipt, and assessment of the above information to confirm the approved works, except for the final capping, were installed.

Limit, operating and monitoring conditions

4. Pollution of waters

- 4.1 The applicant must ensure that the leachate level (measured at LP001 depicted on Figure 7.1 of volume 1 of the EIS) within the landfill does not exceed 30 metres AHD.

5. Waste

- 5.1 The total tonnage of waste disposed of at the premises must not exceed 1 million (1,000,000) tonnes from 1 January to 31 December in any year.
- 5.2 Waste must not be placed at elevations above those depicted in Figure 5.3 of volume 1 of the EIS.

6. Dust

- 6.1 Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

7. Stormwater/sediment control – Construction/Operation Phase

- 7.1 Stormwater control infrastructure detailed in section 5.6.1 of volume 1 of the EIS must be installed and operational to receive and treat all run-off from completed surfaces of the landfill.
- 7.2 The applicant must provide the EPA with the location (northings and eastings using AMG) for the discharge points (pumped and overflow) for the two existing dams with the licence variation application and for the two proposed dams within one week of them being constructed.

8. Leachate management

- 8.1 All rainfall which comes into contact with waste, daily cover and intermediate cover must be managed as leachate, unless otherwise approved by the EPA.
- 8.2 Leachate must not be discharged to surface waters.
- 8.3 Leachate applied to the tipping face and/or used for dust suppression must not be directed to the sediment control dams.
- 8.4 The applicant must monitor the standing water level of leachate (measured at LP001 depicted on Figure 7.1 of volume 1 of the EIS) at a quarterly frequency, and each measurement must be taken at least 48 hours after any leachate is extracted from the landfilled waste.

9. Capping and Revegetation

- 9.1 All surfaces which reach the final landfill profile depicted in Figure 5.3 of volume 1 of the EIS must be revegetated within 6 months, unless otherwise approved by the EPA.

General Terms of Approval

- 9.2 All methane in the landfill gas collected in the gas drainage layer in the cap (including other passive gas collection works) must be passed through an oxidisation system before being released to the atmosphere, unless otherwise approved by the EPA.
- 9.3 The applicant must notify the EPA within 24 hours of becoming aware that landfill gas with a concentration of methane greater than 1.25% v/v has migrated in the subsurface beyond the boundary of the premises.

POLLUTION STUDIES AND REDUCTION PROGRAMS

10 Leachate Level Management

10.1 In the event that:

- the leachate level (measured at LP001 depicted on Figure 7.1 of volume 1 of the EIS) within the landfill exceeds 30 metres AHD (or another level approved by the EPA) for two consecutive measurements, and/or
- the leachate riser becomes further damaged to the extent it cannot be used to measure the height of leachate in the fill and/or
- leachate can no longer be extracted from the landfill,

the applicant must within 2 months of any of these event occurring prepare and submit a report to the EPA. The report must propose:

- measures which can be undertaken to lower the leachate level in the landfill to below 30 m AHD and a timetable for installing and implementing the measures;
- additional measures to monitor the leachate level in the landfill and a timetable indicating when these measures can be installed and be operational (if necessary);
- a design (including drawings 'for construction') for a leachate extraction system to replace the existing leachate riser (if necessary) and a timetable indicating when these measures can be installed and operational. The aim of the design should be to maintain the leachate level in the void to no greater than 30 metre AHD.
- Removing the leachate from the premises by tankering it to a premises which can lawfully receive the waste.

11 Groundwater Management

- 11.1 The applicant prepare and submit a report to the EPA within two months of any groundwater monitoring at the premises detecting ammonia at a concentration above 15 mg/L. The report must propose actions which the applicant can implement (including a timetable) to prevent contaminated groundwater migrating from the premises.



Department of Environment and Conservation (NSW)

Your reference : DA05/1740
 Our reference : HOF65165

PENRITH CITY COUNCIL	
File No.	DA05/1740
RECEIVED	20 Feb 2006 AM/PM
Plemm	

Mr Paul Lemm
 Building Approval and Environment Protection Manager
 Penrith City Council
 PO Box 60
 PENRITH NSW 2124

17 February 2006

Dear Mr Lemm

Integrated Development Application (DA05/1740)- Proposed Revised Final Landform – Enviroguard Erskine Park Landfill – Lot 91, 92 and Part Lot 93 DP 838541 Modification to General terms of Approval

I refer to the development application and accompanying Environmental Impact Statement (EIS) for the proposed revised final landform Enviroguard Erskine Park Landfill provided by Penrith City Council to the Department of Environment and Conservation (DEC) by letter dated 24 October 2005 and received by the DEC on 26 October 2005. I also refer to General Terms of Approval (notice No. 1053732) issued by the DEC dated 10 February 2006.

The DEC wishes to modify General Terms of Approval (notice no. 1053732) to include noise limits that apply at all times at the identified noise sensitive receivers. These limits have been based on the predicted noise levels contained within the EIS.

Noise limits

1.1 Noise generated at the premises must not exceed the noise limits presented in the table below. Note that the noise limits represent the noise contribution from the landfill site for the modification to the final profile.

Noise Limits (dB(A))

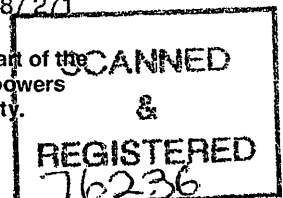
Location	Day
	LAeq(15 minutes)
Mamre Road Residence (as identified in the NIA)	45
Erskine Park Road Residence (as identified in the NIA)	54

1.2 For the purposes of condition 1.1

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public holidays'

59-61 Goulburn Street SYDNEY 2000 PO Box A290 SYDNEY SOUTH NSW 1232
 Telephone (02) 9995 5000 Facsimile (02) 9995 5999 ABN 30 841 387 271

Please note that, although the Environment Protection Authority (EPA) is now a part of the Department of Environment and Conservation, certain statutory functions and powers continue to be exercised in the name of the Environment Protection Authority.



1.3 Noise from the premises is to be measured at the most affected point within the residential boundary or at the most affected point within 30m of the dwelling (rural situations) where the dwelling is more than 30m from the boundary to determine compliance with the $L_{Aeq(15 \text{ minute})}$ noise limits in condition 1.1

Where it can be demonstrated that direct measurement of noise from the premises is impractical, the EPA may accept alternative means of determining compliance. See Chapter 11 of the NSW Industrial Noise Policy.

The modification factors presented in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.

1.4 The noise emission limits identifies in condition 1.1 apply under meteorological conditions of:

- Wind speed up to 3m/s at 10 metres above ground level; or
- Temperature inversion conditions of up to 3°C/100m and wind speed up to 2m/s at 10 metres above the ground.

If you have any queries in relation to this matter please contact Susan Fox on 9995 5713.

Yours sincerely



STEVE BEAMAN 17.2.2006
Manager Sydney Waste
Environment Protection and Regulation Division
Att: Phil Carbins - Enviroguard Pty Ltd



NSW Government

DEPARTMENT OF NATURAL RESOURCES

**GENERAL TERMS OF APPROVAL
RIVERS AND FORESHORES IMPROVEMENT ACT 1948
PART 3A PERMIT**

Note: This is NOT the Part 3A Permit

DA 05/1740

File: PAR9013110

ERM05/6309

In accordance with the Environmental Planning and Assessment Act 1979 and Regulation 1994 (as amended) the Department of Natural Resources (DNR) has an approval role in relation to Development Application **05/1740** (the DA) lodged with Penrith City Council (Council).

A permit issued under Part 3A of the Rivers and Foreshores Improvement Act 1948 (R&FI Act) is required to carry out certain works, including **excavations**, on in or under "protected land". "Protected land", for the purposes of this DA, is land and material that is in, or within 40 metres of the top of the bank or shore of, "protected waters", and within land hereinafter referred to as "the Site" being:

Proposed Lots 91,92 and Part 93 DP 838541, Cnr Mamre Road and Erskine Park Road, Erskine Park.

"Protected waters" include the watercourses within the Site, hereinafter being referred to as "**Watercourse A**", being the generally east-west flowing watercourse at the southern part of the Site, "**Watercourse B**", being the generally east-west flowing watercourse at the northern part of the Site, both being tributaries of Blind Kemps Creek, and **Blind Kemps Creek**, the latter being a generally south-north flowing tributary of South Creek.

The DA for the proposed **landfill** includes the following:

- importation and placement of fill material
- on site detention works
- water quality control works
- outlet works
- sediment and erosion control works
- landscape rehabilitation

Pursuant to Part 3A of the R&FI Act, DNR, having reviewed the documentation associated with the DA, proposes to grant an approval for the DA, subject to conditions. DNR's General Terms of Approval, for inclusion as conditions of consent, are set out below:

Requirement for Permit

1. Any work which requires a permit under Part 3A of the R&FI Act ("Part 3A permit") is not to commence until such time as a Part 3A permit has been applied for, and subsequently issued by DNR. Any work the subject of a Part 3A permit must be carried out in accordance

with drawings and any other documents required by these conditions, and which are approved by DNR, and which will accompany the Part 3A permit.

Standard of Design, Documentation and Implementation

2. All works proposed must be designed, constructed and operated so that they result in NIL or minimal harm to aquatic and riparian environments and do not cause erosion, sedimentation, or increase flood levels of protected waters. Works that result in net positive outcomes for aquatic and riparian environments are encouraged.
3. All designs and documentation required by these conditions are to be prepared to best practice standard by persons with relevant knowledge, qualifications and experience and to the satisfaction of Council and DNR, and approved by DNR, **prior to the issue of the Part 3A Permit.**
4. The **implementation** of any design or "plan", or **carrying-out** of any activity at the Site, is to be undertaken by persons suitably experienced in that aspect of the work they are doing, and such persons must be under the direction and supervision of a person with knowledge, qualifications and experience in current best practice in the relevant aspect of the operations being undertaken.

Cessation of Works

5. If, in the opinion of a DNR officer, any work is being carried out in such a manner that it may damage or detrimentally affect protected waters or protected land, or damage or interfere in any way with any thing not authorised to be so affected, such work shall cease immediately upon oral or written direction of such officer.
6. Should any of the conditions of the Part 3A permit not be complied with, DNR may issue a Stop Order on Part 3A permit related operations at the Site until the conditions have been complied with.

Work as Executed Plans

7. If requested by DNR, work as executed survey plans of a professional standard, and including information required by DNR, shall be forwarded to DNR within 14 calendar days of such request. (NOTE: Apart from extractive industry operations, or large earthmoving projects, DNR usually only invokes this condition in matters of contention).

Remedial Works

8. The Part 3A permit holder shall carry out any instructions given by DNR with a view to preventing damage to the environment of protected waters or protected land.
9. If any Part 3A permit condition is breached, the permit holder shall follow DNR directions to address the breach and shall rehabilitate the Site as directed by, and to the satisfaction of, DNR. If any breach of the permit conditions requires a special site inspection by DNR, then the permit holder shall pay a supplementary permit fee for this inspection and for each and every subsequent inspection until the breach has been rectified.

Disposal of Vegetation

10. Any vegetation or other material removed from the area of operations shall be disposed of lawfully to an appropriate site where the material cannot be swept into protected waters during a flood. Burning must not be carried out unless an approval has been obtained from the relevant authority(ies).

Earthworks

11. The nature and extent of earthworks shall generally be in accordance with the drawings submitted with the DA, subject to finalisation in consultation with, and with the approval of, DNR.
12. The surface of all excavated areas shall be progressively graded to a smooth and even slope free from holes or ridges. Slope drainage and grades are to be as shown on the plans accompanying the Part 3A permit. Batter slopes are not to be steeper than a grade of **1V:3H**, unless indicated otherwise on the plans accompanying the Part 3A permit. Slopes are not to be at grades steeper than those satisfactory to Council in relation to public safety.

Works Plan

13. A Works Plan (WP) is to be prepared for any works that are proposed in, or on the banks of, "protected waters". Such works will include stormwater and spillway outlet structures. The WP must be based on an understanding of stream dynamics and environmentally sensitive stream rehabilitation practices, and is to be prepared in accordance with the guideline *How to Prepare a Works Plan (Attachment A)*.

Sewer, Other service, Utility and Communication Lines

14. Any sewer service, other utility or communication lines proposed to be located within any riparian zone or protected waters are not to be constructed without consultation with, and prior approval of, DNR.
15. Any sewer service, other utility or communication lines proposed to be located within identified riparian zones, after or subsequent to those works outlined in the above condition must:
 - a) be directionally bored beneath the extent of the riparian zones; and
 - b) not require access tracks for maintenance or other purpose; and
 - c) not restrict existing vegetation or rehabilitation.

Detention/Sedimentation Basins and Water Quality Control Structures

16. Detention/sedimentation basins and water quality control structures are not to be located within any riparian zone.
17. The outlet of any detention/sedimentation basin or any water quality control structure to any protected waters, or through any riparian zone, is to be designed and constructed in accordance with the following conditions relating to "Stormwater Outlets".

Stormwater and Clean Water Diversion Drain Outlets

18. Detailed designs of any stormwater and clean water diversion drain outlets, and any necessary scour protection works within the riparian zone or any protected waters, are to be prepared. The designs must include one or more representative surveyed cross sections and a long section showing existing and proposed bed and bank profiles and water levels at the outlet point. The sections are to extend beyond the structure for a distance of 5m for the cross section, and for the long section, 5m beyond the landward extent of the riparian zone and 5m from the toe of the bank of the receiving protected waters. Any proposed stormwater outlets are to be designed in accordance with the DNR guideline: *Stormwater Outlet Structures to Streams (For pipes, culverts, drains and spillways - Version 1) (Attachment B)*.
19. Stormwater and clean water diversion drain outlets must be designed, located and constructed to minimise any erosion or scour of riparian zones or the bed or banks of any protected waters. The construction methods adopted must ensure that disturbance to soil

and vegetation in these areas is kept to an absolute minimum. **The designs and methods of construction are to be included in the WP.**

Scour Protection

20. Points of constriction or any other places where scour is likely within or near any protected waters or any part of the riparian zones on the Site, are to be suitably protected against scour. Designs of scour protection works, based on predicted tractive stress and scour potential, together with methods of construction, **are to be included in the WP.**
21. All finished rock rip-rap surfaces are to be rough, and evenly aligned with the adjoining bed, bank and floodplain profile and must not reduce the capacity of protected waters in any way.
22. All rock and cobbles installed for scour protection are to be packed with topsoil and the crevasses in the rip-rap planted with local native sedges and rushes, to further stabilise the works and to increase riparian zone values and functions.
23. Wire mesh structures and concrete grouting are not permitted for use with rip rap scour protection unless specifically approved by DNR.

Accessways

24. All accessways, being cycleways, pedestrian pathways or other non-vehicular form of accessway that may be proposed for the Site, are to be designed and constructed in accordance with the *Draft Guidelines for the Design and Construction of Paths and Cycleways in Riparian Areas- Version 2 (Attachment C)*.
25. Any accessway, or accessway lighting, proposed to be located within any riparian zone or protected waters is not to be constructed without consultation with, and with prior approval of, DNR.

Maintenance of works within Protected Waters

26. All works within protected waters are to be monitored after each major storm event for the duration of any Part 3A permit issued by DNR. Stabilisation works consisting of soft-engineered designs are to be undertaken as required, after seeking advice and approval from DNR, if there are signs of erosion or instability of protected waters.

Works within Protected Waters to Satisfy NSW Fisheries

27. Prior to the issue of the Part 3A permit, agreement in writing from NSW Fisheries is required for the designs of any proposed works located within any protected waters.

Exclusion fencing

28. Prior to the commencement of any earthworks or vegetation clearing at the site, the location and extent of the riparian zones described in these conditions, and vegetation and habitat to be protected, is to be fenced off with clearly visible, durable, and appropriately signposted exclusion fencing.

Designation of Riparian Zones

29. The extent of the riparian zones is to be measured horizontally landward from the top of the bank (as approved by DNR), and at right angles to the alignment of the bank, of protected waters, including beneath any crossings, for their entirety within the Site, unless otherwise approved by DNR, and shall be:
 - **Watercourse A:** As required in the conditions of consent for DA04/2795 and the associated Part 3A permit, or not less than 40 metres, whichever is the greater
 - **Watercourse B:** An average width of 20 metres, but not less than 10 metres, on both sides, unless otherwise indicated on the approved plans.

- **Blind Kemps Creek:** As required in the conditions of consent for DA DA04/2795 and the associated Part 3A permits

30. Any reference to "riparian zones" in any condition in these General Terms of Approval is to be regarded as a reference to the "riparian zones" described within this section.

Site Rehabilitation - General

31. All riparian zones at the Site must be rehabilitated where they are affected by, or located adjacent to, or located within 10m of, any works on "protected land" that require a Part 3A permit.

NOTE: Various works and riparian zone rehabilitation are being undertaken within the watercourses at the Site, and their riparian zones, under various DA approvals and their associated Part 3A permits. Provided that the subject proposal in no way compromises the implementation of the conditions of the relevant DA approvals, and their associated Part 3A permit requirements, it will not be required to undertake additional rehabilitation, as determined by DNR.

Preparation of a Vegetation Management Plan (VMP)

32. Site rehabilitation and maintenance is to be carried out in accordance with a VMP.

33. The VMP is to be prepared **prior to the issue of the Part 3A Permit**. The VMP is to be in accordance with the guideline: "*How to Prepare a Vegetation Management Plan – Version 4*" (**Attachment D**).

34. The VMP is to fully address all matters relating to riparian zone protection, vegetation to be retained, vegetation to be removed, obtaining plant material for rehabilitation, establishment methods, sequencing of tasks, maintenance and performance monitoring relating to the rehabilitation of the riparian zones. The VMP is to include drawings that clearly show the approved extent of the riparian zones. The VMP is to clearly state planting densities and the species mix for all areas to be rehabilitated. The VMP is to be cross-referenced to other "plans" required by these conditions, where appropriate.

NOTE: The VMPs prepared for other relevant DA approvals, and their associated Part 3A permits, and as approved by DNR, will satisfy the VMP requirements for the subject proposal, provided the VMPs for the other approvals cover the extent and timing of disturbance of this DA. Otherwise, a new VMP will be required.

Site Rehabilitation - Vegetation

35. Site rehabilitation must:

- protect any remnant local native riparian vegetation at the Site wherever it is reasonably possible to do so, and,
- restore any riparian zones, including the area within protected waters, that are disturbed or otherwise affected by the development to a state that is reasonably representative of the natural ecotone of the protected waters and their environment.

36. The riparian zones so restored are to consist of a diverse range of native plant species local to the area and are to be fully structured (i.e. trees, shrubs and groundcovers), unless otherwise approved by DNR. The plants used are to consist of species and communities that emulate the original natural situation. Planting densities are to be as follows:

- Floodplain and upper bank

At least **1 tree or 1 shrub** (in approximately equal numbers) alternately planted at **1 plant per square metre** and in addition, **groundcover plants at 4 plants per square metre**, unless otherwise specified in the VMP.

b) Channel and lower bank

High densities - Sufficient to impart stability and ecological function.

- SHA
37. The riparian zones may be rehabilitated using a combination of methods, such as natural bush regeneration, brush matting, hydro-seeding, direct seeding or tubestock planting, provided the required densities and clear evidence of the plants' ability to survive are achieved by the end of the maintenance period.
- SHA
38. Revegetation must be carried out over all areas in the riparian zone affected by the works, including beneath crossings, and including all areas that are temporarily occupied by soil and water management controls, once those controls have been decommissioned and the ground surfaces restored to the correct profile and stabilised.
- SHA
39. Bush regeneration, for weed control and to promote natural regeneration, is to be undertaken for a minimum distance of 10 metres beyond any disturbed areas in the riparian zones. Revegetation, in accordance with the standards required by these conditions, is to be undertaken in this 10 metre wide area if it is significantly degraded or is likely to give rise to weed invasion due to lack of native vegetation cover before or after weed control.

Physical Barrier to be placed at Landward Edge of Riparian Zones

- SHA
40. To prevent inadvertent damage to riparian zones, a permanent physical barrier is to be placed at their landward extent in all locations where mowing or slashing of adjacent areas is likely.

Maintenance of Rehabilitated Areas within Riparian Zones

- SHA
41. The rehabilitated riparian zones must be maintained and monitored for a period of **at least two years** after final planting, or where other revegetation methods are used, **two years** after plants are at least of tubestock size and are at the densities required by these conditions and with species richness as described in the VMP. Maintenance must include sediment and erosion control, watering, weed control, replacement of plant losses, disease and insect control, mulching and any other requirements necessary for achieving successful vegetation establishment.

Maintenance Report

- SHA
42. A brief and concise report addressing the performance criteria as specified in the VMP, and any problems implementing the VMP, as well as means to overcome these, shall be forwarded to DNR **immediately after completion of initial planting/seeding**, and prior to the release of any cash bond or bank guarantee, and **every six months** thereafter for the duration of the maintenance period. The report must also comment on the stability and condition of any associated stream works. Implementation of the VMP will be considered incomplete without DNR sign-off of the final monitoring report at the end of the minimum two-year maintenance period.

Seed and Plant Material Collection, Propagation and Certification

- SHA
43. The person responsible for implementing the VMP must certify in writing to DNR that plantings (including follow-up plantings) have been carried out using stock propagated from seed or plant material collected only from native plants from the **local botanical provenance**. This certification is to be provided with the first monitoring report, and prior to the release of any cash bond or bank guarantee, and for any supplementary plantings with the next monitoring report thereafter.
- SHA
44. DNR is to be advised of the person responsible for any seed or vegetative propagation prior to the commencement of propagation.

Exotic Plant Species not to be Planted or Placed Within or Near the Riparian Zones

- SA
- 45. No exotic plant species, other than temporary sterile cover crops, are to be planted within, or within **10 metres** of, the riparian zones on the Site, unless otherwise approved by DNR.
 - 46. Only certified weed free and contaminant free mulch is to be used on the Site. This is because mulch products imported onto the Site may contain weed seeds and viable vegetative matter and other contaminants, which could impact adversely on the vegetation, soil, water quality or ecology of the Site.

Works and Activities not to Compromise Riparian Zones and Implementation of the VMP

- SA
- 47. The riparian zones are to function as ecological systems and as such, all works, access routes, roads, recreational areas, service easements and any other non-ecologically functioning work or activity are to be located beyond the riparian zones, unless detailed on plans approved by DNR, prior to the issue of the Part 3A permit.
 - 48. Works and activities must not compromise the implementation of the VMP in any way.

Bushfire Asset Protection Zones not to Compromise Riparian Zones

- SA
- 49. Any requirements for bushfire asset protection zones are not to compromise in any way the extent, form or function of the riparian zones. Fuel reduced areas are to be located outside of riparian zones.

Council Requirements for Flooding, Drainage, Stormwater Detention and Water Quality

- SA
- 50. The development is to satisfy all requirements of Council in relation to flooding, drainage, stormwater detention and water quality, but in so doing, must not compromise in any way the form and function of any works, protected waters and riparian zones required by these conditions.
 - 51. With regard to the previous condition, there is to be no permanent or temporary excavation of, or placement of material on, protected land, or anything done that may affect the flow of protected waters, other than as shown on the DA plans and associated documentation provided to DNR, and approved by DNR, without approval in writing from DNR and NSW Fisheries.

Soil Suitability

- SA
- 52. Wherever possible, riparian zone soils should be those naturally occurring at the Site. If this will not be the case for the final landform, approval from DNR must be obtained **prior to the issue of any Part 3A permit**. If importation of soil into the riparian zone is unavoidable, such soil must be tested and certified by a NATA registered soils laboratory to be:
 - a) similar to the characteristics, and capable of forming the profile, of the naturally occurring local riparian zone soil
 - b) suitable for the establishment and on-going viability of riparian vegetation
 - c) free of any weed propagules
 - d) free of any contaminants

Documentation arising from this testing and certification must be provided to DNR prior to the placement of any soil.

- SA
- 53. Any fill material placed in a riparian zone that is inconsistent with the requirements of the previous condition must be removed and relocated beyond the riparian zone or taken off-Site and disposed of in a lawful manner.

54. The structure of the soils in the riparian zones must be suitable for the vegetative rehabilitation of the Site and are therefore not to be proof rolled or subjected to other unsuitable compaction unless otherwise approved by DNR.

Contaminated Soils

55. Any soils in the riparian zone that are contaminated are to be fully remediated to best practice standards and are to meet the criteria set out in the previous section for imported soils.

Salinity

56. All earthworks likely to affect the riparian zone must follow best practice standards to avoid any negative impacts in relation to salinity.

Soils not to be Compacted

57. The structure of the soils in the riparian zones must be suitable for the vegetative rehabilitation of the Site and are therefore not to be proof rolled or subjected to other unsuitable compaction unless otherwise approved by DNR.

Water Quality and Environmental Protection

58. The Applicant must ensure that the amount of dirty water and sediment from the Site that enters protected waters or that is exposed to the flow of protected waters, or that is likely to detrimentally affect water quality, riparian vegetation or habitat or the environment, is minimised in a manner acceptable to DNR.

Soil and Water Management

59. The Applicant must submit a Soil and Water Management Plan (SWMP) indicating how the works at the Site will achieve the outcome required in the previous condition. The SWMP must cover all works on protected land and in protected waters, and staging and maintenance requirements. The SWMP must meet the requirements outlined in the Landcom publication *Managing Urban Stormwater: Soils and Construction – Volume 1, 4th Edition (2004)*. The SWMP is to be cross-referenced to other "plans" required by these conditions, where appropriate. The SWMP is also to meet any DEC (EPA) licence requirements.
60. All works and activities at the Site are to satisfy all requirements of Council in relation to water pollution issues. Oils and greases, or any other contaminants, must not be permitted to pass to protected waters.
61. All Site drainage and sediment and erosion control works and measures as described in the SWMP, and any other pollution controls, as required by these conditions, shall be implemented prior to commencement of any other works at the Site.

Maintenance of Erosion and Sediment Control Measures

62. All erosion and sediment control measures at the Site are to be inspected and maintained as required on a weekly basis, and immediately following any rainfall events, to ensure their efficient operation. This obligation remains until the Site has been fully stabilised.

Decommissioning of all Sediment and Erosion Controls and water diversion structures

63. Decommissioning of all erosion and sediment controls and any water diversion structures must be documented in detail to the satisfaction of DNR. Decommissioning must meet the requirements outlined in the Landcom publication *Managing Urban Stormwater: Soils and Construction – Volume 1, 4th Edition (2004)*. The timeframes for decommissioning are to be cross-referenced to the implementation of any riparian zone plantings. Decommissioning of sediment and erosion controls is not to detrimentally affect the implementation of the VMP.

Costing to be Provided

64. A costing based on current industry rates is to be provided for all works and activities that are associated with the DA and that are subject to these conditions. The costing is to identify each type of work or activity and is to present the costing in a break-down format that covers each aspect of that work or activity. Costings are to cover labour, equipment and materials and maintenance and reporting where these tasks are relevant. The costing is to cover, but may not be limited to, the following works and activities:

- a) complete implementation of all stages of all works within protected waters and riparian zones, including maintenance requirements and decommissioning of any temporary works, as described in the WP
- b) construction of any stormwater outlets and their revegetation as described in the WP and VMP
- c) construction of any scour protection works and their revegetation as described in the WP and VMP
- d) implementation of the VMP, including monitoring, reporting and maintenance for a period of not less than two years after the date of final planting
- e) construction of any accessways in any riparian zones
- f) decommissioning of any temporary works in any protected waters or any riparian zone, including sediment and erosion controls, or other pollution controls, and water diversion structures.

Security Deposit

65. As a pre-condition to the granting of the Part 3A permit, the applicant for a Part 3A permit will be required to provide a security deposit. The security deposit can be in the form of either a cash bond or bank guarantee. The security deposit is to cover the cost, as approved by DNR, of completing the works and activities listed in the previous condition in accordance with the conditions of the Part 3A permit.
66. Any bank guarantee is to be provided from a bank licensed pursuant to the Banking Act 1959 (Cth) and is to be provided in favour of DNR and it must be drawn up in the format provided in **Attachment E**.
67. Any security deposit will be held until such time as the works and activities the subject of the cash bond or bank guarantee have been satisfactorily completed in accordance with the conditions of the Part 3A permit.
68. The sum held may be reduced on application to DNR, subject to the satisfactory completion of stages of works or activities required by the Part 3A permit.
69. DNR may at any time, and more than once and without notice to the Part 3A permit holder, utilise any cash provided or demand all or part of the moneys available under a bank guarantee, if in its opinion, the Part 3A permit holder has failed at any time to satisfactorily complete the works or activities in accordance with the requirements of the Part 3A permit.

Access to the Site to be Provided for the Purpose of Fully Implementing the VMP

70. Prior to the issue of any Part 3A Permit, documentation that demonstrates a right of access to the site for a sufficient time to enable the full implementation of the VMP is to be provided to DNR. Such documentation is to be legally binding upon the land and its present and future owners until such time as the implementation of the VMP is complete, and as approved by DNR.

Resolution of Inconsistencies

71. In the event that there is any inconsistency between the drawings, other documentation and the conditions herein, the interpretation that will result in the best outcome for the stabilisation of the Site and the subsequent rehabilitation and maintenance of the Site and protected land and protected waters is to prevail. Such interpretation is to be applied in consultation with, and with the approval of, DNR.

Any Part 3A permit issued to be kept current

72. Any Part 3A permit issued for works proposed under the DA, and as required by these conditions, must be kept current by payment of the appropriate fee until such time as the Site has been fully stabilised and rehabilitated, and any required maintenance satisfactorily completed and reported on, in accordance with these conditions. Any application for renewal is to be lodged at least 1 month prior to the expiry date of the Part 3A permit.

General Advice

- a) A Part 3A permit, subject to conditions, will be issued for the proposed works upon application.
- b) Any Part 3A permit granted for works the subject of the DA will be for a period of one year, and renewable thereafter on an annual basis.
- c) Prior to the issue of the Part 3A permit the applicant must provide DNR with the following:
 - A copy of Council's development consent including all conditions of approval.
 - Any approval from NSW Fisheries required by these conditions.
 - Sufficient number of sets of plans and other documentation that satisfy DNR's General Terms of Approval, and any associated recommendations, for distribution to: the proponent, Council, DNR and any other approval body likely to be affected by DNR requirements.
 - The appropriate Part 3A permit fee paid and any required security deposit.
 - Full details on land ownership of all areas affected by the proposed works, and written authorisation for the works by the relevant land owners.
- d) The rehabilitation of the Site in accordance with the Part 3A permit conditions, as determined by DNR, is the responsibility of the Part 3A permit holder and the owner or occupier of the land.
- e) The Part 3A permit holder and the owner or occupier of the land are responsible for construction of works or any excavation or removal of material undertaken by any other person or company at the Site.
- f) Any Part 3A permit granted is not transferable to any other person or company without written approval from DNR and does not allow operations at any other site.
- g) Any Part 3A permit granted does not give the holder the right to occupy any land without the consent from the owner(s), nor does it relieve the Part 3A permit holder of any obligation which may exist to also obtain permission from local government and other authorities who may have some form of control over the Site of the work and/or the activities proposed to be undertaken.
- h) A "person" for the purposes of these General Terms of Approval (GTAs), means a person, persons or organisation authorised by the recipient of the consent for the DA, or their agent, should such consent be issued, to undertake any of the requirements of these GTAs.

- i) These GTAs are issued with the proviso that operations shall be carried out on freehold land. Should operations be on Crown Land, any Part 3A permit is rendered invalid for such Crown Land and has no force or effect on the same, and the occupier of Crown Land should contact the Department of Lands for their requirements.

End of Conditions



**PENRITH
CITY COUNCIL**
Serving Our Community

Our Ref: DA10/0429
Contact: Development Services
Telephone: (02) 4732 7991

23 December 2010

Enviroguard Pty Ltd
PO Box 804
ST MARYS PRIVATE BOXES NSW 1790

Dear Sir/Madam

Development Application No. DA10/0429
Proposed: Landfill Gas Management System
Address: Lot 4 DP 1094504, 50A Quarry Road ERSKINE PARK NSW 2759

Reference is made to your Development Application for the construction of Landfill Gas Management System at the above mentioned premises.

Please find enclosed a copy of your development consent and stamped approved plans. You are advised, construction cannot commence until such time as a Construction Certificate has been issued.

If your Construction Certificate application has been submitted to Council for assessment, your development approval file has been sent directly to the appropriate assessment officer in Council's Building Approvals Unit.

If you require any additional information, please do not hesitate to contact Colin Wood directly on 4732 8083.

Yours faithfully


Maya Goldsmith
Administration Services Supervisor



PENRITH CITY COUNCIL

Serving Our Community

DETERMINATION OF DEVELOPMENT APPLICATION

P E N R I T H C I T Y C O U N C I L

DESCRIPTION OF DEVELOPMENT

Development Application No.	DA10/0429
Joint Regional Planning Panel No.	2010SYW032
Description of development	Landfill Gas Management System
Classification of development	The classification of the building(s) forming part of this consent is as follows: <ul style="list-style-type: none">• Class 10b

DETAILS OF THE APPLICANT

Name & Address	Enviroguard Pty Ltd PO Box 804 ST MARYS PRIVATE BOXES NSW 1790
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NOTES

1. Your attention is drawn to the attached conditions of consent attachment 1.
2. You should also check if this type of development requires a construction certificate in addition to this development consent.
3. It is recommended that you read the Advisory Note enclosed with this consent.

DETAILS OF THE LAND TO BE DEVELOPED

Legal Description: Lot 4 DP 1094504
Property Address: 50A Quarry Road ERSKINE PARK NSW 2759

DECISION OF CONSENT AUTHORITY (JOINT REGIONAL PLANNING PANEL)

In accordance with Section 23G and 81 (1) (a) of the Environmental Planning and Assessment Act 1979 (as amended), consent is granted subject to the conditions implementation in attachment 1.

Date from which consent operates 23 December 2010
Date the consent expires 23 December 2015
Date of Decision 2 December 2010 as determined by the Joint Regional Planning Panel (Sydney West Region)

Please note that this consent will lapse on the expiry date unless the development has commenced in that time.

OTHER APPROVALS

APPROVAL BODIES:

APPROVAL BODY NAME	DATE OF GENERAL TERMS OF APPROVAL	REF. NO.	NO. OF PAGES	RELEVANT LEGISLATION
Department of Environment and climate Change	24 September 2010	DOC10/43673	6	Protection of the Environment Operations (Clean-Air) Regulation 2010

The approval bodies listed above have provided General Terms of Approval for this development in accordance with the relevant legislation. A copy of these General Terms of Approval is provided with this development consent notice. Compliance with the relevant State Government departments' General Terms of Approval are required in conjunction with the following conditions listed in Attachment 1: Conditions of Consent issued by Penrith City Council.

REVIEW OF DETERMINATION & RIGHTS OF APPEAL

1. Where the Joint Regional Planning Panel determines a development application, there are no provisions for the decision to be reviewed under section 82A of the Environmental Planning and Assessment Act 1979 (as amended).
2. The applicant may appeal against this decision in the Land and Environment Court within 12 months of receiving this Notice of Determination.

You cannot appeal if a Commission of Inquiry was held for the subject development application, or if the development is a State Significant Development.

3. Right of Appeal if the application was for Designated Development
If a written objection was made in respect to the Application for Designated Development, the objector can appeal against the Joint Regional Planning Panel's decision to the Land and Environment Court within 28 days after the date of this Notice. The objector cannot appeal if a Commission of Inquiry was held.

If the applicant appeals against Council's decision, objector(s) will be given a notice of the appeal and the objector(s) can apply to the Land and Environment Court within 28 days after the date of this appeal notice to attend the appeal and make submissions at that appeal.

Please refer to Section 23H of the Environmental Planning and Assessment Act, 1979 (as amended) for any further regulations.

REASONS

The conditions in the attached schedule have been imposed for the following reasons:

- To ensure compliance with the terms of the relevant Planning Instrument.
- To ensure that no injury is caused to the existing and likely future amenity of the neighbourhood.
- Due to the circumstances of the case and the public interest.
- To ensure the structural integrity of the development.
- To ensure the protection of the health and safety of the occupants of the development.

POINT OF CONTACT

If you have any questions regarding this consent you should contact:

Assessing officer	Gurvinder Singh Senior Environmental Planner
Contact telephone number	(02) 4732 7539

SIGNATURE

Name	Gurvinder Singh
Signature	
For the Development Services Manager	

ATTACHMENT 1: CONDITIONS OF CONSENT

- 1 The development must be implemented substantially in accordance with the following plans stamped approved by Council, the application form and any supporting information received with the application, except as may be amended in red on the attached plans and by the following conditions:

Run Energy Plans for Run Energy CC

Drawing Title	Drawing No	Revision	Prepared by	Dated
Gasfield Design Layout	0019-AB-003	D	Run Energy	18/02/2009
Typical Well Installation	RE-LFG-001	A	Run Energy	22/02/2007
Flare General Arrangement	Q9329-01	B	GASCO	22/02/2009

- 2 The development shall not be used or occupied until an Occupation Certificate has been issued.
- 3 Exterior lighting shall be located and directed in such a manner so as not to create a nuisance to surrounding landuses. The lighting shall be the minimum level of illumination necessary for safe operation. The lighting shall be in accordance with AS 4282 "Control of the obtrusive effects of outdoor lighting" (1997).
- 4 The finishes of all structures and buildings are to be maintained at all times and any graffiti or vandalism immediately removed/repaired.
- 5 A Construction Certificate shall be obtained prior to commencement of any building works.
- 6 Dust suppression techniques to the satisfaction of Council shall be employed during site and constructions works.
- 7 That a safety and security management plan shall be prepared and implemented for the gas management system and electricity generation system.
- 8 Erosion and sediment control measures shall be installed prior to the commencement of works on site including approved clearing of site vegetation. The erosion and sediment control measures are to be maintained in accordance with the approved erosion and sediment control plan(s) for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.

(Note: To obtain a copy of the publication, you should contact Landcom on (02) 98418600).

The erosion and sediment control measures shall be certified (by way of a Compliance Certificate) as having been installed in accordance with the approved erosion and sediment control plan(s) for the development and "Managing Urban Stormwater: Soils and Construction" 2004. The Compliance Certificate shall be obtained and issued a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.

The approved sediment and erosion control measures are to be installed prior to and maintained throughout the construction phase of the development until [the

landscaping, driveway and on-site parking areas have been completed for the development. These measures shall ensure that mud and soil from vehicular movements to and from the site does not occur during the construction of the development.

- 9 All waste materials stored on-site are to be contained within a designated area such as a waste bay or bin to ensure that no waste materials are allowed to enter the stormwater system or neighbouring properties. The designated waste storage areas shall provide at least two waste bays / bins so as to allow for the separation of wastes, and are to be fully enclosed when the site is unattended.

- 10 All excavated material and other wastes generated as a result of the development are to be re-used, recycled or disposed of in accordance with the approved waste management plan.

Waste materials not specified in the approved waste management plan are to be disposed of at a lawful waste management facility. Where the disposal location or waste materials have not been identified in the waste management plan, details shall be provided to the Certifying Authority as part of the waste management documentation accompanying the Construction Certificate application.

All receipts and supporting documentation must be retained in order to verify lawful disposal of materials and are to be made available to Penrith City Council on request.

- 11 During shutdowns of the electricity generation plant the applicant is to ensure continued safe treatment and disposal of methane
- 12 All aspects of the building design shall comply with the applicable performance requirements of the Building Code of Australia so as to achieve and maintain acceptable standards of structural sufficiency, safety (including fire safety), health and amenity for the on-going benefit of the community. Compliance with the performance requirements can only be achieved by:
- a) complying with the deemed to satisfy provisions, or
 - b) formulating an alternative solution which:
 - complies with the performance requirements, or
 - is shown to be at least equivalent to the deemed to satisfy provision, or
 - c) a combination of (a) and (b).

It is the owner's responsibility to place on display, in a prominent position within the building at all times, a copy of the latest fire safety schedule and fire safety certificate/ statement for the building.

- 13 Prior to the issue of a Construction Certificate, a written clearance is to be obtained from Integral Energy stating that electrical services have been made available to the development or that arrangements have been entered into for the provision of services to the development.

In the event that a padmounted substation is necessary to service the development, Penrith City Council shall be consulted over the proposed location of the substation before the Construction Certificate for the development is issued as the location of the substation may impact on other services and building, driveway or landscape design already approved by Council.

- 14 Stamped plans, specifications, a copy of the development consent, the Construction Certificate and any other Certificates to be relied upon shall be available on site at all times during construction.

The following details are to be displayed in a maximum of 2 signs to be erected on the site:

- the name of the Principal Certifying Authority, their address and telephone number,
- the name of the person in charge of the work site and telephone number at which that person may be contacted during work hours,
- that unauthorised entry to the work site is prohibited,
- the designated waste storage area must be covered when the site is unattended, and
- all sediment and erosion control measures shall be fully maintained until completion of the construction phase.

Signage but no more than 2 signs stating the above details is to be erected:

- at the commencement of, and for the full length of the, construction works onsite, and
- in a prominent position on the work site and in a manner that can be easily read by pedestrian traffic.

All construction signage is to be removed when the Occupation Certificate has been issued for the development.

- 15 Prior to the commencement of construction works:
- a) Toilet facilities at or in the vicinity of the work site shall be provided at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. Each toilet provided must be:
- a standard flushing toilet connected to a public sewer, or
 - if that is not practicable, an accredited sewage management facility approved by the council, or
 - alternatively, any other sewage management facility approved by council.
- b) All excavations and backfilling associated with the erection or demolition of a building must be executed safely and in accordance with the appropriate professional standards. All excavations associated with the erection or demolition of a building must be properly guarded and protected to prevent them from being dangerous to life or property.

- 16 Construction works that are carried out in accordance with an approved consent that involve the use of heavy vehicles, heavy machinery and other equipment likely to cause offence to adjoining properties shall be restricted to the following hours in accordance with the NSW Environment Protection Authority Noise Control Guidelines:
- Mondays to Fridays, 7am to 6pm
 - Saturdays, 7am to 1pm (if inaudible on neighbouring residential premises), otherwise 8am to 1pm
 - No work is permitted on Sundays and Public Holidays.

Other construction works carried out inside a building/tenancy and do not involve the use of equipment that emits noise are not restricted to the construction hours stated above.

The provisions of the Protection of the Environment Operations Act, 1997 in regulating offensive noise also apply to all construction works.

- 17 Prior to the commencement of any earthworks or construction works on site, the proponent is to:
- a) employ a Principal Certifying Authority to oversee that the said works carried out on the site are in accordance with the development consent and related Construction Certificate issued for the approved development, and with the relevant provisions of the Environmental Planning and Assessment Act and accompanying Regulation, and
 - b) submit a Notice of Commencement to Penrith City Council.

The Principal Certifying Authority shall submit to Council an "Appointment of Principal Certifying Authority" in accordance with Section 81A of the Environmental Planning and Assessment Act 1979.

Information to accompany the Notice of Commencement

Two (2) days before any earthworks or construction/demolition works are to commence on site (including the clearing site vegetation), the proponent shall submit a "Notice of Commencement" to Council in accordance with Section 81A of the Environmental Planning and Assessment Act 1979.

- 18 An Occupation Certificate is to be obtained from the Principal Certifying Authority on completion of all works and prior to the occupation of the building/tenancy and commencement of the approved use. The Occupation Certificate shall not be issued if any conditions of this consent, but not the conditions relating to the operation of the development, are outstanding, and the development does not comply with the provisions of the Environmental Planning and Assessment Act and Regulation.
- Before the Occupation Certificate can be issued for the development, [Fire Safety Certificates issued for the building are to be submitted to Penrith City Council and the New South Wales Fire Brigades.
- 19 All civil works shall be designed and constructed in accordance with Penrith City Council's Design and Construction Guidelines and Construction Specification for Civil Works and applicable Australian Standards.
- 20 Detailed engineering plans and specifications relating to the work shall be submitted for consideration and approval prior to the issue of a Construction Certificate.
- 21 No fill material is to be imported to the site without the prior approval of Penrith City Council in accordance with Sydney Regional Environmental Plan No.20 (Hawkesbury-Nepean River) (No.2-1997). No recycling of material for use as fill material shall be carried out on the site without the prior approval of Council.
- 22 A noise assessment is to be obtained from a qualified acoustic consultant detailing that the plant and equipment associated with the development have been selected, designed and installed in such a manner that ensures compliance with the provisions of the EPA's Industrial Noise Policy. In doing so the certificate is to undertake the relevant background noise assessments to be used as the bases for the intrusive noise criteria. The assessment is to be provided and approved by Council prior to the operation of the development.
- 23 A plan detailing spill prevention, contingency and emergency procedures for the development shall be submitted for approval prior to the commencement of operation. The approved procedures plan shall be implemented in the event of a spill or emergency

- 24 The air quality impacts assessment and mitigation reports required by the NSW Department of Environment Climate Change and Water are to be provided to Council prior to the detailed design and construction of the proposed landfill gas management system.

Prior to the issue of a construction certificate evidence that satisfactory arrangements have been made with Integral Energy for the connection to the grid and the acceptance of the generated power are to be provided.

Gurvinder Singh

Signature



For the Development Services Manager

Our reference : DOC10/43673

The General Manager
Penrith City Council
PO Box 60
PENRITH NSW 2751

Attn: Mr Gurvinder Singh

ELECTRONIC, STANDARD POST & FACSIMILE

Dear Mr Singh

Re: Integrated Development Application (DA307/2007 & IMS 2671441) – Proposed landfill gas management system – Lot 4 DP 1094504 (No. 50A) Quarry Road Erskine Park – Erskine Park Landfill

I refer to Penrith City Council's letter regarding development application (DA10/0429 & IMS 2671441) for the installation of landfill gas management system at 50A Quarry Road Erskine Park ("the Premises") and supporting documentation "Statement of Environmental Effects for the Landfill Gas Management System at the Erskine Park Landfill Erskine Park, NSW" ("SEE") prepared by Enviroguard Pty Ltd, received by the Department of Environment, Climate Change and Water ("DECCW") on 31 August 2010. Enviroguard Pty Ltd hold environment protection licence no. 4865 ("the Licence") in respect to the Premises.

Please note that, although the Environment Protection Authority ("EPA") is now a part of DECCW, certain statutory functions and powers continue to be exercised in the name of the EPA.

The EPA has reviewed the SEE provided with the development application and has determined that the proposed activity would require an environment protection licence. The proponent will need to make a separate application to DECCW to vary the Licence once development consent has been obtained.

The General Terms of Approval for this proposal are provided at Attachment A. Should Penrith City Council grant development consent for the proposal, consideration should be given to including these conditions within the development consent. Attachment B are the DECCW conditions that would be added to the Licence.

These general terms of approval relate to the development as proposed in the documents and information currently provided to the EPA.


The Department of Environment and Conservation NSW is now known as
the Department of Environment and Climate Change NSW

PO Box A290 Sydney South NSW 1232
59-61 Goulburn St Sydney NSW 2000
Tel: (02) 9995 5000 Fax: (02) 9995 5999
TTY (02) 9211 4723
ABN 30 841 387 271
www.environment.nsw.gov.au

Department of **Environment and Climate Change** NSW

If you have any questions relating to the above, or related to Attachment A or B, please contact Belinda Lake on 9995 5753

Yours sincerely

 24/9/10

JULIE CURREY
A/ Unit Head - Waste Operations
Department of Environment, Climate Change and Water NSW

Attachment A

General Terms of Approval – Environment Protection Authority – Proposed landfill gas management system – Lot 4 DP 1094504 (No. 50A) Quarry Road Erskine Park – Erskine Park Landfill - September 2010

1. Work to be conducted prior to construction of the proposed landfill gas management system

- 1.1 Prior to detailed design and construction of the proposed landfill gas management system, the proponent must submit an **air quality impact assessment and mitigation report** to the Manager Waste Operations, DECCW, PO Box A290, Sydney South 1232. The report must include the following information:
- a. outlines the emission performance of all pollutants of the proposed engines;
 - b. outlines the air quality impact of the power generation facility; and
 - c. demonstrates compliance with the Protection of the Environment Operations (Clean-Air) Regulation 2010; and
 - d. the following information set out in condition 2 below.
- 1.2 Prior to the commencement of construction of the proposed landfill gas management system, the proponent must submit a detailed report based on the final detailed design to the Manager Waste Operations, DECCW, PO Box A290, Sydney South 1232. The final detailed design must:
- a. comply with requirement outlined in the Protection of the Environment Operations (Clean-Air) Regulation 2010.

2. Air Quality

- 2.1 The **air quality impact assessment and mitigation report** must be carried out strictly in accordance with the methodologies set out in the following documents:
- a. DEC, 2005, Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW; and
 - b. DEC, 2005, Approved Methods for the Sampling and Analysis of Air Pollutants in NSW, July 2001.
- 2.2 The **air quality impact assessment report** must address the following:
- a. manufacturers performance specification for the proposed reciprocating engines;
 - b. compliance of the reciprocating engines with the requirements of the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
 - c. manufacturers performance specification for any proposed pollution control equipment if the proposed reciprocating engines will not comply with the requirements of the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
 - d. a dispersion modelling study to predict ground-level concentrations of air pollutants. This must be conducted strictly in accordance with the methods detailed in 2.1 (a) and using the data collected in 2.2 (a) (b) and (c); and
 - e. the results of the air quality impact assessment study must be compared against the appropriate impact assessment criterion detailed in 2 (a).
- 2.3 The **air quality impact mitigation report** must address the following:
- a. Using the results of 2.2 (e), if proponent cannot meet the relevant impact assessment criteria, a technical review of all practicable options for mitigating or controlling the

- emission concentration and rate of air pollutants must be carried out. The potential reduction in the emission concentration and rate and air quality impacts associated with each mitigation option must be quantitatively evaluated.
- b. A cost/benefit analysis of a range of air quality mitigation options must be carried out.
 - c. Using the results of 2.2, 2.3 (a) and (b), emission concentration limits for the proposed reciprocating engines must be identified for the most cost effective air quality impact mitigation option to ensure that the relevant impact assessment criteria detailed in 2.2 (a) can be met.

3. General

- 3.1 The proponent must not commence construction of the facility until it obtains written advice from the DECCW that all of the requirements of condition 2 have been met to the satisfaction of the DECCW.
- 3.2 The DECCW will set licence conditions, including air pollutant emission limits, consistent with the facility achieving proper and efficient operation and best-practice emissions performance for principal air toxic emissions and solid particles based on the reports required by condition 2.
- 3.3 The Proponent shall carry out the development in accordance with the Development Application and Environmental Impact Statement and any further information submitted to the DECCW during the development assessment process.
- 3.4 The Proponent shall ensure that the plant and equipment used on site, or in connection with the project, is:
 - a. maintained in a proper and efficient condition; and
 - b. operated in a proper and efficient manner.
- 3.5 The Proponent shall store all chemicals, fuels and oils used on site in an appropriately designed impervious bunded area that contains 110 percent of the largest container contained within the bund. These bunds shall be designed and installed in accordance with the requirements of all relevant Australian standards, and/or DECCW's Environment Protection Manual *Technical Bulletin Bunding and Spill Management*.
- 3.6 The proponent shall prepare a Fire Response Plan for the site prior to operations commencing and the plan being implemented. The Fire Response Plan should include, but need not be limited to the following:
 - 3.6.1 Implement suitable measures to minimise the risk of fire on site;
 - 3.6.2 Extinguish any fires on site promptly; and
 - 3.6.3 Maintain adequate fire-fighting capacity on site.

4. Environmental Management during Construction

- 4.1.1 The Proponent must ensure a Sediment and Erosion Control Plan for the proposed landfill gas management plant is prepared to minimise sediment laden runoff from the plant site for the construction phase of the development.

ATTACHMENT B

PROPOSED CONDITIONS FOR LANDFILL GAS MG SYSTEM ON ENVIRONMENTAL PROTECTION LICENCE

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA Identification No.	Type of monitoring point	Type of discharge point	Description of location
X	Air emissions monitoring	Discharge to air	Enclosed Ground Level Flare as identified in an appropriate site diagram provided to the DEC

LY Combustion Parameters

LY.1 For each monitoring/discharge point or utilisation area specified in Table L12.1 below (by point number), the parameter must be equal to or greater than the limit specified for that parameter in the table:

POINT X

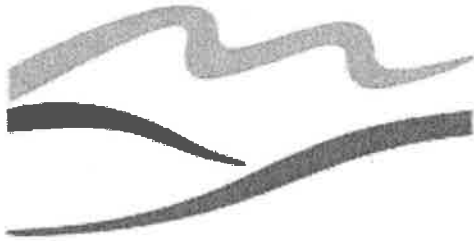
Parameter	Units of measure	Lower Limit	Averaging Period	
Residence Time	Seconds	0.6	Hourly Average	Rolling
Temperature	°C	760	Hourly Average	Rolling

MZ Requirement to monitor combustion parameters

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

POINT X

Parameter	Units of measure	Frequency	Sampling method
Volumetric flowrate	cubic metres per second	Continuous	CEM-6
Temperature	°C	Continuous	TM-2



PENRITH CITY COUNCIL

Serving Our Community

DETERMINATION OF DEVELOPMENT APPLICATION

P E N R I T H C I T Y C O U N C I L

DESCRIPTION OF DEVELOPMENT

Development Application No.	DA11/0063
Joint Regional Planning Panel No.	JRPP No. 2011SYW032
Description of development	Leachate Treatment Plant
Classification of development	The classification of the building(s) forming part of this consent is as follows: <ul style="list-style-type: none">▪ Class 8

DETAILS OF THE APPLICANT

Name & Address	Enviroguard Pty Ltd PO Box 804 ST MARYS PRIVATE BOXES NSW 1790
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NOTES

1. Your attention is drawn to the attached conditions of consent attachment 1.
2. You should also check if this type of development requires a construction certificate in addition to this development consent.
3. It is recommended that you read the Advisory Note enclosed with this consent.

DETAILS OF THE LAND TO BE DEVELOPED

Legal Description: Lot 4 DP 1094504
Property Address: 50A Quarry Road ERSKINE PARK NSW 2759

DECISION OF CONSENT AUTHORITY (JOINT REGIONAL PLANNING PANEL)

In accordance with Section 23G and 81(1) (a) of the Environmental Planning and Assessment Act 1979 (as amended), consent is granted subject to the conditions implementation in attachment 1.

Date from which consent operates 21 June 2011
Date the consent expires 21 June 2016
Date of Decision 8 June 2011 as determined by the Joint Regional Planning Panel (Sydney West Region)

Please note that this consent will lapse on the expiry date unless the development has commenced in that time.

OTHER APPROVALS

APPROVAL BODIES:

APPROVAL BODY NAME	DATE OF GENERAL TERMS OF APPROVAL	REF. NO.	NO. OF PAGES	RELEVANT LEGISLATION
Department of Environment Climate Change and Water	30 March 2011	DOC11/1612 6	2	Protection of the Environment Operations Act

The approval bodies listed above have provided General Terms of Approval for this development in accordance with the relevant legislation. A copy of these General Terms of Approval is provided with this development consent notice. Compliance with the relevant State Government departments' General Terms of Approval are required in conjunction with the following conditions listed in Attachment 1: Conditions of Consent issued by Penrith City Council.

REVIEW OF DETERMINATION & RIGHTS OF APPEAL

1. Where the Joint Regional Planning Panel determines a development application, there are no provisions for the decision to be reviewed under section 82A of the Environmental Planning and Assessment Act 1979 (as amended).
2. The applicant may appeal against this decision in the Land and Environment Court within 12 months of receiving this Notice of Determination.

You cannot appeal if a Commission of Inquiry was held for the subject development application, or if the development is a State Significant Development.

3. Right of Appeal if the application was for Designated Development

If a written objection was made in respect to the Application for Designated Development, the objector can appeal against the Joint Regional Planning Panel's decision to the Land and Environment Court within 28 days after the date of this Notice. The objector cannot appeal if a Commission of Inquiry was held.

If the applicant appeals against Council's decision, objector(s) will be given a notice of the appeal and the objector(s) can apply to the Land and Environment Court within 28 days after the date of this appeal notice to attend the appeal and make submissions at that appeal.

Please refer to Section 23H of the Environmental Planning and Assessment Act, 1979 (as amended) for any further regulations.

REASONS

The conditions in the attached schedule have been imposed for the following reasons:

- To ensure compliance with the terms of the relevant Planning Instrument.
- To ensure that no injury is caused to the existing and likely future amenity of the neighbourhood.
- Due to the circumstances of the case and the public interest.
- To ensure the structural integrity of the development.
- To ensure the protection of the health and safety of the occupants of the development.

POINT OF CONTACT

If you have any questions regarding this consent you should contact:

Assessing officer	Jonathon Wood Environmental Planner
Contact telephone number	(02) 4732 7774

SIGNATURE

Name	Jonathon Wood
Signature	

For the Development Services Manager

ATTACHMENT 1: CONDITIONS OF CONSENT

GENERAL

1.2 The development must be implemented substantially in accordance with the following plans/documents:

- Statement of Environmental Effects prepared by Enviroguard Pty Ltd and dated October 2010;
- Plan set entitled 'Erskine Park Leachate Treatment Plant' numbered:
 - 10265-GA-3.00 Rev 1, drawn by Henry and Hymas and dated August 2010;
 - 10265-GA-3.01 Rev 1, drawn by Henry and Hymas and dated August 2010;
 - 10265-DA-C100 Rev 1, drawn by Henry and Hymas and dated September 2010;
 - 10265-DA-C200 Rev 1, drawn by Henry and Hymas and dated September 2010;
 - 10265-DA-C101 Rev 1, drawn by Henry and Hymas and dated September 2010;
 - 10265-DA-SE01 Rev 1, drawn by Henry and Hymas and dated September 2010;
 - 10265-DA-SE02 Rev 1, drawn by Henry and Hymas and dated September 2010;
 - 10265-GA-2.00 Rev 1, drawn by Henry and Hymas and dated August 2010;
 - 10265-GA-1.00 Rev 2, drawn by Henry and Hymas and dated August 2010;
 - 10265-GA-2.01 Rev 1, drawn by Henry and Hymas and dated August 2010;

and any supporting information received with the application, except as may be amended in red on the attached plans and by the following conditions.

1.3 The development shall not be used or occupied until an Occupation Certificate has been issued. The final Occupation Certificate shall not be issued until all conditions of consent, except those relating to ongoing operational matters, have been completed.

1.4 Works on the development shall not commence until:

- A Construction Certificate has been issued,
- A Principal Certifying Authority has been appointed for the project, and
- Any other matters prescribed in the development consent for the subdivision and the Environmental Planning and Assessment Act and Regulation have been complied with.

A Notice of Commencement is to be submitted to Penrith City Council two (2) days prior to commencement of engineering works or clearing associated with the subdivision.

1.5 Prior to the issue of a Construction Certificate a schedule of external finishes is to be submitted to the Principal Certifying Authority. In this regard the external finishes are to be dull and non-reflective and are to adopt earthy tones that will blend the structures into the background as viewed from Erskine Park Road.

1.6 Any fencing that can be viewed from Erskine Park Road is to be powder coated (or similarly treated) black.

- 1.7 The sludge generated in the treatment process is to be disposed of at a facility that is lawfully able to accept the waste. Documentation is to be obtained and retained as evidence of the disposal location.
- 1.8 The development is not to cause offensive odour and is to comply with the relevant conditions specified in the Environmental Protection License issued for the landfill operations. In the event that odour is identified by ongoing monitoring (or other means) as an issue requiring rectification, measures are to be put in place to mitigate odour.
- 1.9 Final bunding design is to comply with the provisions of AS3600 and is to incorporate the matters listed within the Office of Environment and Heritage's document entitled 'Storing and Handling Liquids', where relevant.
- 1.10 A plan detailing spill prevention, contingency and emergency clean-up procedures for the development shall be submitted for approval **prior to construction works commencing**. The approved procedures plan shall be implemented in the event of a spill or emergency.
- 1.11 Noise levels from the operation of the treatment plant are not to exceed the relevant noise criteria detailed in the Environmental Noise Assessment prepared by Renzo Tonin and Associates, dated 18 May 2011, and those specified in the Environmental Protection License regulating the landfill operations.
- 1.12 Stamped plans, specifications, a copy of the development consent, the Construction Certificate and any other Certificates to be relied upon shall be available on site at all times during construction.

The following details are to be displayed in a maximum of 2 signs to be erected on the site:

- the name of the Principal Certifying Authority, their address and telephone number,
- the name of the person in charge of the work site and telephone number at which that person may be contacted during work hours,
- that unauthorised entry to the work site is prohibited,
- the designated waste storage area must be covered when the site is unattended, and
- all sediment and erosion control measures shall be fully maintained until completion of the construction phase.

Signage but no more than 2 signs stating the above details is to be erected:

- at the commencement of, and for the full length of the, construction works onsite, and
- in a prominent position on the work site and in a manner that can be easily read by pedestrian traffic.

All construction signage is to be removed **when the Occupation Certificate has been issued for the development**.

1.13 Construction works that are carried out in accordance with an approved consent that involve the use of heavy vehicles, heavy machinery and other equipment likely to cause offence to adjoining properties shall be restricted to the following hours in accordance with the NSW Environment Protection Authority Noise Control Guidelines:

- Mondays to Fridays, 7am to 6pm
- Saturdays, 7am to 1pm (if inaudible on neighbouring residential premises), otherwise 8am to 1pm
- No work is permitted on Sundays and Public Holidays.

Other construction works that do not involve the use of equipment that emits offensive noise are not restricted to the construction hours stated above.

The provisions of the Protection of the Environment Operations Act, 1997 in regulating offensive noise also apply to all construction works.

1.14 Any Construction Certificate issued by the Principal Certifying Authority or Certifying Authority shall incorporate plans and details for erosion and sediment control in accordance with the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.

Prior to the commencement of works on site, including approved clearing of site vegetation, erosion and sediment control measures shall be installed. The erosion and sediment control measures are to be installed in accordance with the approved erosion and sediment control plan(s) for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.

Erosion and sediment control measures shall remain in place and be maintained until all disturbed areas have been rehabilitated and stabilised.

1.15 All land that has been disturbed by earthworks is to be spraygrassed or similarly treated to establish a grass cover.

1.16 No fill material shall be imported to the site until such time as a Validation Certificate (with a copy of any report forming the basis for the validation) for the fill material has been submitted to Council. The Validation Certificate shall:

- state the legal property description of the fill material source site,
- be prepared by an appropriately qualified person (as defined in Penrith Contaminated Land Development Control Plan) with consideration of all relevant guidelines (e.g. EPA, ANZECC, NH&MRC), standards, planning instruments and legislation,
- clearly indicate the legal property description of the fill material source site,
- provide details of the volume of fill material to be used in the filling operations,
- provide a classification of the fill material to be imported to the site in accordance with the Environment Protection Authority's "Environmental Guidelines: Assessment, Classification & Management of Non-Liquid Wastes" 1997, and
- (based on the fill classification) determine whether the fill material is suitable for its intended purpose and land use and whether the fill material will or will not pose an unacceptable risk to human health or the environment.

- 1.17 Dust suppression techniques are to be employed during construction to reduce any potential nuisances to surrounding properties.
- 1.18 Mud and soil from vehicular movements to and from the site must not be deposited on the road.
- 1.19 Prior to the issue of a Construction Certificate, the following service authority clearances shall be obtained and submitted to the Principal Certifying Authority:
- Section 73 Compliance Certificate under the Sydney Water Act 1994, and
 - Notification of Arrangement from Integral Energy; and
- 1.20 All roadworks, drainage works and dedications, required to effect the consented development shall be undertaken at no cost to Penrith City Council.
- 1.21 All civil works shall be designed and constructed in accordance with Penrith City Council's Design and Construction Guidelines and Construction Specifications for Civil Works and applicable Australian Standards.
- 1.22 On-site detention shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by Henry and Hymas, reference number 10265_DA_C100- C200, revision 1, dated 8 October 2010.

The proposed development and stormwater drainage system shall be designed to ensure that stormwater runoff from upstream properties is conveyed through the site without adverse impact on the development or adjoining properties.

Engineering plans and supporting calculations for the on-site detention system are to be prepared by a suitably qualified person and shall accompany the application for a Construction Certificate.

Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the on-site detention system has been designed in accordance with Penrith City Council's Design Guidelines and Construction Specification for Civil Works.

- 1.23 Prior to the issue of a Construction Certificate the stormwater plan prepared by Henry and Hymas drawing number 10265-DA-C100 Rev.01 dated 8/10/10 shall be amended with regards to the Site Analysis information on the plan to state: "Proposed Controlled (PSD) 5 year ARI, tc=25min. Q= 39 l/s".
- 1.24 Stormwater runoff from parking, uncovered paved areas shall be directed to a stormwater pre-treatment system. The treatment devices shall be designed to remove expected pollutant loadings in accordance with the Department of Environment, Climate Change & Water's 'Managing Urban Stormwater – Environmental Targets/ Treatment Techniques– October 2007' publications.

Any Construction Certificate issued by the Principal Certifying Authority or Certifying Authority shall incorporate:

- Specification & installation details of the stormwater pre-treatment system

- The approval of an operation and maintenance manual/ schedule for the proposed device

A copy of the approved operation and maintenance manual/ schedule shall be submitted to Penrith City Council with notification of the Construction Certificate issue.

1.25 **Prior to the issue of a Construction Certificate** the Certifying Authority shall ensure that vehicular access, circulation, manoeuvring, pedestrian and parking areas associated with the subject development are in accordance with AS 2890.1, AS2890.2, AS2890.6 and Penrith City Council's Development Control Plan.

1.26 Prior to the issue of an Occupation Certificate the Principal Certifying Authority shall ensure that the:

- a) On-site detention system/s
- b) Stormwater pre-treatment system/s
- c) Overland flowpath works
- d) Flood control works

- Have been satisfactorily completed in accordance with the approved Construction Certificate and the requirements of this consent.
- Have met the design intent with regard to any construction variations to the approved design.
- Any remedial works required to be undertaken have been satisfactorily completed.

Details of the approved and constructed system/s shall be provided as part of the works-as-executed drawings.

1.27 Prior to the issue of an Occupation Certificate a restriction as to user and positive covenant relating to the:

- a) On-site detention system/s
- b) Stormwater pre-treatment system/s
- c) Overland flowpath works
- d) Flood control works

Shall be registered on the title of the property. The restriction as to user and positive covenant shall be in Penrith City Council's standard wording as detailed in Penrith City Council's Design and Construction Guidelines and Construction Specification for Civil Works.

1.28 **Prior to the commencement of any earthworks, construction or demolition works on site**, the proponent is to:

- a) employ a Principal Certifying Authority to oversee that the said works carried out on the site are in accordance with the development consent and related Construction Certificate issued for the approved development, and with the relevant provisions of the Environmental Planning and Assessment Act and accompanying Regulation, and

b) submit a Notice of Commencement to Penrith City Council.

The Principal Certifying Authority shall submit to Council an "Appointment of Principal Certifying Authority" in accordance with Section 81A of the Environmental Planning and Assessment Act 1979.

Information to accompany the Notice of Commencement

Two (2) days before any earthworks or construction/demolition works are to commence on site (including the clearing site vegetation), the proponent shall submit a "Notice of Commencement" to Council in accordance with Section 81A of the Environmental Planning and Assessment Act 1979.

Jonathon Wood

Signature

A handwritten signature in cursive script that reads "Wood".

For the Development Services Manager



**Environment,
Climate Change
& Water**

Our reference: DOC11/16126
Contact: Deanne Pitts
(02) 9995 5739

Mr Jonathon Wood
Environmental Planner
Penrith City Council
PO Box 60
PENRITH NSW 2751



EMAIL & STANDARD POST

Dear Mr Wood

**Integrated Development Application – Leachate Treatment Plant – Erskine Park Landfill
Lot 4 DP 1094504, 50 Quarry Rd Erskine Park NSW – DA11/0063**

I refer to your letter dated 28 February 2011 and received by the Department of Environment, Climate Change and Water ("DECCW") on 4 March 2011 requesting general terms of approval in relation to the attached development application DA11/0063 lodged by Enviroguard Pty Ltd for the construction of a leachate treatment plant ("LTP") at Erskine Park Landfill, Quarry Rd, Erskine Park ("the Premises").

DECCW has reviewed the DA and the attached Statement of Environmental Effects ("SEE") dated January 2011 prepared by Transpacific Cleanaway trading as Enviroguard Pty Ltd. Accordingly, DECCW provides the following general terms of approval and comments to assist Penrith City Council in determining the application:

Odour

The SEE states that the LTP will, "include processes and control systems to ensure that the leachate is treated and minimise the emission of odours". Given the potential risk for odour generation from the LTP, DECCW suggests that the Applicant be required to provide a detailed description of the processes and controls that will minimise the emission of odours.

The SEE also states that sludge will be removed daily from the LTP. DECCW is concerned about the potential risk of fugitive odour emissions during this process. DECCW suggests that the Applicant be required to provide additional information on how fugitive odours will be managed from the LTP, particularly relating to the removal and transport of sludge.

The SEE states that the LTP will undergo regular routine maintenance, as well as major maintenance activities for longer intervals as needed. DECCW is concerned about the potential risk of odour emissions during maintenance activities, particularly if this includes a major equipment overhaul. DECCW suggests that the Applicant be required to provide additional information on how odours will be managed from the LTP during routine and major maintenance activities.

Noise

DECCW notes that the environment protection licence no. 4865 issued to Enviroguard Pty Ltd for scheduled activities at the Premises currently contains Noise Limits as listed under conditions L6.1,

PO Box A290 Sydney South NSW 1232
59-61 Goulburn St Sydney NSW 2000
Tel: (02) 9995 5000 Fax: (02) 9995 5999
TTY: (02) 9211 4725
ASN 30 841 387 271
www.environment.nsw.gov.au

L6.2 and L6.3. DECCW advises that the Applicant should be required to comply with these noise limits during construction and operation of the LTP. DECCW will regulate noise issues through the licence. The Noise Limits currently on the environment protection licence are below:

Condition 6.1

Noise generated from the premises must not exceed the noise limits presented in the table below.

Location	Day
	$L_{A_{eq}}$ (15 minutes)
Mamre Road Residence	45
Erskine Park Road Residence	54

As identified in section 7.8 of volume 1 of the document titled "Environmental Impact Statement – Enviroguard – Erskine Park Landfill – Revised Final Profile – National Environmental Consulting Services" and dated 17 October 2005.

Note: the noise limits represent the noise contribution from the landfill site for the modifications to the final profile.

Condition 6.2

Noise from the premises is to be measured at the most affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the most-affected point within 30 metres of the residence to determine compliance with condition L6.1.

Condition 6.3

The noise emission limits identified in condition L6.1 apply under meteorological conditions of:

- Wind speed up to 3m/s at 10 metres above ground level; or
- Temperature inversion conditions of up to 3°C/100m and wind speed up to 2m/s at 10 metres above the ground.

Other

DECCW suggests that the Applicant be required to provide additional information on the following:

- The quantity of sludge that will be removed from the LTP on a daily basis.
- The proposed disposal location (name of company, address and environment protection licence number if applicable) for the LTP sludge.

The SEE refers to Australian Standard AS3600: Concrete Structures to determine requirements for bunding associated with the LTP. DECCW suggests that the Applicant also refer to DECCW's guidelines, "Storing and Handling Liquids", which contains additional information about DECCW's bunding requirements. The Guidelines can be found on DECCW's website at:

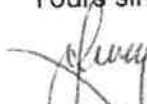
<http://www.environment.nsw.gov.au/resources/sustainbus/2007210liquidsManual.pdf>

DECCW advises that the cheque for \$250 provided with the integrated development application has been processed and a receipt will be provided to the Applicant in due course.

DECCW requests that Penrith City Council forward a copy of the development consent when it has been finalised to Manager Waste Operations, PO Box A290, Sydney South NSW 1232.

If you have any questions in relation to this letter, please do not hesitate to contact Deanne Pitts on (02) 9995 5739.

Yours sincerely

 30/3/11

JULIE CURREY
Unit Head Waste Operations
Environment Protection and Regulation



10th September 2009

Thomas Wetherill
Principal Business Development Manager
Transpacific Industries Group LTD
126 Barry Road
Campbellfield
Vic 3061

Dear Thomas

Staged Installation of LFG Collection System, Flare & Gas Field Management – Erskine Park Landfill Site, Erskine Park NSW

Further to our recent meeting at Victory Road, please find enclosed a proposal for the above services.

Please contact me at (03) 9543 4344 or email russellclarke@runenergy.com with any queries.

We look forward to hearing from you.

Yours sincerely

A handwritten signature in black ink, appearing to read "R Clarke".

Russell Clarke
General Manager – Gas & Construction Services

CONSTRUCTION CERTIFICATE No. J110422

FOR

TRANSPACIFIC CLEARAWAY
TRADING AS ENVIROGUARD PTY LTD

PREMISES

50A QUARRY ROAD, ERSKINE PARK

Date: 3 November 2011

Ref: J110422

CONSTRUCTION CERTIFICATE No. J110422

CONSTRUCTION CERTIFICATE

Issued under the Environmental Planning and Assessment Act 1979
Section 109C(1), 81A(2) AND 81a(4)

Property to which this certificate relates

Address 50a Quarry Road ERSKINEVILLE NSW 2759
Lot No 4 DP 1094504

Applicant

Name Transpacific Clearaway
Trading As Enviroguard Pty Ltd
Address PO Box 804 ST MARYS NSW 1790

Description of Development

This certificate relates to the construction of leachate treatment plant.

Consent details

Development Consent No DA11/0063 Date of determination 30 March 2011 Consent authority Penrith Council

Building classification 10a & 10b

Certification

I *Alex Mullin* certify that work completed in accordance with the documentation contained in the annexures (with such modifications verified by me as may be shown on the documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation 2000 as referred to in Section 81A(5) of the Environmental Planning & Assessment Act 1979.

Certificate Number J110422

Date of endorsement 3 November 2011

Signature
Accredited Certifier
Accredited Body
Registration No



Alex Mullin
Building Professionals Board
BPB1657

DETERMINATION OF DEVELOPMENT APPLICATION

DESCRIPTION OF DEVELOPMENT

DA No.	DA05/1740.01
Description of development	Modification to Approved Final Landform at the Erskine Park Cleanaway site
Classification of development	The classification of the building(s) forming part of this consent is as follows:

DETAILS OF THE APPLICANT

Name & Address	GHD Pty Ltd Level 15, 133-145 Castlereagh Street SYDNEY NSW 2000
----------------	--

NOTES

1. Your attention is drawn to the attached conditions of consent in attachment 1.
2. You should also check if the modification of the development requires a Construction Certificate to reflect the modification to the development consent subsequently issued by Council.
3. It is recommended that you read the Advisory Note enclosed with this consent.

DETAILS OF THE LAND TO BE DEVELOPED

Legal Description: Lot 4 DP 1094504
Property Address: Lot 4 Off Quarry Road ERSKINE PARK NSW 2759

DECISION OF CONSENT AUTHORITY

In accordance with Sections 4.16 and 4.55 of the Environmental Planning and Assessment Act 1979, consent is granted subject to the conditions listed in attachment 1.

Date from which consent operates 25/05/2006
Date the consent expires 25/05/2008
Date of this decision 25/05/2006 as amended on 08/08/2019 under Section 4.55 of the Environmental Planning and Assessment Act.

Please note that this consent will lapse on the expiry date unless the development has commenced in that time.

OTHER APPROVALS

LOCAL GOVERNMENT ACT 1993 APPROVAL

1. The approval to operate the On-Site Sewage Management System (also known as septic tanks) has not been issued with this consent. The On-Site Sewage Management System is not to be used until:

- all the conditions attached to this development consent relating to the installation of the On-Site Sewage Management System has been complied with, and
- the installation of the On-Site Sewage Management System has been completed to Penrith City Council's satisfaction and has issued a satisfactory inspection report for the same, and
- an approval to operate the On-Site Sewage Management System has been issued by Council.

{Note: With regard to On Site Sewage Management System (system), Council is the:

- certifying authority for the installation of system, and
- consent authority for the operation of the system.}

OTHER APPROVALS

APPROVAL BODIES:

APPROVAL BODY NAME	DATE OF GENERAL TERMS OF APPROVAL	REF. NO.	NO. OF PAGES	RELEVANT LEGISLATION
Department of Environment & Conservation	10 February 2006, as amended on 17 February 2006	Notice No. 1053732	7	Protection of the Environment Operations Act 1997
Department of Natural Resources	1 December 2005	ERM 05/06309	11	Rivers and Foreshores Improvement Act 1948

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The approval bodies listed above have provided General Terms of Approval for this development in accordance with the relevant legislation. A copy of these General Terms of Approval is provided with this development consent notice. Compliance with the relevant State Government departments' General Terms of Approval are required in conjunction with the following conditions listed in Attachment 1: Conditions of Consent issued by Penrith City Council.

RIGHT OF APPEAL

1. The applicant can appeal against this decision in the Land and Environment Court within six (6) months of receiving this Notice of Determination.

You cannot appeal if a Commission of Inquiry was held for the subject development application, or if the development is a State Significant Development.

2. If the application was for designated development and a written objection was made in respect to the application, the objector can appeal against this decision to the Land and Environment Court within 28 days after the date of this notice. The objector cannot appeal if a Commission of Inquiry was held.
3. If the applicant appeals against this decision, objector(s) will be given a notice of the appeal and the objector(s) can apply to the Land and Environment Court within 28 days after the date of this appeal notice to attend the appeal and make submissions at that appeal.

REASONS

The conditions in the attached schedule have been imposed for the following reasons:

- To ensure compliance with the terms of the relevant Planning Instrument.
- To ensure that no injury is caused to the existing and likely future amenity of the neighbourhood.
- Due to the circumstances of the case and the public interest.
- To ensure that adequate road and drainage works are provided.
- To ensure that satisfactory arrangements are made to satisfy the increased demand for public recreation facilities.
- To ensure that access, parking and loading arrangements will be made to satisfy the demands created by the development.
- To ensure the structural integrity of the development.
- To ensure the protection of the health and safety of the occupants of the development.

POINT OF CONTACT

If you have any questions regarding this consent you should contact:

Assessing officer	Wendy Connell Senior Environmental Planner
Contact telephone number	(02) 4732 7908

SIGNATURE

Name	Wendy Connell
Signature	Senior Environmental Planner

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ATTACHMENT 1: CONDITIONS OF CONSENT

GENERAL

1. The development must be implemented substantially in accordance with the Environmental Impact Statement Volumes 1 - 4, undertaken by NECS Pty Ltd and dated 17 October 2005, the General Terms of Approval as provided by the Department of Natural Resources, the General Terms of Approval as provided by the Department of Environment and Conservation, the application form and any supporting information received with the application, except as may be amended in red on the attached plans and by the following conditions.

And as amended on 8th August 2019 under Section 4.55 of the Environmental Planning and Assessment Act.

Plan/Document Name	Reference No.	By	Dated
Design Surface	Figure 01 22-19620 Revision A	GHD	March 2019
Cross Sections	Figure 02 22-19620 Revision A	GHD	March 2019
Statement of Environmental Effects	-	GHD	22 March 2019

2. A copy of the approval issued by the Department of Natural Resources and the Department of Environment and Conservation shall be submitted to the Principal Certifying Authority, **before the Construction Certificate can be issued** for the same development. A copy of the approvals shall be submitted to Penrith City Council with the copy of the Construction Certificate, if Council is not the Principal Certifying Authority.
3. The development shall comply with those conditions set down by the Department of Environment and Conservation and the Department of Natural Resources.
4. A Landscape Plan, drawn by an appropriately qualified person and strictly in accordance with Council's 'Landscape Development Control Plan' and the 'Biodiversity Restoration Plan for Erskine Park Release Area', prepared by Greening Australia, shall be submitted to Council for written approval of the Manager Development Assessment, within 12 months from the date of this consent.

At the time of approval of the Landscape Plan, a monetary bond shall be lodged with Penrith City Council for an amount equivalent to the cost of implementing the approved Landscape Plan and maintenance for a period of 12 months after planting.

5. Those areas used, or previously used, for the storage of concrete and bitumen shall be remediated strictly in accordance with State Environmental Policy No.55 - Remediation of Land.
6. An amended Site Rehabilitation and Environmental Management Plan (the Plan) is to be submitted to Penrith City Council and prepared to Council's satisfaction prior to the commencement of the development. The Plan is to be consistent with the EPA/DEC approved Landfill Environmental Management Plan, is to address the environmental aspects of the development and is to include details on the environmental management

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practices and controls to be implemented on site. The Plan must be prepared by a suitably qualified person/s, in consultation with the relevant authorities and agencies (e.g. Department of Environment and Conservation and the Department of Natural Resources) and is to address but is not limited to the following:

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- Water quality
- Wastewater management
- Stormwater management and drainage
- Noise control
- Waste management including solid and liquid waste
- Vehicle movements
- Chemical storage, transport, spill contingency and response
- Erosion and sediment control
- Air quality including odour and dust control
- Environmental monitoring
- Site rehabilitation

All activities on the site are to be implemented and managed in accordance with the Plan. The Plan is to incorporate a review process that involves, the consultation of Penrith City Council and other relevant authorities to ensure that it reflects current environmental best practice, standards and legislation. Penrith City Council must be satisfied with any changes prior to the amendment of the Plan. The Plan shall be submitted every 12 months.

7. An annual environmental performance report is to be prepared and a copy submitted to Penrith City Council for consideration at the end of June each year (the first report is due at the end of June 2007). The report shall address the environmental issues, implemented pollution control strategies and monitoring programmes as outlined in the Site Rehabilitation and Environmental Management Plan. The report is also to address compliance with the conditions of this consent.
8. A copy of the Vegetation Management Plan (VMP) and Soil and Water Management Plan (SWMP) approved by the Department of Natural Resources (DNR) is to be provided to Council prior to the commencement of the development. The VMP and SWMP are to be implemented to the satisfaction of DNR and Council.
9. A copy of the Landfill Environmental Management Plan (LEMP) approved by the Environment Protection Authority (part of the Department of Environment and Conservation) is to be provided to Council prior to the commencement of the development. Copies of future revised and approved LEMP's are to be provided to Penrith City Council.
10. All conditions of consent from DA 163/92 shall be complied with throughout the lifetime of the operations and until such time as a Statement of Completion is issued for the site by the Department of Environment and Conservation.

ENVIRONMENTAL MATTERS

11. Erosion and sediment control measures shall be installed **prior to the commencement of works on site** including approved clearing of site vegetation. The erosion and sediment control measures are to be maintained **in** accordance with the approved erosion and sediment control plan(s) for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.

(Note: To obtain a copy of the publication, you should contact Landcom on (02) 98418600).

Certification that the erosion and sediment control measures have been installed **in** accordance with the approved erosion and sediment control plan (s) for the development and "Managing Urban Stormwater: Soils and Construction 2004" shall be obtained and issued a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.

The approved sediment and erosion control measures are to be installed **prior to and maintained throughout the construction phase of the development until the land, that was subject to the works, have been stabilised.** These measures shall ensure that mud

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and soil from vehicular movements to and from the site does not occur during the construction of the development.

12. No fill material is to be imported to the site without the prior approval of Penrith City Council in accordance with Sydney Regional Environmental Plan No.20 (Hawkesbury-Nepean River) (No.2-1997). No recycling of material for use as fill material shall be carried out on the site without the prior approval of Council.
13. **No fill material shall be imported to the site until such time as a Validation Certificate (with a copy of any report forming the basis for the validation) for the fill material has been submitted to Council.** The Validation Certificate shall:
 - state the legal property description of the fill material source site,
 - be prepared by an appropriately qualified person (as defined in Penrith Contaminated Land Development Control Plan) with consideration of all relevant guidelines (e.g. EPA, ANZECC, NH&MRC), standards, planning instruments and legislation,
 - clearly indicate the legal property description of the fill material source site,
 - provide details of the volume of fill material to be used in the filling operations,
 - provide a classification of the fill material to be imported to the site in accordance with the Environment Protection Authority's "Environmental Guidelines: Assessment, Classification & Management of Non-Liquid Wastes" 1997, and
 - (based on the fill classification) determine whether the fill material is suitable for its intended purpose and land use and whether the fill material will or will not pose an unacceptable risk to human health or the environment.

An appropriately qualified person/s (as defined in the Penrith City Council Contaminated Land Development Control Plan) shall:

- Supervise the filling works,
- (On completion of filling works) carry out an independent review of all documentation relating to the filling of the site, and shall submit a review findings report to Council and any Principal Certifying Authority,
- Certify by way of certificate or written documentation that fill materials have been placed on the site in accordance with all conditions of this consent and that the site will not pose an unacceptable risk to human health or the environment. A copy of the Certificate or other documentation shall be submitted to Council and any Principal Certifying Authority.

The contact details of any appropriately qualified person/s engaged for the works shall be provided with the Notice of Commencement.

If the Principal Certifying Authority or Penrith City Council is not satisfied that suitable fill materials have been used on the site, further site investigations or remediation works may be requested. In these circumstances the works shall be carried out prior to any further approved works.

{Note: Penrith Contaminated Land Development Control Plan defines an appropriately qualified person as "a person who, in the opinion of Council, has a demonstrated experience, or access to experience in hydrology, environmental chemistry, soil science, eco-toxicology, sampling and analytical procedures, risk evaluation and remediation technologies. In addition, the person will be required to have appropriate professional indemnity and public risk insurance."}

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LANDSCAPING

14. All trees that are required to be retained as part of the development are to be protected in accordance with the minimum tree protection standards prescribed in section F4 of Councils Landscape Development Control Plan.
15. No trees are to be removed, ringbarked, cut, topped or lopped or wilfully destroyed (other than those within the proposed building footprint or as shown on the approved plans) without the prior consent of Penrith City Council and. in accordance with Council's Tree Preservation Order and Policy.

SIGNATURE

Name
Signature

Wendy Connell
Senior Environmental Planner

For the Development Services Manager

Consent to discharge industrial trade wastewater

Consent to Discharge Industrial Trade Wastewater

SYDNEY WATER CORPORATION

and

CLEANAWAY WASTE MANAGEMENT LTD

A.C.N. 101 155 220

Trading as

ENVIROGUARD PTY LIMITED

A.B.N. 23 060 919 164

ACTIVITY: GARBAGE TIP (GE06)

RISK INDEX: 04

CONSENT NO: 35835

CONNECTION NO: 1

PROPERTY NUMBER: 5360639

This **CONSENT** is made on
Executed for and on behalf of
Sydney Water Corporation

day: 22nd month: February year: 2016

By



(Signature)

Patrick O'Beirne
Manager Business Customer Delivery

In the presence of:

Witness



(Signature)

S. SINDHE
(Print name of witness)

Executed for and on behalf of
the Customer:



(Signature)

By

ERIC LE PROVOST REGIONAL MANAGER

(Print name and position of person signing)

who warrants s/he has sufficient authority to execute this consent.

In the presence of:

Witness



(Signature)

LUKE SLECHTA ENVIRONMENTAL MANAGER.
(Print name of witness)

This consent must be executed by the Customer prior to execution by Sydney Water and submitted by the Customer to Sydney Water for its consideration. Submission of a consent executed by the Customer under no circumstances obliges Sydney Water to enter into or complete the consent. Submission of an executed consent by the Customer constitutes an application for a consent which Sydney Water may in its reasonable discretion reject, or with the consent of the Customer modify any of the proposed terms thereto.

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 1

(SUBJECT TO PUBLIC DISCLOSURE)

TRADE WASTEWATER WHICH MAY BE DISCHARGED

1. Trade wastewater substances

- (a) The Customer may discharge trade wastewater into the Sewer in a manner whereby the substance characteristics of the trade wastewater are of a type and discharged at a rate, level or concentration equal to or less than that described in this schedule.
- (b) The Customer must not discharge trade wastewater into the Sewer in a manner whereby the trade wastewater discharged;
- (i) contains, possesses or produces a substance characteristic not provided in, or which may be determined as being contrary to that described in this schedule.
- (ii) is at or of a rate, level, or concentration not provided in, or which may be determined as being contrary to, that described in this schedule.

SUBSTANCE	LTADM (kg/day)	MDM (kg/day)	Standard (mg/L)
AMMONIA (AS N)	25	45	100
BIOCHEMICAL OXYGEN DEMAND	208	630	
SUSPENDED SOLIDS	231	621	600
BARIUM	2	5	5
NITROGEN	50	90	150
PHOSPHORUS	7	11	50

RECONCILIATION PROCEDURES:

LONG TERM AVERAGE DAILY MASS:

The Long Term Average Daily Mass is a twelve month arithmetic average of ALL daily mass discharges as calculated for each composite sample. The Daily Mass discharged is to be calculated for each of the above substances, and checked against the above Long Term Average Daily Mass (kg/day) on the basis of average concentrations of substances discharged (mg/L) over any 24 hour period as determined from composite samples, obtained by either the Customer (in accordance with Schedule 2) or Sydney Water, or a combination of sample results by both.

This average concentration (mg/L) is to be multiplied by the total discharge (kL) as recorded by the Customer's discharge flow meter over the 24 hour period in order to calculate the Daily Mass of substances discharged (kg). Exceeding the Long Term Average Daily Mass does not constitute a Breach.

ACCEPTANCE STANDARD:

The Composite Sample Concentration is to be determined for each of the above substances, and checked against the above Acceptance Standard (mg/L) for each sample obtained. Exceeding the Acceptance Standard constitutes a Breach and will also incur an increased Quality Charge as detailed in Schedule 3.

The Discrete Sample Concentration is to be determined for each of the substances identified at Schedule 2, 2 (b) and checked against the above Acceptance Standard (mg/L) for each sample obtained. Exceeding the Acceptance Standard constitutes a Breach.

MAXIMUM DAILY MASS:

The Daily Mass discharged is to be calculated for each of the above substances, and checked against the above Maximum Daily Mass (kg/day) on the basis of average concentrations of substances discharged (mg/L) over any 24 hour period as determined from composite samples, obtained by either the Customer (in accordance with Schedule 2) or Sydney Water, or a combination of sample results by both.

This average concentration (mg/L) is to be multiplied by the total discharge (kL) as recorded by the Customer's discharge flow meter over the 24hour period in order to calculate the Daily Mass of substances discharged (kg). Exceeding the Maximum Daily Mass constitutes a Breach.

Consent to Discharge Industrial Trade Wastewater

2. The trade wastewater discharged must at all times have the following properties:

- Temperature - Not to exceed 38 degrees Celsius.
- Colour - Determined on a system specific basis
- pH - Within the range 7.0 to 10.0.
- Fibrous material - None which could cause an obstruction to Sydney Water's sewerage system.
- Gross solids (other than faecal) - A maximum linear dimension of less than 20 mm, a maximum cross section dimension of 6 mm, and a quiescent settling velocity of less than 3 m/h.
- Flammability - Where flammable and/or explosive substances may be present, the Customer must demonstrate to the satisfaction of Sydney Water that there is no possibility of explosions or fires occurring in the sewerage system. The flammability of the discharge must never exceed 5% of the Lower Explosive Limit (LEL) at 25° Celsius.

3. Rate of discharge of waste to sewer:

- (a) Instantaneous maximum rate of gravitated discharge 12 litres per second
- (b) Maximum daily discharge 1036 kilolitres
- (c) Average daily discharge 750 kilolitres

RECONCILIATION PROCEDURE:

The data obtained from applying these procedures is to be checked by the interface of a chart recorder to the Customer's flow metering equipment, or by the installation of flow metering equipment by Sydney Water, for a minimum of 7 days.

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 2

(SUBJECT TO PUBLIC DISCLOSURE)

SAMPLING, ANALYSIS, FLOW RATES AND VOLUME DETERMINATION

1. The Customer must provide and make available for the purpose of sampling and analysis;
 - (a) Sampling point located at pretreat.discharge excl. domestic sewage prior to the point of connection to the Sewer.
 - (b) Equipment necessary to allow collection of composite automatic samples on either a flow proportional or a time basis.

2. The Customer is to undertake collection and analysis of samples in accordance with the schedule detailed below:
 - (a) Composite samples are to be obtained:
 - (i) over one full production day by combining equal volumes taken at 20 kilolitre intervals. The volumes are to be such that at least 5,000 millilitres are obtained over the full day. The reading of the Flowmeter meter is to be obtained at the commencement and conclusion of the sampling day.
 - (ii) on 4 March 2016 and every 8 days thereafter. If trade wastewater is not discharged on this day, then the sample is to be taken on the next day that trade wastewater is discharged. Trade wastewater includes all non-domestic wastewater discharged to sewer from the premises, including cleaning waste.
 - (b) Discrete samples are to be obtained as detailed below, and analysed according to the procedures and methods specified in Sydney Water's published analytical methods, to determine the concentrations or levels of the following substance characteristics:

pH at the start and finish of each sample day
 - (c) Composite samples are to be analysed according to the procedures and methods specified in Sydney Water's published analytical methods, or methods otherwise agreed to and detailed hereunder, to determine the concentrations or levels of the following substance characteristics

AMMONIA (AS N)
BIOCHEMICAL OXYGEN DEMAND
SUSPENDED SOLIDS
BARIUM
NITROGEN
PHOSPHORUS
 - (d) The Customer, or the laboratory contracted by the customer, is to submit results of analyses to Sydney Water within 21 days from the date the sample was taken. All analysis results are to be submitted on the sample analysis report provided as appendices 1 and 2 to this Consent or in such format as may be specified from time to time by Sydney Water.
 - (e) All data requested on the sample analysis report must be provided.
 - (f) Sydney Water must be notified in writing within 7 days of;
 - (i) any failure to obtain samples in accordance with the provisions of Schedule 2; or
 - (ii) any loss of any analytical data.

Where data is unavailable, lost or not provided, the Quality Charge, as detailed in Schedule 3, will be assessed on the basis of the highest Composite Sample concentration recorded in the 12 months prior to the date of the missing sample data.

3. The volume of wastewater discharged must be obtained from the reading of the total flow on the Customer's flowmetering system.

The rate of waste discharged is to be obtained by the reading of the instantaneous flow rate indicator on the Customer's flowmetering system, or from any chart recorder interfaced to the Customer's flowmetering

Consent to Discharge Industrial Trade Wastewater

system.

The flowmetering system is to be calibrated at least annually at the Customer's expense, by a person or company approved by Sydney Water and a copy of the calibration certificate supplied to Sydney Water within one month of such certificate being received by the Customer.

If the Customer's flowmetering system fails to record data for any period, Sydney Water is to be advised in writing by the Customer within 7 days of any such failure becoming known by the Customer. An estimate of any data not recorded is to be made as follows:

Average of the waste discharged, registered for the four weeks before and/or after the failure to record.

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 3 (SUBJECT TO PUBLIC DISCLOSURE) PAYMENTS

The charges are effective from 1 March 2016 and will continue until otherwise advised by Sydney Water.

All trade waste fees and charges are subject to CPI adjustments from 1 July each year in accordance with Determination No 1, 2012 made by the Independent Pricing and Regulatory Tribunal (IPART) and are detailed in fact sheets on the Sydney Water website.

1. CHARGES FOR TRADE WASTEWATER DISCHARGE

Sydney Water will conduct a reading of the Customer's discharge meter at approximately 90 day intervals. The volume of trade wastewater discharged for the period since the previous reading will be calculated.

Charges are based on the Daily Mass calculated from composite samples and corresponding meter readings for each sampling day in the billing period, and calculated in accord with (c), (d), (e), and (f) below. The charge for each sampling day is then multiplied by a flow weighting factor to give a flow weighted charge. The total charge for each substance for the billing period is equal to the sum of the flow weighted charges for the billing period.

Total Charge = the sum of the flow weighted charges for the billing period

Flow Weighted Charge = (charge for all sample days) x (flow weighting factor) and:

$$\text{Flow Weighting Factor} = \frac{\text{(total volume discharged during billing period)}}{\text{(sum of volumes discharged during all sample days during billing period)}}$$

In this formula volume discharged refers to the volume of trade wastewater discharged.

(a) Mass Discharged:

For each substance, the Mass Discharged is calculated by multiplying the Composite Sample concentration by the Trade Wastewater discharge for that sample day.

(b) Chargeable Trade Waste Mass:

(i) For the following substances, the Chargeable Trade Waste Mass is equal to the Mass Discharged:

SUBSTANCE
N/A

(ii) For the following substances, the Chargeable Trade Waste Mass is calculated by subtracting the Equivalent Domestic Mass from the Mass Discharged. The Equivalent Domestic Mass is defined as the Domestic Concentration multiplied by the Trade Wastewater discharge.

SUBSTANCE	DOMESTIC CONCENTRATION mg/L
AMMONIA (AS N)	35
BIOCHEMICAL OXYGEN DEMAND	230
SUSPENDED SOLIDS	200
NITROGEN	50
PHOSPHORUS	10

If the resulting Chargeable Trade Waste Mass is zero or negative, then no Quality charges will apply for that substance for that sample day.

(c) Quality Charge:

(i) For the following substances, the Quality Charge is determined by multiplying the Chargeable Trade Waste Mass by the Rate for that substance as detailed in the Industrial Customers Acceptance Standards and charging rates for the applicable financial year fact sheet on the Sydney Water website.

Consent to Discharge Industrial Trade Wastewater

SUBSTANCE

SUSPENDED SOLIDS
NITROGEN
PHOSPHORUS

- (ii) For the following substances, the Quality Charge is determined by multiplying the Chargeable Trade Waste Mass by the Rate, where the Rate is a function of the composite sample concentration recorded for that sample day.

SUBSTANCE

BIOCHEMICAL OXYGEN DEMAND

(d) Concentration Breach Charge:

Where the Composite Sample concentration is greater than the Acceptance Standards specified in Schedule 1 (with the exception of sulphate), any charges calculated in (c) above will be doubled for that sampling day.

(e) Failure to collect required samples:

Where the Customer fails to collect and analyse samples in accord with this consent the above charges will be assessed on the basis of the highest composite concentrations recorded for any billing period within the previous 12 months and the average daily discharge for the current billing period.

(f) pH and Temperature charges:

Sydney Water regularly assesses its wastewater networks to determine if a system is affected by accelerated odour and corrosion. Where Sydney Water declares a wastewater system to be affected by accelerated odour and corrosion, the temperature and pH charge will only apply if the customer is not committed to or not complying with an effluent improvement program.

2. CHARGES FOR INSPECTIONS

- (a) If, in the opinion of Sydney Water, it is necessary for a Business Customer Representative to exercise rights under clause 6.1, the Customer will incur no liability for payment for any such exercise unless the Business Customer Representative has already exercised rights under clause 6.1 on 6 occasions within a period of one year.
- (b) If it is necessary, in the opinion of Sydney Water, to carry out more than 6 occasions within a period of one year, the additional inspections will be charged at the current inspection rate.
- (c) Any inspection required following up an alleged breach or a default notice will result in a fee payable even if the number of inspections nominated in paragraph 2 (a) has not been exceeded.
- (d) For the purposes of 2 (a) and 2 (b), above, one year is defined as the period from 1 July to 30 June the following year.

3. CHARGES FOR ADMINISTRATION OF TRADE WASTE CONSENT

A consent fee per quarter is payable from 1 March 2016.

4. CHARGES FOR VARIATION OR RENEWAL OF TRADE WASTE CONSENT

Where a Variation is made to the Consent a fee will be payable. There will be no charge for renewal.

5. CHARGES FOR GREASE TRAPS

Wastesafe administration charges are levied per pit per year.

Consent to Discharge Industrial Trade Wastewater

6. PAYMENT OF FEES AND CHARGES

An account will be issued for all fees and charges. Any fees or charges payable by the Customer must be paid by the Customer within 30 days of the receipt by the Customer of the account detailing those fees and charges.

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 4 ADDITIONAL REQUIREMENTS

1. EFFLUENT IMPROVEMENT PROGRAM

N/A

2. WASTE MANAGEMENT PLAN

The existing pre-treatment will result in the generation of 12 tonne per annum of waste substances in the form of a sludge containing generally solids. The waste substances are, and will continue to be disposed of, in compliance with the requirements of The Environment Protection Authority.

3. OTHER REQUIREMENTS

- (a) A Backflow Containment Device must be installed and maintained at the water meter outlet/property boundary in line with Sydney Water's Responsibilities Of Connected Customers Policy.
- (b) Backflow individual/zone protection is required on any tap located within 5m of the trade waste apparatus.

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 5 APPARATUS, PLANT AND EQUIPMENT

EXISTING: Sequencing Batch Reactor
Feed Equalisation Tank
Two SBR Tanks
Final Equalisation Tank
Aerobic Sludge Digester
Discharge Flow Meter and Sample Point

PROPOSED: N/A

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 6 SPECIAL CONDITIONS

1. DANGEROUS DISCHARGES

In this Schedule, the term "may pose a danger to the environment, the Sewer or workers at a sewage treatment plant";

- (a) means an occurrence whereby matter is discharged to the Sewer which either alone or in conjunction with other matter discharged cannot be adequately treated or may cause corrosion or a blockage, explosion or the production of dangerous gases in the Sewer or may adversely affect the operation of a sewer or sewage treatment plant; and
- (b) includes, but not so as to restrict the generality of paragraph (a), matter or substances, which is or are;
 - (i) toxic or corrosive;
 - (ii) petroleum hydrocarbons;
 - (iii) heavy metals;
 - (iv) volatile solvents;
 - (v) phenolic compounds;
 - (vi) organic compounds.

2. UNINTENDED DISCHARGES

- (a) For purposes of avoiding unintended discharges to the Sewer or the stormwater drainage system, all matter and substances on the Premises must be processed, handled, moved and stored in a proper and efficient manner.
- (b) Any substance on the Premises which, if discharged to the Sewer, may pose a danger to the environment, the Sewer or workers at a sewage treatment plant or may harm any sewage treatment process must be handled, moved and stored in areas where leaks, spillages or overflows cannot drain by gravity or by automated or other mechanical means to the Sewer or the stormwater drainage system

3. NOTIFICATION

In the event of a discharge of matter to the sewer that poses or may pose a danger to the environment, the Sewer or workers at a sewage treatment plant the Customer must immediately notify:

- (a) 24 HOUR SYDNEY WATER CONTACT TEL: 131 110 FAX: (02) 9822 5688
- (b) BUSINESS CUSTOMER SERVICES (8AM TO 5PM MON TO FRI) TEL: 1300 985 227
- (c) BUSINESS CUSTOMER SERVICES EMERGENCY CONTACT (24 HOURS) TEL: (02) 8849 5029

4. PROVISION OF SAFE ACCESS

The Customer shall provide safe access to Sydney Water employees visiting the site. In the event that unsafe conditions are identified the Customer must take reasonable steps to correct unsafe conditions and create safe access.

Sydney Water employees must also comply with the Customer's safety policies and procedures and any directions from the Customer's staff while on the Customer's site.

Consent to Discharge Industrial Trade Wastewater

5. ELECTRONIC REPORTING OF SAMPLE ANALYSIS RESULTS

Sydney Water reserves the right to vary this consent to specify the option of reporting by electronic mail as outlined in Schedule 2, 2 (d).

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 7

1. Premises for which Consent is granted
50-52 QUARRY RD, ERSKINE PARK NSW 2759
2. Industrial or other commercial activities for which Consent is granted
GARBAGE TIP (GE06)
3. Discharge point for which Consent is granted
BOUNDARY TRAP
4. The date for purposes of clause 3.1 is 1 March 2016
5. The period for purposes of clause 3.2 is 24 months
6. The receiving Treatment Plant is ST MARYS Wastewater Treatment Plant / Water Recycling Plant

Consent to Discharge Industrial Trade Wastewater

SCHEDULE 8

NOTICES AND COMMUNICATION ADDRESSES

SYDNEY WATER MANAGER BUSINESS CUSTOMER DELIVERY TEL: 1300 985 227
PO Box 399 A.H: (02) 8849 5029
PARRAMATTA 2150

CUSTOMER: ERIC LE PROVOST TEL: 8602 8705
REGIONAL MANAGER FAX: 9834 3306
CLEANAWAY WASTE MANAGEMENT LTD
PO BOX 804
ST MARYS NSW 1790

SCHEDULE 9

AUTHORISED OFFICERS

SYDNEY WATER: MANAGER BUSINESS CUSTOMER DELIVERY TEL: 1300 985 227
PO Box 399 A.H: (02) 8849 5029
PARRAMATTA 2150

Email: businesscustomers@sydneywater.com.au

CUSTOMER: ERIC LE PROVOST TEL: 8602 8705
REGIONAL MANAGER FAX: 9834 3306
CLEANAWAY WASTE MANAGEMENT LTD
PO BOX 804
ST MARYS NSW 1790
Email: eric.leprovost@cleanaway.com.au

SCHEDULE 10

NOMINATED REPRESENTATIVES

SYDNEY WATER: MANAGER BUSINESS CUSTOMER DELIVERY TEL: 1300 985 227
PO Box 399 A.H: (02) 8849 5029
PARRAMATTA 2150

CUSTOMER: CHRIS WATKINS TEL: 9834 3411
OPERATIONS MANAGER FAX: 9834 3306
CLEANAWAY WASTE MANAGEMENT LTD T/AS
ENVIROGUARD PTY LTD
85-87 QUARRY ROAD
ERSKINE PARK NSW 2759G

Consent to Discharge Industrial Trade Wastewater

APPENDIX 1 (Example)

SAMPLE ANALYSIS REPORT (COMPOSITE) DISCHARGE METER

Consent Number:	35835		
Company Name:	CLEANAWAY WASTE MANAGEMENT LTD, ENVIROGUARD PTY LTD		
Company Address:	50-52 QUARRY RD, ERSKINE PARK NSW 2759		
Sample Type:	<input type="checkbox"/> 6 (composite, manual time based) Start date: ___/___/___ <input type="checkbox"/> 7 (composite, manual flow proportional) Finish date: ___/___/___ <input type="checkbox"/> 8 (composite, automatic time based) Start time: ___:___ am/pm <input type="checkbox"/> 9 (composite, automatic flow proportional) Finish time: ___:___ am/pm		
grabs taken in sample period:	_____	Initial meter reading:	_____ kL
sample intervals min/kL	_____	Final Meter reading:	_____ kL
mL per grab:	_____	Volume discharged:	_____ kL

Laboratory:		
	Acceptance Standard	Measured Units
Substance	Acceptance Standard (mg/L)	Measured Concentration(mg/L)
AMMONIA (AS N)	100	
BIOCHEMICAL OXYGEN DEMAND		
SUSPENDED SOLIDS	600	
BARIUM	5	
NITROGEN	150	
PHOSPHORUS	50	

COPY OF ORIGINAL ANALYTICAL LABORATORY REPORT TO BE ATTACHED
NOTE: LABORATORY REPORT MUST CERTIFY NATA REGISTRATION FOR EACH ANALYSIS

Comments: _____

Customer Signature: _____ Date: ___/___/___

Designation: _____

OFFICE USE ONLY

Sample No:

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EMAIL TO:
 businesscustomers.labdata@sydneywater.com.au

Consent to Discharge Industrial Trade Wastewater

APPENDIX 2 (Example)

SAMPLE ANALYSIS REPORT (DISCRETE SAMPLE)

Consent Number:	35835
Company Name:	CLEANAWAY WASTE MANAGEMENT LTD, ENVIROGUARD PTY LTD
Company Address:	50-52 QUARRY RD, ERSKINE PARK NSW 2759

Sample Type: DISCRETE
Date
Time

Laboratory:

Substance	Acceptance Standard (units or mg/L)	Measured Units or Concentration.
pH at start	7 - 10	
pH at finish	7 - 10	

COPY OF ORIGINAL ANALYTICAL LABORATORY REPORT TO BE ATTACHED
NOTE: LABORATORY REPORT MUST CERTIFY NATA REGISTRATION FOR EACH ANALYSIS

Comments: _____

Customer Signature: _____ Date: ___/___/___
Designation: _____

OFFICE USE ONLY

Sample No:

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EMAIL TO:
businesscustomers.labdata@sydneywater.com.au

GENERAL CONDITIONS

Recitals:

- A. Under its Operating Licence, Sydney Water provides sewerage services and treats and disposes of trade wastewater. The objectives of Sydney Water include operating as an efficient business, maximising the net worth of the State's investment and exhibiting a sense of social responsibility by having regard to the interests of the community. Sydney Water has special objectives of reducing risks to human health and preventing degradation of the environment.
- B. Sydney Water is granted licences by the Environment Protection Authority, which are subject to conditions to discharge pollutants. A change to a licence condition may require that variations be made to a consent granted by Sydney Water.
- C. In the conduct of its business operations, Sydney Water must comply with its obligations, duties and responsibilities under the Act and its Operating Licence and the Protection of the Environment Administration Act 1991, the Protection of the Environment Operations Act 1997 and the Protection of the Environment Legislation Amendment Act 2011.
- D. The customer requests that Sydney Water grant consent to the customer for purposes of discharge of trade wastewater from the premises to the sewer.

Sydney Water grants to the customer consent to discharge trade wastewater, subject to the terms and conditions specified in this consent. The customer accepts the consent and agrees to be bound by the terms and conditions of this consent:

1. Definitions and interpretation

- 1.1 In this consent, unless the contrary intention appears;

Acceptance standards means Sydney Water's published concentration limits for certain substances in trade wastewater.

Act means the Sydney Water Act 1994.

Business Customer Representative means an officer of Sydney Water who is authorised to enter land or buildings for purposes of carrying out his or her duties in relation to Sydney Water's trade wastewater service.

Consent means this consent together with its attached schedules and appendices. Any definitions or standards referred to in this consent but not contained in it are deemed to form a part of this consent with necessary changes being made to accommodate their inclusion.

Authorised officer means:

- with respect to Sydney Water, the person from time to time holding the position pertained in schedule 9 or such other person or position as may be nominated by Sydney Water from time to time;
- with respect to the customer, the person identified, and includes the details specified, in schedule 9 or as may be notified to Sydney Water by the customer from time to time.

Breach means any contravention of or non-compliance with a term, condition or provision of this consent or the Act.

Chargeable trade waste mass means the mass of a pollutant subject to quality or critical substance charges.

Composite sample means a sample of trade wastewater obtained by combining equal volumes at either equal time or flow intervals.

Critical mass charge means the charge applied to some critical and over capacity substances as calculated in accordance with the provisions set out in schedule 3.

Critical substance means a substance determined to be critical and notified from time to time by Sydney Water.

Customer means the party or parties (except Sydney Water) who executes or execute this consent.

Daily mass means the mass of a substance discharged during a 24-hour period.

Default notice means a notice issued in accordance with clause 8.1.

Domestic concentration means the concentration of a pollutant deemed by Sydney Water to be equivalent to that found in domestic wastewater.

Domestic wastewater means water which has in it human faecal matter, urine or refuse of any type produced in, and which is permitted to be discharged to a Sydney Water sewer from, any premises used exclusively for residential purposes.

Environment Protection Authority means the statutory authority established under section 15 of the Protection of the Environment Administration Act 1991

Equivalent domestic mass means the mass of a substance that would be expected in the trade wastewater if it were at domestic concentration.

Flow weighted charge means the portion of a substance's charge for a billing period that is attributed to any sample collected in accordance with schedule 2 or, if such sample is required but is not collected, then fixed by Sydney Water in accordance with schedule 2.

Flow weighting factor means a factor used to determine charges as described in schedule 3.

Long term average daily mass means, for each pollutant, the figure listed in schedule 1 and used to determine critical mass charges as described in schedule 3.

Lower explosive limit means the minimum concentration of flammable and/or explosive substances that would result in a fire or explosion.

Mass discharged means the mass of a pollutant discharged on a sample day and is measured by multiplying the composite sample concentration by

GENERAL CONDITIONS

the trade wastewater discharge for that sample day.

Maximum daily mass means the greatest mass of a substance permitted for discharge within a 24-hour period.

Over capacity means the status of a substance as determined in accordance with Sydney Water's Trade Waste Policy, 2007.

Over capacity substance means a substance determined to be over capacity and notified from time to time by Sydney Water.

Premises means the land, plant and buildings described and specified in paragraph 1 of schedule 7, on or in which the customer carries on industrial or other commercial activities specified in paragraph 2 of schedule 7.

Quality charge means a pollutant charge applied to trade waste discharges based on the mass of each pollutant discharged to sewer.

Regulator means any statutory authority, which may grant permission, authority or licence to Sydney Water to operate the sewer or treat or dispose of sewage treatment by-products.

Residual products means biosolids, re-use water or such other product intended for re-use as may be developed by Sydney Water from time to time.

Risk index means a ranking applied to the consent by Sydney Water to describe the relative risk of accepting the trade wastewater. Determination of the risk index will be based on the methodology determined from time to time by Sydney Water, or as may be necessary in the opinion of Sydney Water to take into account particular circumstances. The risk index is used to determine, among other things, the amount of self-monitoring required, the number of inspections to be performed by Sydney Water, the annual consent fee and the term of the consent.

Sewer means the sewerage service of Sydney Water, including the sewage treatment plant, discharge to which is facilitated by a discharge point situated on the premises and specified in item 3 of schedule 7.

Significant breach means any breach of a nature outlined at clause 15.2. Such breaches may result in immediate suspension or termination of the consent.

Standard mass charging rate means the charge per kilogram for substances as defined in schedule 3.

Sydney Water means Sydney Water Corporation.

Responsibilities of connected customers policy means Sydney Water's policy detailing the conditions under which Sydney Water will agree to accept trade wastewater to sewer.

Trade wastewater means any liquid and any substance in it that is produced in an industrial or commercial activity at the premises and

discharged into the sewer, but does not include domestic wastewater.

Trade waste residue means any substance separated and retained, from trade wastewater being discharged into the sewer.

1.2 In this consent, unless the contrary intention appears:

- (a) A reference to an Act or any delegated legislation or instrument made under an Act includes any other Act delegated legislation or instrument as may amend or replace any of them.
- (b) A reference to a word or expression
 - (i) in the singular form includes a reference to the word or expression in the plural form; and
 - (ii) in the plural form includes a reference to the word or expression in the singular form.
- (c) A reference to a party or a natural person includes a reference to a corporation.
- (d) A word or expression that indicates one or more particular genders is taken to indicate every other gender.
- (e) Headings to clauses and paragraphs are included in this consent to assist understanding of its terms and conditions but are not intended to affect the meaning or application of any term or condition.
- (f) A reference to a clause, schedule or appendix is a reference to a clause of or schedule or appendix to this consent and any such schedule or appendix is a part of this consent.

1.3 Remedies available to the parties under this consent;

- (a) are cumulative; and
- (b) do not prejudice or affect any other remedy available to the parties.

1.4 No rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of this consent or any part of it.

2. Application of certain statutes and laws

2.1 This consent is made under and is subject to the provisions of the Act.

2.2 This consent is governed by and will be performed according to the law applicable in the State of New South Wales.

2.3 Subject to the terms and conditions of this consent the customer has lawful authority to dispose of trade wastewater for purposes of;

- (i) Section 115 of the Protection of the Environment Operations Act 1997; and
- (ii) Section 49 of the Act; and

GENERAL CONDITIONS

3. Commencement and term of consent

- 3.1 This consent commences on the date specified in paragraph 4 of schedule 7.
- 3.2 This consent will, unless terminated or renewed in accordance with this consent, continue for the period specified in item 5 of schedule 7.

4. Discharge of trade wastewater into sewer

- 4.1 The customer may discharge trade wastewater from the premises into the sewer in accordance with the provisions of schedule 1 and schedule 4.
- 4.2 The customer must not discharge trade wastewater from the premises into the sewer contrary to the provisions of schedule 1 and schedule 4.
- 4.3 The customer indemnifies Sydney Water against all damages, losses, costs or expenses suffered or incurred by Sydney Water, caused by any unauthorised discharge from the premises in respect of:
- (a) injury (including death) or harm to any person; or
 - (b) damage to property vested in Sydney Water; or
 - (c) contamination of residual products; or
 - (d) material harm to any sewage treatment process
- provided that the said damages, losses, costs or expenses suffered or incurred by Sydney Water are caused by any unauthorised discharge of trade wastewater or other matter into the sewer by the customer which is in breach of this consent or by any other person from the customer's premises, except to the extent to which the damages, losses, costs or expenses (as the case may be) were caused by either the negligent or wilful act or omission of Sydney Water or a breach of this consent by Sydney Water.
- 4.4 The customer must take all precautions reasonably practicable to ensure that no person, other than a person acting for or on behalf of or with the consent of the customer, discharges any matter from the premises into the sewer.
- 4.5 For purposes of this consent, every discharge of matter from the premises into the sewer will be taken to have been a discharge by a person acting for or on behalf of, or with the consent of, the customer.

5. Charges

- 5.1 The customer must pay Sydney Water charges with respect to trade wastewater discharged to the sewer, the administration of this consent and, when applicable, the processing of grease trap waste determined in accordance with, and within the time and in the manner specified in schedule 3.
- 5.2 Sydney Water may vary the basis of charges or the charging rates in schedule 3;
- (a) as and when determined by the Independent Pricing and Regulatory Tribunal of New South Wales (IPART); or
 - (b) by written consent with the customer.

6. Inspections

- 6.1 A Business Customer Representative may enter the premises at any time;
- (a) for purposes of inspecting whether the activities of the customer are being conducted in accordance with this consent; or
 - (b) for the purposes described in Section 38 of the Act or exercising any right or function conferred on Sydney Water under this consent.

This clause does not limit Sydney Water's statutory powers of entry.

- 6.2 When exercising rights under clause 6.1;
- (a) a Business Customer Representative must not cause any delay or inconvenience to the efficient conduct of business activities by the customer which could be reasonably avoided; and
 - (b) except for any relevant safety precautions, a Business Customer Representative must not be impeded or delayed by any person on the premises.
- 6.3 If, in the opinion of Sydney Water, it is necessary for a Business Customer Representative to exercise rights under clause 6.1, the customer will make payment in accordance with the provisions of schedule 3.

7. Inquiries

- 7.1 Sydney Water may convene and determine the terms of reference of a joint inquiry about the circumstances relating to an incident that may have caused a breach.
- 7.2 An inquiry under clause 7.1 is to be conducted informally and without legal representation for purposes of gathering information about an incident directly from any person who may be expected to know, from his or her own observations, about the circumstances relating to the incident.
- 7.3 An inquiry under clause 7.1 may be conducted irrespective of whether the incident, the subject of the inquiry, is also the subject of a default notice.
- 7.4 Before conducting an inquiry under clause 7.1, the customer and Sydney Water may agree about what action, if any (except any action pursuant to a statutory obligation), may be taken with respect to any information that may be gathered during the inquiry.

8. Default procedures

- 8.1 If, in the opinion of Sydney Water, the customer commits, causes or allows a breach to occur, Sydney Water may issue to the customer a default notice.
- 8.2 A default notice must;
- (a) provide any relevant particular of the breach alleged by Sydney Water, including any particular known to Sydney Water that may assist the customer to ascertain the alleged breach; and

GENERAL CONDITIONS

- (b) specify that the customer must provide a response in writing to Sydney Water within seven days of receipt of the notice.
- 8.3 A default notice is not invalid merely because it does not provide a particular that may assist the customer to ascertain the alleged breach.
- 8.4 Any supply to the customer by Sydney Water of particulars under clause 8.7(a) is taken, for purposes of clause 8.5, to be a default notice under clause 8.1.
- 8.5 The customer must supply to Sydney Water a written response to a default notice within seven days of receipt of the default notice which must;
- (a) request further particulars of the alleged breach; or
- (b) describe or explain the circumstances causing;
- (i) the event which appeared to Sydney Water to be a breach; or
- (ii) the breach to occur; and
- (c) describe any action taken with respect to the alleged breach; and
- (d) provide a plan of action to be taken by the customer to avoid the occurrence of any incident similar to the alleged breach; or
- (e) explain the reasons of the customer for disputing the alleged breach.
- 8.6 The customer may make one request only for particulars under clause 8.5(a) with respect to a default notice.
- 8.7 When the customer responds in writing to Sydney Water in accordance with clause 8.5, Sydney Water must within seven days of receipt of that response either;
- (a) with respect to clause 8.5(a), provide in writing to the customer any further particulars that it may be able to provide in which case the customer shall be allowed a further seven days from receipt of those particulars to respond as required by clause 8.5(b)
- (b) specify to what extent it accepts, rejects or disagrees with the response under 8.5(b) and provide details of any action it proposes to take (including any special requirements it may impose) to deal with the breach.
- 8.8 The issue by Sydney Water of a default notice is without prejudice to any right or power Sydney Water may have pursuant to this consent or conferred on it by statute or statutory rule.
- 9. Improvement program**
- 9.1 The customer must, at its own expense, establish and carry out the improvement program specified in, and in accordance with the provisions of, schedule 4.
- 9.2 If, prior to any failure to comply, the customer notifies Sydney Water that it may not be able to comply with any obligation under clause 9.1, Sydney Water will consider any reasonable proposal of the customer to vary a term or condition of the improvement program.
- 10. Diligence program**
- 10.1 Within six months of the making of this consent, the customer must give a notice to Sydney Water specifying a current diligence program.
- 10.2 For purposes of clause 10.1, a diligence program includes a plan, whereby the customer demonstrates that the management of the customer is exercising reasonable care in planning and taking appropriate action, to prevent or minimise the effects of any incident that may constitute a breach.
- 11. Suspension or termination of consent to discharge trade wastewater**
- 11.1 Sydney Water may suspend the consent granted in clause 4.1 if;
- (a) the customer does not comply with clause 8.5, 9.1, 12.1, 12.2 or notice of the suspension is given to the customer; or
- (b) Sydney Water is for any reason specified in clause 11.2 unable to accept for treatment trade wastewater that may be discharged by the customer.
- 11.2 Sydney Water may, by a notice given to the customer, suspend the consent granted in clause 4.1 if, in the reasonable opinion of Sydney Water;
- (a) an emergency prevents the sewer from accepting any or certain specified categories of trade wastewater that may be discharged by the customer; or
- (b) an event has occurred, which could have an adverse effect on any employee or agent of or contractor to Sydney Water or the sewer, including any biological process.
- whether the emergency or event is caused by fire, storm, tempest, flood, malicious damage, act of war, civil disobedience, explosion, earthquake or an act or omission of an employee, or agent of, or contractor to Sydney Water, or an unlawful discharge of matter into the sewer, or some other cause.
- 11.3 The period of any notice of suspension given under clause 11.2 will be no shorter than any period, which in the opinion of Sydney Water the circumstances dictate.
- 11.4 The customer must comply with any notice under clause 11.1 or 11.2 subject only to any delay that may be required to safeguard the health or life of any person.
- 11.5 Any suspension under clause 11.1 or 11.2 must not be for a period longer than, in the opinion of Sydney Water, the circumstances dictate.
- 11.6 If the customer does not cease discharging trade wastewater in accordance with a notice given under clause 11.1 or 11.2 and Sydney Water is of the opinion that the customer is not taking appropriate measures to stop the discharge, a Business Customer Representative may, with such other persons as he or she may think necessary, enter the premises and take such

GENERAL CONDITIONS

measures as he or she may think necessary to stop the discharge.

- 11.7 A suspension under clause 11.1 or 11.2 or any action that may be taken in accordance with clause 11.6 does not give rise to any remedy to the customer against Sydney Water for, or in respect of, the suspension or action.
- 11.8 Any costs incurred by Sydney Water with regard to taking action under clause 11.6 is a debt payable to Sydney Water by the customer on demand made by Sydney Water.
- 11.9 Sydney Water may suspend the consent granted in clause 4.1 if, the discharge of trade wastewater by the customer in accordance with the consent granted under clause 4.1, by itself or in conjunction with the discharges of other persons is likely, in the opinion of Sydney Water, to cause Sydney Water to contravene any legislation, permission, authority or licence granted by a regulator, or any other regulatory authority.
- 11.10 Any suspension under clause 11.9 must be terminated as soon as Sydney Water is reasonably satisfied that the conditions giving rise to the suspension no longer exist.
- 11.11 If the customer and Sydney Water cannot agree in accordance with clause 11.10, they will initiate and attend discussions with the regulator to resolve any relevant matter.
- 11.12 If, after discussions under clause 11.11 the customer and Sydney Water fail to agree in accordance with clause 11.10, the consent granted in clause 4.1 may be terminated by Sydney Water.
- 11.13 Without limitation of the effect of any other clause in this consent, Sydney Water may terminate or suspend the customer's permission to discharge trade wastewater immediately by written notice to the customer, if in the opinion of Sydney Water the customer's discharge of trade wastewater is in breach of this consent and is likely to cause;
- (a) Sydney Water's contravention of the condition of any licence issued to it by the EPA; or
 - (b) the failure to meet a product specification of any of Sydney Water's residual products.
 - (c) Sydney Water to breach or fail to comply with any legislation.
- 11.14 A suspension under clause 11.9 or 11.13 in accordance with the terms of this consent or a termination under clause 11.12 or 11.13 in accordance with the terms of this consent does not give rise to any remedy to the customer against Sydney Water for or in respect of the suspension or termination.
- 11.15 Without limitation of the effect on any other clause in this consent, Sydney Water may terminate or suspend the customer's consent to discharge trade wastewater immediately by written notice served on the customer in accordance with Section 100 of the Act, on the occurrence of any one of the following events;

- (a) The customer fails to pay to Sydney Water any amount due and payable under this consent within twenty-one days of the due date for payment and such payment is not made within fourteen days of a written request from Sydney Water to do so.
- (b) The customer is in breach of the consent and is unable or unwilling to remedy the breach of consent as required by Sydney Water.

The customer acknowledges and agrees that if, following the termination of the consent, it continues to discharge trade wastewater into the sewer, a Business Customer Representative may enter the customer's premises and take all reasonable necessary steps to stop the customer's continued discharge of trade wastewater to the sewer. The right of entry conferred by this clause is in addition to, and not in substitution for, any power of entry conferred on Sydney Water by the Act.

12. Supply of information

- 12.1 Any information supplied by the customer to Sydney Water for purposes of making this consent or for any purpose of this consent must as far as reasonably possible be a true and complete disclosure by the customer for purposes of enabling Sydney Water to;
- (a) determine whether to grant the consent in clause 4.1; and
 - (b) determine whether there has been any breach of this consent.
- 12.2 The customer must not, in or in connection with a document supplied to Sydney Water for purposes of making this consent or for any purpose of this consent, furnish information, which is false or misleading in a material particular with regard to the trade wastewater to be discharged to the sewer.
- 12.3 Sydney Water must not disclose any confidential information obtained in connection with the administration or execution of this consent, unless that disclosure is made;
- (a) with the consent in writing of the customer
 - (b) with other lawful excuse.

13. Sampling

- 13.1 For purposes of this consent, schedule 2 specifies sampling and analysis criteria, flow rates and volume determinations of trade wastewater to be discharged or discharged under clause 4.1.
- 13.2 A Business Customer Representative may take as many samples of trade wastewater at any point in any production process or storage facility, or at any other point on the premises, as he or she thinks fit.
- 13.3 The customer must comply with the provisions of schedule 2.

14. Apparatus, plant and equipment for recording or treating trade wastewater

GENERAL CONDITIONS

- 14.1 The customer must, at its own cost, provide, operate and maintain in an effective and efficient working order, the apparatus, plant and equipment described in schedule 5 for purposes of regulating, treating, determining and measuring the quality, quantity and rate of discharge of trade wastewater under clause 4.1.
- 14.2 Sydney Water may require the customer to use its discretion to formulate and take such additional actions as may be appropriate to achieve the objects which, in the opinion of Sydney Water, are necessary for the customer to regulate, treat, determine or measure trade wastewater for purposes of discharge under clause 4.1.
- 14.3 The customer must, at its own costs, maintain records in such manner as may be required by Sydney Water, of all measurements, sampling and results obtained in the course of treatment and discharge of trade wastewater under clause 4.1.
- 14.4 The customer must submit to Sydney Water documents containing records of results specified in schedule 2.
- 14.5 The customer must maintain records of particulars and dates of cleaning and maintaining all apparatus, plant and equipment described in schedule 5 and particulars, dates and method of disposal of trade waste residue from such apparatus, plant and equipment.
- 14.6 The customer acknowledges that Sydney Water does not approve or warrant that any apparatus, plant or equipment used by the customer is sufficient for purposes of processing or treating trade wastewater for discharge under clause 4.1.
- 15. Variation and renewal of consent**
- 15.1 Before varying, substituting or adding any process conducted or to be conducted on the premises that may cause the volume, rate or quality of wastewater discharged to change from that agreed under schedule 1 and schedule 4, the customer shall give Sydney Water not less than 14 days written notice of its intention. Any variation, substitution or addition shall only be conducted after receipt of written approval to same and subject to any conditions (including any requirement to vary the terms of this consent) that Sydney Water may impose.
- 15.2 Sydney Water may vary the terms of this consent where:
- (a) Sydney Water alleges a single significant breach or three breaches of the same nature, to have occurred in a six month period; or
 - (b) in the opinion of Sydney Water, a substantial or material part of any plan of action under clause 8.5(d) may not be completed for a period exceeding 90 days; or
 - (c) the customer gives Sydney Water notice under clause 15.1.
- For the purposes of this clause and without limitation, the following circumstances shall be regarded as being a single significant breach:
- (i) an activity or event that could adversely affect; the health and safety of any employee, agent or contractor to Sydney Water, the integrity of Sydney Water assets or the viability of any of Sydney Water's treatment processes or products; or
 - (ii) failure to achieve effluent improvement program milestone; or
 - (iii) failure to install pre-treatment; or
 - (iv) by-pass pre-treatment and/or installation of equipment that facilitates by-pass of pre-treatment; or
 - (v) flow-meter turned off or bypassed.
- 15.3 A renewal of this consent may be initiated by the customer:
- (a) not less than two months before the date of expiration of this consent, and
 - (b) not more than six months before the date of expiration of this consent.
- 15.4 If this consent remains current immediately prior to the expiration of the term detailed in 3.2, or any subsequent terms renewed in accordance with this clause, and:
- (a) the customer has not given notice in accordance with clause 20.1 of this consent and;
 - (b) Sydney Water has not given to the customer at least 30 days' notice prior to the expiration of this consent, of its intention to permit the consent to expire in accordance with clause 3.2
- Then this consent shall be deemed to be renewed immediately following its expiration, for a further period of six months.
- 15.5 Any amended schedules that Sydney Water prepares in response to a variation or renewal will be taken to be incorporated into this consent;
- (a) on execution by the customer; or
 - (b) after 14 days of receipt by the customer of the notice of the variation or renewal.
- 15.6 The notification of alterations to the critical status of any pollutants does not constitute a variation.
- 16. Disposal of trade waste residue**
- The customer must not dispose of any trade waste residue, except in accordance with the requirements of the EPA.
- 17. Disposal of grease trap wastes**
- The customer must not dispose of grease trap wastes other than in accordance with Sydney Water's 'Wastesafe' Management System.
- 18. This consent comprises all applicable terms and conditions**
- 18.1 The provisions of this consent comprise all of the applicable terms and conditions between the parties.

GENERAL CONDITIONS

18.2 It is declared by the parties that no further or other promises or provisions are, or will be claimed to be implied, or to arise between the parties by way of collateral or other agreement by reason of any promise, representation, warranty or undertaking given or made by any party (or its agent) to another, on or prior to the execution of this deed, and the existence of any such implication or collateral or other agreement, is hereby negated by the parties.

18.3 Clauses 18.1 and 18.2 do not prejudice the ability of the parties to vary or amend this consent in accordance with the provisions of this consent or by a further consent in writing.

19. No transfer or assignment

The customer cannot transfer or assign the consent granted in clause 4.1 nor any other right or obligation the customer has or may have under this consent, without the prior consent in writing of Sydney Water.

20. Termination of consent by customer

20.1 Termination of this consent may be effected by the customer upon the giving of at least 30 days' notice in writing to Sydney Water. The notice must state the date on which this consent terminates.

20.2 The customer is bound by the provisions of this consent with regard to any discharge of trade wastewater into the sewer from the premises, including the payment of charges under clause 5.1, from the commencement of this consent until its termination.

20.3 Notwithstanding provisions contained elsewhere in this consent the parties may terminate this consent in writing by mutual agreement provided the parties enter into a further trade waste consent immediately following termination of this consent.

21. Notices and communications

21.1 A notice or communication under this consent must be in writing.

21.2 For purposes of clause 21.1, a notice or communication may;

- (a) be left at the address of the addressee; or
- (b) be sent by prepaid ordinary post to the address of the addressee; or
- (c) sent by facsimile transmission to the facsimile number of the addressee
- (d) sent by email to the email address of the addressee

as specified in schedule 8 or such other address as may be notified by the addressee to the other party.

21.3 Unless a later time is specified in it, a notice or communication takes effect from the time it is received.

21.4 Unless the contrary is shown, for purposes of clause 21.3, if a notice or communication is;

- (a) a letter sent by pre-paid post, it will be taken to have been received on the third day after posting; or
- (b) a facsimile, it will be taken to have been received on receipt by the sender, of the written or oral advice of the addressee that the whole of the facsimile transmission has been received by the addressee in a form that is legible.

22. Miscellaneous

Each party must act in good faith in the implementation of this consent and, without limiting the scope of this obligation, must also seek to resolve any difference or dispute between them as to the consent in good faith.

23. Entire consent

This consent constitutes the entire agreement between the parties in relation to its subject matter. No understanding, arrangement or provision not expressly set out in this consent will bind the parties. Accordingly all correspondence, negotiations and other communications between the parties in relation to the subject matter of this consent that precede this consent are superseded by and merged in it.

Note: This consent has no effect until it is executed for and on behalf of Sydney Water Corporation.

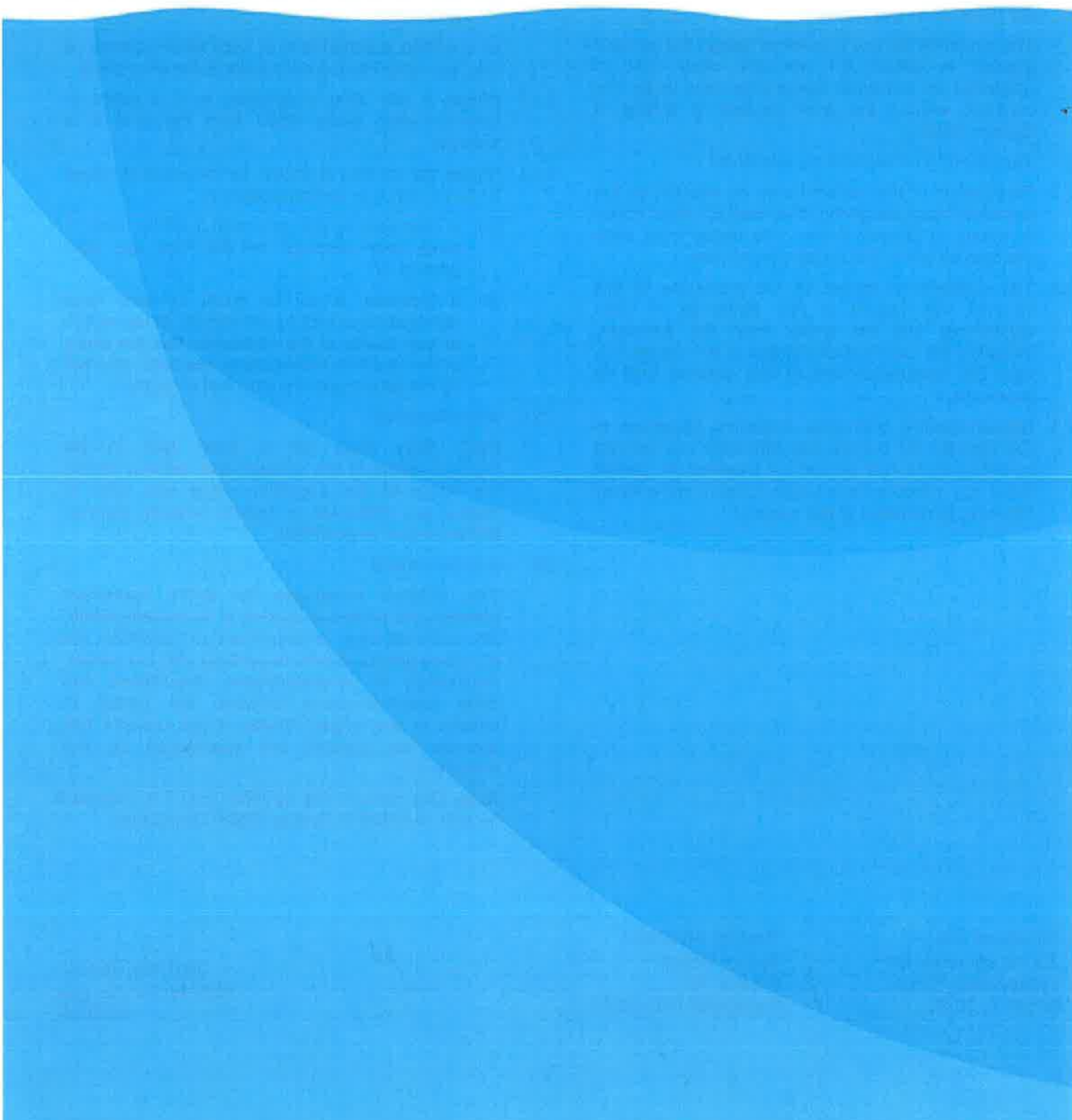
Contact Us

To find out more visit
sydneywater.com.au
or call 13 20 92

Postal address

Sydney Water
PO Box 399
Parramatta NSW 2124

Sydney Water
ABN 49 776 225 038
BCS034



APPENDIX B

Environment Protection License

Environment Protection Licence

Licence - 4865

Licence Details	
Number:	4865
Anniversary Date:	29-September

Licensee
ENVIROGUARD PTY LIMITED
PO BOX 804
ST MARYS NSW 1790

Premises
ERSKINE PARK LANDFILL
50 QUARRY ROAD
ERSKINE PARK NSW 2759

Scheduled Activity
Waste disposal (application to land)

Fee Based Activity	Scale
Waste disposal by application to land	Any capacity

Region
Waste & Resource Recovery
59-61 Goulburn Street
SYDNEY NSW 2000
Phone: (02) 9995 5000
Fax: (02) 9995 5999
PO Box A290
SYDNEY SOUTH NSW 1232



Environment Protection Licence

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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

ENVIROGUARD PTY LIMITED
PO BOX 804
ST MARYS NSW 1790

subject to the conditions which follow.

Environment Protection Licence



Licence - 4865

1 Administrative Conditions

A1 What the licence authorises and regulates

- A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Waste disposal (application to land)	Waste disposal by application to land	Any capacity

A2 Premises or plant to which this licence applies

- A2.1 The licence applies to the following premises:

Premises Details
ERSKINE PARK LANDFILL
50 QUARRY ROAD
ERSKINE PARK
NSW 2759
PART LOT 4 DP 1094504, PART LOT 1 DP 1140063, PART LOT 103 DP 1143935
AS SHOWN WITHIN HATCHED AREA ON ERSKINE PARK LANDFILL LICENCED AREA DRAWING SHEETS 1 & 2 DATED 13/07/2006

A3 Information supplied to the EPA

- A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

Note: For the purposes of this licence the abbreviation "LEMP" is defined as the document titled Erskine Park Landfill Environmental Management Plan dated September 2007 and any amendments made to this edition.

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2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

<i>Air</i>			
EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
3	Dust deposition monitoring - D1		Dust gauge known as "D1", 295541E 6255574N.
4	Dust deposition monitoring - D2		Dust gauge labelled as "D2" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295628E 6255787N.
5	Dust deposition monitoring - D8		Dust gauge labelled as "D8" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295451E 6256020N.
6	Dust deposition monitoring - D4		Dust gauge labelled as "D4" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295051E 6255980N.
7	Dust deposition monitoring - D7		Dust gauge labelled as "D7" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295216E 6255546N.
8	Dust deposition monitoring - D6		Dust gauge labelled as "D6" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295252E 6255974N.
18	Weather monitoring station		Weather monitoring station labelled as "Weather station" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295053E 6255721N.
23	Gas Monitoring Well - GS1		Gas monitoring bore labelled as "GS1" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295455E 6256019N.
24	Gas Monitoring Well - GS2		Gas monitoring bore labelled as "GS2" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295632E 6255693N.
25	Gas Monitoring Well - GS3		Gas monitoring bore labelled as "GS3" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295471E 6255619N.

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26	Gas Monitoring Well - GS4	Gas monitoring bore labelled as "GS4" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295225E 6255568N.
27	Gas Monitoring Well - GS9	Gas monitoring bore labelled as "GS9" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 294960E 6255743N.
29	Gas Monitoring Well - GS6	Gas monitoring bore labelled as "GS6" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295257E 6255960N.
31	Gas Monitoring Well - GS7	Gas monitoring bore labelled as "GS7" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295057E 6256001N.
32	Gas Monitoring Well - GS8	Gas monitoring bore labelled as "GS8" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295546E 6255576N.

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Retention Dam - SD004		Retention dam located at the SE boundary of the landfill labelled as "SD004" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295009E 6255659N.
2	Leachate quality monitoring - LP002		Concrete leachate riser labelled as "LP002" (Secondary Leachate Riser) 295285E 6255810N
9	Groundwater monitoring point - BH18		Groundwater monitoring bore labelled as "BH 18" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295320E 6255935N.
10	Groundwater monitoring point - BH15A		Groundwater monitoring bore labelled as "BH15A" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295001E 6255888N.

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11	Groundwater monitoring point - BH15B		Groundwater monitoring bore labelled as "BH15B" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295017E 6255898N.
12	Groundwater monitoring point - BH16A		Groundwater monitoring bores labelled as "BH16A" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295628E 6255781N.
13	Groundwater monitoring point - BH16B		Groundwater monitoring bore labelled as "BH16B" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295630E 6255786N.
14	Groundwater monitoring point - BH17E		Groundwater monitoring bore labelled as "BH17E" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 294952E 6255744N.
15	Groundwater monitoring point - BH17D		Groundwater monitoring bore labelled as "BH17D" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 294955E 6255742N.
16	Sedimentation Dam - SD003	Sedimentation Dam - SD003	Sedimentation pond located in the north-west corner of the landfill labelled as "SD003" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295055E 625610
17	Sedimentation Dam - SD002	Sedimentation Dam - SD002	Sedimentation pond located in the south-east corner of the landfill labelled as "SD002" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295622E 6255643N.
19	Groundwater Monitoring Point - BH19		Groundwater monitoring bore labelled as "BH19" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295324E 6255995N.

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20	Groundwater Monitoring Point - BH21	Groundwater monitoring bore labelled as "BH21" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295477E 6255620N.
21	Groundwater Monitoring Point - BH22	Groundwater monitoring bore labelled as "BH22" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295474E 6255620N.
22	Groundwater Monitoring Point - BH23	Groundwater monitoring bore labelled as "BH23" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295467E 6255629N.
28	Groundwater Monitoring Point - BH24	Groundwater monitoring bore labelled as "BH24" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295176E 6255602N.
30	Groundwater Monitoring Point - BH20	Groundwater monitoring bore labelled as "BH20" on map titled "Figure 2: Location of Monitoring Sites" dated 6 November 2009 prepared by CES, 295263E 6255964N.
33	Leachate quality monitoring - LP003	Auxiliary Riser (Feeding to Leachate Treatment Plant & Online Ammonia Analyser) 295200E 6255750N

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\ below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the

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specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\.

L2.4 Water and/or Land Concentration Limits

POINT 16

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Ammonia	milligrams per litre				1
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

POINT 17

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Ammonia	milligrams per litre				1
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Volume and mass limits

L3.1 The licensee must not discharge from Points 1, 16 and 17 unless:

- The discharge from Points 1, 16 and 17 is a result of rainfall causing the sedimentation dam to overflow; and
- The licensee has taken all practical measures to avoid or minimise water pollution; and
- The 100 percentile Concentration Limit for Ammonia applies to all discharges.

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L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled "Waste" and meeting the definition, if any, in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled "Other Limits" in the table below.

This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General solid waste (non-putrescible)	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste disposal (application to land)	A maximum quantity of 1,000,000 tonnes of waste may be disposed from 1 January to 31 December in any year
NA	Asbestos waste	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste disposal (application to land)	A maximum quantity of 1,000,000 tonnes of waste may be disposed from 1 January to 31 December in any year
NA	Waste tyres	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste disposal (application to land)	A maximum quantity of 1,000,000 tonnes of waste may be disposed from 1 January to 31 December in any year
NA	General solid waste (non-putrescible)	Immobilised waste which is assessed as General Solid Waste (non-putrescible) and are subject to general or specific immobilisation approvals	Waste disposal (application to land)	A maximum quantity of 1,000,000 tonnes of waste may be disposed from 1 January to 31 December in any year
NA	Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA

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- L4.2 The licensee must not dispose of any tyres on the premises which;
- have a diameter of less than 1.2 metres; and
 - are delivered at the premises in a load containing more than 5 whole tyres; and
 - became waste in the Sydney Metropolitan Area.
- L4.3 For the purpose of this condition:
- Tyres are taken to be shredded only if the tyres are in pieces measuring no more than 250 mm in any direction; and
 - Domestic load means a load containing no more than 5 tyres having a diameter of less than 1.2 metres.
- L4.4 Tyres stockpiled on the premises must:
- not exceed fifty (50) tonnes of tyres at any one time; and
 - be located in a clearly defined area away from the tipping face; and
 - be managed to control vermin; and
 - be managed to prevent any tyres from catching fire.

L5 Noise limits

L5.1

Location	Day
	LAeq (15 minutes)
Mamre Road Residence*	45
Erskine Park Road Residence*	54

Note: *As identified in section 7.8 of volume 1 of the document titles, "*Environmental Impact Statement - Enviroguard - Erskine Park Landfill - Revised Final Profile - National Environmental Consulting Services*" dated 17 October 2005.

Note: The noise limits represent the noise contribution from the landfill site for the modifications to the final profile.

- L5.2 Noise from the premises is to be measured at the most affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the most-affected point within 30 metres of the residence to determine compliance with condition L5.1.
- L5.3 The noise emission limits identified in condition L5.1 apply under meteorological conditions of:
- Wind speed up to 3m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3oC/100m and wind speed up to 2m/s at 10 metres above the ground.

L6 Hours of operation

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- L6.1 The hours of operation are limited to those shown in condition 18 of development consent no 163/93 issued by Penrith City Council. These are 6am to 5pm Monday to Friday, 6am to 4pm Saturdays and 7am to 4pm Sundays and public holidays.

L7 Potentially offensive odour

- L7.1 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

- O1.1 Licensed activities must be carried out in a competent manner.
This includes:
- the processing, handling, movement and storage of materials and substances used to carry out the activity; and
 - the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.
- O1.2 All operations and activities occurring at the premises must be carried out in a manner that will prevent and minimise fire at the premises.
- O1.3 The licensee must ensure that the landfill cells are capped progressively and in accordance with EPA's Environmental Guidelines: Solid Waste Landfills (1996)" or equivalent.
- O1.4 Final capping must be carried out in accordance with "EPA Environmental Guidelines: Solid Waste Landfills (1996)" or other EPA approved capping design.

O2 Maintenance of plant and equipment

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- must be maintained in a proper and efficient condition; and
 - must be operated in a proper and efficient manner.

O3 Dust

- O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

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O4 Processes and management

O4.1 The licensee must take all practicable steps to control entry to the premises.

O5 Waste management

O5.1 The leachate collection system must be maintained so as to collect and impound without discharge to waters external to the premises, all leachate generated by rainfall events of less than 1 in 25 year recurrence interval of 24 hours duration.

O5.2 A leachate barrier system with a minimum in-situ coefficient of permeability less than 10^{-9} m/sec must be installed in the leachate storage pond(s) and the drains that connect the ponds to the leachate collection system.

O5.3 All rainfall which comes into contact with waste, daily cover and intermediate cover must be managed as leachate, unless otherwise approved by the EPA.

O5.4 Leachate must not be discharged to surface waters.

O5.5 Leachate applied to the tipping face and/or used for dust suppression must not be directed to the sediment control dams.

O5.6 The Licensee must ensure that the leachate level in the landfill (measured at point 2) does not exceed 30 metres AHD.

O5.7 The licensee must monitor the standing water level of leachate (measured at LP002) at a quarterly frequency, and each measurement must be taken at least 48 hours after any leachate is extracted from the landfilled waste.

O5.8 The licensee must manage immobilised waste in a manner that ensures that it continues to meet the criteria described for General Solid Waste (non-putrescible) in accordance with the DECC Waste Classification Guidelines, as in force from time to time.

O5.9 The licensee must ensure that immobilised waste(s) are not crushed and/or compacted.

O5.10 The licensee must cover all immobilised waste on the day of its receipt.

O5.11 Waste must not be placed at elevations above those depicted in Figure 5 of volume 1 of the document titled "Environmental Impact Statement – Enviroguard – Erskine Park Landfill – Revised Final Profile – National Environmental Consulting Services" and dated 17 October 2005.

O5.12 Cover material must be

a) Daily cover

Daily cover material must be either

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- (i) Virgin excavated natural material (VENM); or
- (ii) NSW EPA approved alternative daily cover (ADC).

Cover material must be applied to a minimum depth of 15 centimetres over all exposed landfilled waste prior to ceasing operations at the end of each day.

b) Intermediate cover

Cover material must be applied to a depth of 30 centimetres over surfaces of the landfilled waste at the premises which are to be exposed for more than 90 days.

c) Cover material stockpile

At least two weeks cover material must be available at the premises under all weather conditions. This material may be won on site, or alternatively a cover stockpile must be maintained adjacent to the tip face.

O5.13 In accordance with Condition O5.12 a) (ii) the Licensee may apply material as an alternative daily cover that meets all the following criteria:

- a) The alternative daily cover must consist only of crushed concrete and/or crushed bricks and/or crushed clay tiles and/or crushed glass fines from domestic or commercial recycling collections, mixed with soil. The amount of soil in the mixture must be at least 25% (by mass).
- b) The alternative daily cover must be applied to a depth of at least 150mm prior to ceasing operations at the end of each day.
- c) The alternative daily cover material must not contain contaminants at concentrations above those specified for General Solid Waste (Non-putrescible) in Tables 1 and 2 of the Waste Classification Guidelines, Part 1: Classifying Waste.
- d) The alternative daily cover material must not contain asbestos, food waste, animal waste, grease trap waste, biosolids, rubber, plastic, bitumen, asphalt, paper, cloth, paint, wood, other vegetable matter, plaster and metal.
- e) The maximum permissible dimension of particles is 50mm and 50% by mass of the material must be comprised of particles less than 1mm in diameter. Note: To meet all of the requirements in this approval it is likely that the alternative daily cover will require processing into a fine particle size.
- f) The alternative daily cover material must have the ability to suppress odours from the landfilled waste and must not itself generate offensive odours.
- g) Rainwater which comes into contact with the alternative daily cover must be managed as landfill leachate.

O5.14 Where wastes are received at the premises for purposes of storage or processing or transfer to another premises, then such wastes are not required to be covered on a daily basis provided that:

- a) Such wastes are stored and managed so as not to cause or be likely to cause any off-site environmental effects; and
- b) Such wastes are stored in a clearly defined area of the premises away from the tipping face.

O5.15 The last licensee must prepare and submit to the EPA within three months prior to the last load of waste being landfilled a closure plan in accordance with section 76 of the Protection of the Environment Operations Act 1997.

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O6 Other operating conditions

- O6.1 The licensee must install and operate stormwater control infrastructure, as detailed in of volume 1 of the document titled “Environmental Impact Statement – Enviroguard – Erskine Park Landfill – Revised Final Profile – National Environmental Consulting Services” and dated 17 October 2005, to receive and treat all run-off from completed surfaces of the landfill.
- O6.2 Stormwater sedimentation basins must be operated and maintained so as to collect and impound, without discharge to surface waters external to the premises, all surface water run-off from storm events of less than a 1 in 5-year recurrence interval of 24 hours duration.

5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2 All records required to be kept by this licence must be:
- in a legible form, or in a form that can readily be reduced to a legible form;
 - kept for at least 4 years after the monitoring or event to which they relate took place; and
 - produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
- the date(s) on which the sample was taken;
 - the time(s) at which the sample was collected;
 - the point at which the sample was taken; and
 - the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

- M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

- M2.2 Air Monitoring Requirements

POINT 3,4,5,6,7,8

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	Australian Standard 3580.10.1-1991

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M2.3 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Nitrogen (ammonia)	milligrams per litre	Quarterly	Grab sample
pH	pH	Quarterly	Grab sample
Total suspended solids	milligrams per litre	Quarterly	Grab sample

POINT 2

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams per litre	Yearly	Grab sample
Aluminium	milligrams per litre	Yearly	Grab sample
Arsenic	milligrams per litre	Yearly	Grab sample
Barium	milligrams per litre	Yearly	Grab sample
Cadmium	milligrams per litre	Yearly	Grab sample
Calcium	milligrams per litre	Yearly	Grab sample
Chloride	milligrams per litre	Yearly	Grab sample
Chromium (hexavalent)	milligrams per litre	Yearly	Grab sample
Cobalt	milligrams per litre	Yearly	Grab sample
Conductivity	microsiemens per centimetre	Quarterly	Probe
Copper	milligrams per litre	Yearly	Grab sample
Ethyl benzene	milligrams per litre	Yearly	Grab sample
Fluoride	milligrams per litre	Yearly	Grab sample
Magnesium	milligrams per litre	Yearly	Grab sample
Manganese	milligrams per litre	Yearly	Grab sample
Mercury	milligrams per litre	Yearly	Grab sample
Nitrate	milligrams per litre	Yearly	Grab sample
Nitrite	milligrams per litre	Yearly	Grab sample
Nitrogen (ammonia)	milligrams per litre	Yearly	Grab sample
Organochlorine pesticides	milligrams per litre	Yearly	Grab sample
Organophosphate pesticides	milligrams per litre	Yearly	Grab sample
pH	pH	Quarterly	Grab sample
Phosphorus (total)	milligrams per litre	Yearly	Grab sample
Polychlorinated biphenyls	milligrams per litre	Yearly	Grab sample
Polycyclic aromatic hydrocarbons	milligrams per litre	Yearly	Grab sample

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Potassium	milligrams per litre	Yearly	Grab sample
Sodium	milligrams per litre	Yearly	Grab sample
Standing Water Level	metres	Yearly	In situ
Sulfate	milligrams per litre	Yearly	Grab sample
Toluene	milligrams per litre	Yearly	Grab sample
Total chromium	milligrams per litre	Yearly	Grab sample
Total dissolved solids	milligrams per litre	Yearly	Grab sample
Total organic carbon	milligrams per litre	Yearly	Grab sample
Total petroleum hydrocarbons	milligrams per litre	Yearly	Grab sample
Total Phenolics	milligrams per litre	Yearly	Grab sample
Xylene	milligrams per litre	Yearly	Grab sample
Zinc	milligrams per litre	Yearly	Grab sample

POINT 9,10,11,12,13,14,15,19,20,21,22,28,30

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams per litre	Quarterly	Grab sample
Aluminium	milligrams per litre	Yearly	Grab sample
Arsenic	milligrams per litre	Yearly	Grab sample
Barium	milligrams per litre	Yearly	Grab sample
Benzene	milligrams per litre	Yearly	Grab sample
Cadmium	milligrams per litre	Yearly	Grab sample
Calcium	milligrams per litre	Quarterly	Grab sample
Chloride	milligrams per litre	Quarterly	Grab sample
Chromium (hexavalent)	milligrams per litre	Yearly	Grab sample
Chromium (total)	milligrams per litre	Yearly	Grab sample
Cobalt	milligrams per litre	Yearly	Grab sample
Copper	milligrams per litre	Yearly	Grab sample
Ethyl benzene	milligrams per litre	Yearly	Grab sample
Fluoride	milligrams per litre	Yearly	Grab sample
Lead	milligrams per litre	Yearly	Grab sample
Magnesium	milligrams per litre	Quarterly	Grab sample
Manganese	milligrams per litre	Yearly	Grab sample
Mercury	milligrams per litre	Yearly	Grab sample
Nitrate	milligrams per litre	Yearly	Grab sample
Nitrite	milligrams per litre	Yearly	Grab sample
Nitrogen (ammonia)	milligrams per litre	Quarterly	Grab sample
Organochlorine pesticides	milligrams per litre	Yearly	Grab sample
Organophosphate pesticides	milligrams per litre	Yearly	Grab sample
pH	pH	Quarterly	Probe

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Polycyclic aromatic hydrocarbons	milligrams per litre	Yearly	Grab sample
Potassium	milligrams per litre	Quarterly	Grab sample
Sodium	milligrams per litre	Quarterly	Grab sample
Standing Water Level	metres	Quarterly	In situ
Sulfate	milligrams per litre	Quarterly	Grab sample
Toluene	milligrams per litre	Yearly	Grab sample
Total dissolved solids	milligrams per litre	Quarterly	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample
Total petroleum hydrocarbons	milligrams per litre	Yearly	Grab sample
Total Phenolics	milligrams per litre	Yearly	Grab sample
Xylene	milligrams per litre	Yearly	Grab sample
Zinc	milligrams per litre	Yearly	Grab sample

POINT 16,17

Pollutant	Units of measure	Frequency	Sampling Method
BOD	milligrams per litre	Quarterly	Grab sample
Chemical oxygen demand	milligrams per litre	Quarterly	Grab sample
Conductivity	microsiemens per centimetre	Quarterly	Grab sample
Nitrogen (ammonia)	milligrams per litre	Quarterly	Grab sample
pH	pH	Quarterly	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample
Total suspended solids	milligrams per litre	Quarterly	Grab sample

POINT 33

Pollutant	Units of measure	Frequency	Sampling Method
Alkalinity (as calcium carbonate)	milligrams per litre	Yearly	Other Approved Method 1
Aluminium	milligrams per litre	Yearly	Other Approved Method 1
Arsenic	milligrams per litre	Yearly	Other Approved Method 1
Barium	milligrams per litre	Yearly	Other Approved Method 1
Cadmium	milligrams per litre	Yearly	Other Approved Method 1
Calcium	milligrams per litre	Yearly	Other Approved Method 1
Chloride	milligrams per litre	Yearly	Other Approved Method 1
Chromium (hexavalent)	milligrams per litre	Yearly	Other Approved Method 1
Cobalt	milligrams per litre	Yearly	Other Approved Method 1
Conductivity	microsiemens per centimetre	Quarterly	Probe
Copper	milligrams per litre	Yearly	Other Approved Method 1

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Ethyl benzene	milligrams per litre	Yearly	Other Approved Method 1
Fluoride	milligrams per litre	Yearly	Other Approved Method 1
Magnesium	milligrams per litre	Yearly	Other Approved Method 1
Manganese	milligrams per litre	Yearly	Other Approved Method 1
Mercury	milligrams per litre	Yearly	Other Approved Method 1
Nitrate	milligrams per litre	Yearly	Other Approved Method 1
Nitrite	milligrams per litre	Yearly	Other Approved Method 1
Nitrogen (ammonia)	milligrams per litre	Yearly	Other Approved Method 1
Organochlorine pesticides	milligrams per litre	Yearly	Other Approved Method 1
Organophosphate pesticides	milligrams per litre	Yearly	Other Approved Method 1
pH	milligrams per litre	Quarterly	Other Approved Method 1
Phosphorus (total)	milligrams per litre	Yearly	Other Approved Method 1
Polychlorinated biphenyls	milligrams per litre	Yearly	Other Approved Method 1
Polycyclic aromatic hydrocarbons	milligrams per litre	Yearly	Other Approved Method 1
Potassium	milligrams per litre	Yearly	Other Approved Method 1
Sodium	milligrams per litre	Yearly	Other Approved Method 1
Standing Water Level	metres	Yearly	In situ
Sulfate	milligrams per litre	Yearly	Other Approved Method 1
Toluene	milligrams per litre	Yearly	Other Approved Method 1
Total chromium	milligrams per litre	Yearly	Other Approved Method 1
Total dissolved solids	milligrams per litre	Yearly	Other Approved Method 1
Total organic carbon	milligrams per litre	Yearly	Other Approved Method 1
Total petroleum hydrocarbons	milligrams per litre	Yearly	Other Approved Method 1
Total Phenolics	milligrams per litre	Yearly	Other Approved Method 1
Xylene	milligrams per litre	Yearly	Other Approved Method 1
Zinc	milligrams per litre	Yearly	Other Approved Method 1

M2.4 For the purposes of monitoring point 33 the 'Other Approved Method 1' refers to reading from the online ammonia analyser of the Leachate Treatment Plant.

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

- any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
- if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
- if no such requirement is imposed by or under the Act or by a condition of this licence, any

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methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M4 Weather monitoring

M4.1

Parameter (Point 18)	Units of Measure	Frequency	Averaging Period	Sampling Method
Air Temperature	Degrees Celsius	Continuous	1 hour	AM-4
Wind direction	Degrees	Continuous	15 minute	AM-2 & AM-4
Wind speed	m/s	Continuous	15 minute	AM-2 & AM-4
Rainfall	mm	Continuous	1 hour	AM-4
Rainfall	mm	Continuous	24 hour	AM-4
Evaporation	mm	Continuous	24 hour	AM-4
- Siting				AM-1 & AM-4
- Measurement				AM-2 & AM-4

Note: Methods AM-2 and AM-4 are specified in the *"Approved Methods for Sampling and Analysis of Air Pollutants in NSW"* and all monitoring must be conducted strictly in accordance with the requirements outlined in this document.

M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:

- the date and time of the complaint;
- the method by which the complaint was made;
- any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- the nature of the complaint;
- the action taken by the licensee in relation to the complaint, including any follow-up contact with the

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complainant; and

f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M7 Other monitoring and recording conditions

M7.1 The licensee must record the following data for every fire at the premises:

- a) Time and date that the fire started;
- b) Time and date that the fire was either burnt out or extinguished;
- c) Location of the fire (eg. clean timber stockpile, putrescible garbage cell etc.);
- d) Prevailing weather conditions; and
- e) Observations made in regard to smoke direction and dispersion.

M7.2 The licensee must monitor landfill gas quarterly and otherwise in accordance with Benchmark 17 of the EPA's publication titled "Environmental Guidelines: Solid Waste Landfills".

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

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At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.
- R1.3 Where this licence is transferred from the licensee to a new licensee:
- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
 - b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.
- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
 - b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.
- R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').
- R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.
- R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
- a) the licence holder; or
 - b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

- R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.
- R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.
- R2.3 The licensee must notify the EPA within 24 hours of becoming aware that landfill gas with a concentration of methane greater than 1.25% v/v has migrated in the subsurface beyond the boundary of the premises.

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Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

- R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
- where this licence applies to premises, an event has occurred at the premises; or
 - where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
- and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.
- R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.
- R3.3 The request may require a report which includes any or all of the following information:
- the cause, time and duration of the event;
 - the type, volume and concentration of every pollutant discharged as a result of the event;
 - the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
 - the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
 - action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
 - details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
 - any other relevant matters.
- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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8 Pollution Studies and Reduction Programs

U1 Ongoing groundwater management

- U1.1 The licensee must prepare and submit a report to the EPA within two months of any groundwater monitoring at the premises that detects ammonia at a concentration above 15 mg/L in any groundwater monitoring bore on this licence. The report must propose actions which the licensee will implement (including timeframes) to prevent contaminated groundwater migrating from the premises.

9 Special Conditions

E1 Financial assurance

- E1.1 A financial assurance, in favour of the EPA, in the amount of one million dollars (\$1,000,000) must be maintained during the operation of the facility and thereafter until such time as the EPA is satisfied the premises are environmentally secure.

This assurance must be replenished to the full amount should the EPA have any reason to call up the financial assurance or any part thereof to correct environmental problems which have not been remedied by the occupier upon being given notice to do so.

Failure to maintain the assurance at the full amount will result in suspension of this Licence.

This financial assurance shall be indexed to the Consumer Price Index (CPI). The EPA reserves the right to vary the magnitude of the bank guarantee at any time depending upon any reassessment of possible cost(s) of rehabilitation of the premises.

E2 Alternative Daily Cover - Operational Trial

- E2.1 The licensee is permitted to undertake an alternative daily cover trial of waste at the tip face for six trial events over a six month period. Each trial event must be no longer than 48 hours.

The trial must be conducted in accordance with:

- the document titled "Trial Proposal for Recovered Fines use as Alternative Landfill Cover" prepared by ResourceCo Pty Ltd dated 27 June 2018 and filed on EPA files at DOC18/547028, and
- the EPA's Environmental Guidelines: Solid Waste Landfills (2nd Edition, 2016).

- E2.2 The six month period referred to in condition E2.1 shall commence from the first day alternative daily cover is utilised at the premises.
- E2.3 The alternative daily cover must not contain asbestos, food waste, animal waste, grease trap waste, biosolids or vegetable matter.
- E2.4 The licensee must provide a written report to the Director Waste Compliance within 30 days of the end of the alternative daily cover trial.

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The report must be submitted via email to waste.operations@epa.nsw.gov.au and must include, but not be limited to:

- a) an assessment of the effectiveness and consistency of the alternative daily cover in meeting the required outcomes for the covering of waste at Section 8 and any other relevant sections of the Environmental Guidelines: Solid Waste Landfills (NSW EPA, Second edition, 2016);
- b) data relating to the analytical testing of the alternative daily cover material including but not limited to particle size distribution, physical contaminant levels, asbestos, and waste classification requirements;
- c) photographs of the alternative daily cover prior to, during, and after placement at the tip face, and at stripping;
- d) benchmarking the performance of the alternative daily cover against virgin excavated natural material as daily cover;
- e) any other relevant findings of the trial.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Mr Greg Sheehy

Environment Protection Authority

(By Delegation)

Date of this edition: 27-June-2001

Environment Protection Licence



Licence - 4865

End Notes

- 1 Licence varied by notice 1028719, issued on 04-Jul-2003, which came into effect on 29-Jul-2003.
- 2 Licence varied by notice 1053138, issued on 02-Dec-2005, which came into effect on 27-Dec-2005.
- 3 Licence varied by notice 1060804, issued on 29-May-2006, which came into effect on 29-May-2006.
- 4 Licence varied by notice 1067269, issued on 19-Mar-2007, which came into effect on 19-Mar-2007.
- 5 Licence varied by notice 1074334, issued on 17-Jul-2007, which came into effect on 17-Jul-2007.
- 6 Licence varied by notice 1077901, issued on 02-Sep-2008, which came into effect on 02-Sep-2008.
- 7 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 8 Licence varied by notice 1095272, issued on 28-Nov-2008, which came into effect on 28-Nov-2008.
- 9 Licence fee period changed by notice 1114358 approved on .
- 10 Licence varied by notice 1114405, issued on 03-Jun-2011, which came into effect on 03-Jun-2011.
- 11 Licence varied by notice 1505834 issued on 08-May-2012
- 12 Licence varied by notice 1508294 issued on 27-Aug-2012
- 13 Licence varied by notice 1508965 issued on 11-Oct-2012
- 14 Licence varied by notice 1513491 issued on 03-May-2013
- 15 Licence varied by notice 1528025 issued on 17-Apr-2015
- 16 Licence varied by notice 1569274 issued on 20-Mar-2019

APPENDIX C

Landscape Plan

Proposed Restoration of the Erskine Park Landfill, Erskine Park

Detailed Landscape Plan

Cleanaway Waste Management

19 December 2019



Building exceptional
outcomes together



Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	For Client Comment	JV	MRS	MRS	10/12/2019
1	Final	JV	Paul Antony (CWY) and MRS	MRS	19/12/2019

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Proposed Restoration of the Erskine Park Landfill, Erskine Park | Detailed Landscape Plan

2



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Executive Summary

Tonkin Consulting (Tonkin) was engaged by Enviroguard Pty Ltd (ABN: 23 060 919 164) owned and operated by Cleanaway Waste Management to update the Landscape Plan (LP) for the Erskine Park Landfill (EPL), previously prepared by GHD for Enviroguard Pty Ltd (Ref. 22/13022/11160 dated February 2007). The EPL site is located in the eastern sector of the Penrith City Council (PCC) local government area and within the Erskine Park Employment Area (EPEA). Environment Protection Authority licence 4865 incorporates Lot 4 DP1094504, Lot 1 DP1140063 and Lot 103 DP1143935 on Quarry Road near the corner of Mamre Road and Erskine Park Road.

The LP is a consent condition of DA05/1740.01 from PCC. It aims to provide a clear, concise and practical framework for the landscaping of the final landform of the EPL, in accordance with the requirements of the *Landscape Development Control Plan (2014)* and both the *Biodiversity Restoration Plan (2005)* and *Management Plan (2006)* for the *Erskine Park Employment Area*. The final landform and landscaping was to provide bird habitat, a seed bank resource and form part of the biodiversity corridor in the area.

The objectives of the LP are to:

- determine local vegetation characteristics;
- describe the landscaping activities necessary to restore the native vegetation;
- describe the maintenance program to ensure establishment;
- utilise cost efficient restoration techniques;
- restore the EPL in a manner which minimises management costs in perpetuity; and
- provide an indication of the costing for the landscaping work.

The site was quarried from 1925 until 1994 for volcanic breccia as well as some clays and shales to a depth of 30 m below the nearby creek level. Since 1992, the site has been used as a landfill under a development consent issued by PCC. It used to receive approximately 1 Mt/yr of non-putrescible waste. Cleanaway proposes to continue using the quarry site as a landfill for non-putrescible waste to a height of 92 m AHD. It is proposed to cap the landfill with a seal bearing layer, a clay sealing layer, a revegetation infiltration layer and a revegetation topsoil layer.

The LP provided an assessment of the opportunities and constraints at the site in relation to landscaping and a detailed description of all activities required to implement the LP. Four distinct areas that will require different vegetation management were identified in the LP, these were:

Zone 1 – This was the rim of the quarry. Planting on the rim was recommended to consist of Shale Hills Woodland vegetation to link with the adjacent corridors.

Zone 2 – This was the 12.2 ha capping of the landfill. Due to the shallow capping, it is recommended that the LP for this zone will be restricted to a mixture of native shrubs and grasses.

Zone 3 – This zone consisted of a 4.6 hectare areas on the peak of the landfill capping. It is anticipated that this area forms part of the biodiversity corridor in the area and therefore recommended to be landscaped by lawn and native gardens.

Zone 4 – This is the wet areas surrounding the sediment basins. The landscaping in this area is recommended to consist of native wetland species.

A species list and densities are outlined for each Zone, as is the seed collection, plant propagation, site preparation, landscaping, maintenance, monitoring and reporting requirements. To assist with the implementation of the LP an indicative program of works and costings is also provided. The program of works is for a period of five years. The first two years are for establishment and the remaining three for maintenance.



1 Introduction

1.1 Overview

Tonkin Consulting (Tonkin) was engaged by Enviroguard Pty Ltd (ABN: 23 060 919 164) owned and operated by Cleanaway Waste Management to update the Landscape Plan (LP) previously prepared by GHD for Enviroguard Pty Ltd (Ref. 22/13022/11160 dated February 2007) for the Erskine Park Landfill (EPL). The LP is a consent condition of DA05/1740.01 from Penrith City Council (PCC). The LP has been developed in accordance with the Council's *Landscape Development Control Plan* (PCC, 2014) and the *Biodiversity Restoration Plan for the Erskine Park Employment Area* (Greening Australia NSW, 2005).

1.2 Aims and Objectives

The LP aims to provide a clear, concise and practical framework for the landscaping of the final landform of the EPL, in accordance with the requirements of the *Landscape Development Control Plan* (PCC, 2014) and the *Biodiversity Restoration Plan for the Erskine Park Employment Area* (Greening Australia NSW, 2005). The final landform and landscaping was to provide bird habitat and a seed bank resource and to form part of the biodiversity corridor in the area.

The objectives of the LP are to:

- determine local vegetation characteristics;
- describe the landscaping activities necessary to restore the native vegetation;
- describe the maintenance program to ensure establishment;
- utilise cost efficient restoration techniques;
- restore the EPL in a manner which minimises management costs in perpetuity; and
- provide an indication of the costing for the landscaping work.

1.3 Relationship with Existing Reports

Several reports and documents exist regarding the native vegetation occurring on site and possible restoration programs. The LP has taken into consideration the impacts of the following documentation:

- Landscape Development Control Plan (PCC, 2014);
- Biodiversity Management Plan Erskine Park Employment Area (HLA, 2006);
- Biodiversity Restoration Plan for Erskine Park Release Area, 2005;
- Conservation and Development Strategy Erskine Park Release Area, 2003;
- Vegetation Management Plan Bluescope Steel, 2004;
- Vegetation Management Plan Chep Site, 2005;
- Flora and Fauna Assessment Lots 3, 4, & 7, 2002; and
- Bush Fire Risk Management Plan, 2004.

The LP has also been prepared to be consistent with and enhance the Greening Western Sydney Project because it links with vegetation restoration work being undertaken along South Creek.

All work to be performed on site will also be in accordance with the following guidelines, or as updated:

- "Recovering Bushland" Best Practices Guidelines for Vegetation Restoration on the Cumberland Plain, DEC, 2005;
- Florabank Seed Collection and Management Guidelines, updated 2004;
- DIPNR's Best Practice Guidelines for Bush Regeneration on the Cumberland Plain, 2004; and
- GANSW Best Practice Revegetation Guidelines, 1999.



1.4 Relevant Legislation and Policies

The LP has been prepared in accordance with the provisions contained in relevant legislation and policy guidelines, including but not limited to the following:

- Biodiversity Conservation Act 2016 No 63;
- Hawkesbury Nepean Catchment Blue Print 2002;
- Local Government Act 1993 and Local Government Amendment (Community Land Management) Act 1998; and
- Penrith City Council Local Environmental Plan and relevant policies.

1.5 List of Abbreviations

The following summarises the various abbreviations used throughout the LP.

DEC	Department of Environment & Conservation. Now called Office of Environment and Heritage
DNR	Department of Natural Resources
OEH	Office of Environment and Heritage
EEC	Endangered Ecological Community
EPL	Erskine Park Landfill
EPEA	Erskine Park Employment Area
GANSW	Greening Australia NSW
GWS	Greening Western Sydney Project
LEP	Penrith Local Environment Plan
LGA	Local Government Area (Penrith City Council)
LP	Landscape Plan
PCC	Penrith City Council
SCRFF	Sydney Coastal River Flat Forest
SHW	Shale Hills Woodland
SPW	Shale Plains Woodland
BCA	Biodiversity Conservation Act 2016 No 63



2 Site Analysis

This section was prepared by GHD (2007) and is repeated herein as it provides a general description of the proposed development site, as reported in the *Erskine Park Landfill EIS* (2005). Only minor updates have been made to reflect changes in legislation.

2.1 Site Location

The Erskine Park Landfill (EPL) site is located 85-87 Quarry Road in the eastern sector of the Penrith LGA at Erskine Park. The site access is shared with Cleanaway's waste transfer station to the front of the property. Erskine Park is located 45 km from the Sydney CBD, 15 km south-east of Penrith and approximately 6 km south of St Marys. EPL is described as Lot 4 DP1094504, Lot 1 DP1140063 and Lot 103 DP1143935 and is situated within the EPEA near the corner of Mamre Road and Erskine Park Road, as shown in Figure 1 Appendix A. The EPL site is approximately 22 ha in size. The EPEA is land identified by Penrith City Council in the 1990s as suitable industrial land and is currently being developed for industrial purposes. The EPEA land is bounded by the Sydney Water pipeline and rural properties to the south, Mamre Road to the west, Erskine Park to the north and Ropes Ck to the east.

The land known as the EPEA was previously zoned Rural 1(a) under Interim Development Order No 93 – Penrith. The site is currently zones as the Erskine Park Employment Lands as part of the Western Sydney Employment Area by the NSW Government.

2.2 Site History

The initial land use of the area was agricultural with settlement occurring from the early 1880s. Quarrying began in 1925 on a prominent hill formed by a volcanic neck. This hill was RL 87 m in height and was quarried until 1994, extracting volcanic breccia as well as some clays and shales. Approximately 2.04 Million tonnes (Mt) of resources were available in the hill and another 3.57 Mt were available as quarrying continued to 30 m below the nearby creek level.

During the majority of the quarrying era, the neighbouring areas were zoned agricultural use, however urban development has taken place in the Erskine Park area all around the EPL.

2.3 Current Development

The landfill operates under a development consent issued by Penrith Council:

- DA No 163/92 on 11 November 1992,
- DA05/1740 on 25 May 2006 (revised landform), and
- DA05/1740.01 (Modification to Approved Final Landform).

It receives non-putrescible waste currently at an average of 25,000 to 35,000 tonnes per month. Site access is off Mamre Road through the adjacent industrial area. Figure 2 shows the existing site layout.

The landfill is open from 7 am to 4 pm Monday to Friday for pre-authorized commercial contractors. An office/weighbridge building is located on the access road with two weighbridges. There is a vehicle wheel wash facility. Other office and amenities buildings are located on the site.

Previous landfilling has been below the quarry rim and the overburden mounds which resulted from the previous quarrying activities. Filling is currently taking place above this level.

2.4 Climate

The general climate of the Penrith area is warm-subtropical with a summer-autumn rainfall peak. The region experiences a dry winter and spring with rainfall becoming unreliable in late winter / early spring. The average monthly summer temperature is 28 °C and the average monthly winter temperature is 4.5 °C. The average monthly summer rainfall is 64 mm and the average monthly winter rainfall is 13 mm while the average annual rainfall total is less than 850 mm.



2.5 Topography

The EPEA lands have an elevation of approximately 67 m AHD in the west to approximately 35 m AHD at Mamre Road. The landforms are gently undulating slopes rising in an easterly direction. Slopes that surround the quarry, not including the batters, are between 7% and 13% with the majority of the slopes at the site being less than 5%.

The original hill in the Erskine Park Landfill site was approximately 500 m long and between 200 – 300 m in width rising to about 50 m above the nearby creek line with steep southern and western slopes and gentle northern and eastern slopes (Mitchell McCotter, 1992).

This landform was subsequently quarried with the quarry excavated to approximately 100 m deep, from the quarry rim height in 1983, as the base of the quarry had recorded elevations of -40 m AHD. This topography has changed over subsequent years as the quarry filled up with landfill materials.

2.6 Local Hydrology

The two major drainage channels in the surrounding area are Ropes and South Creek. There are also numerous intermittent/ephemeral watercourses in the area around the EPL site. Two drainage lines drain the EPL site and these enter South Creek approximately 2.5 km downstream of the site. South Creek flows in a north direction to the west of Mamre Road and joins the Hawkesbury River at Windsor.

The area has a low flooding potential due to the site topography, the ephemeral flow regime of on-site creeks and the site location in the 'upper sub catchment' of South Creek.

Leachate that is produced by the landfill is currently pumped out and transferred to the leachate treatment plant prior to discharge to Sydney Water sewer. Stormwater / sediment control dams are located to the NE and SE of the landfill.

2.7 Geology and Soils

The EPEA is located near to the central part of the Sydney Basin where the geological sequence is part of the Wianamatta Group. Bringelly Shale is the uppermost formation of this Group and comprises the ground layer of the site. Various lithologies occur within Bringelly Shale with the most common being claystone, siltstone and sandstone. The quarried material of the landfill site was comprised of basalt and dolerite. Borehole depths of between 25 m and 60 m indicate alternating layers of claystone, siltstone and sandstone.

The soil landscape was identified as the Blacktown Unit which commonly forms on Wianamatta Group shales. Depending on topographic position within the study area, the soil depth of the site varies from shallow to moderately deep red, brown or yellow podzolic soils. There is a generally shallow topsoil of maximum depth of 30 – 50 cm and a texture contrast with depth. The soil is grey brown to dark brown in colour and includes hardsetting silt loams and clay loams. Subsoils occur to depths greater than 70 cm and are silty clays to medium clays, yellowish brown and exhibit an acid soil reaction trend. The high clay content and indurated particles contribute to very slow drainage conditions.

The Blacktown Unit soil landscape is limited by moderate reactivities, a highly plastic subsoil, low soil fertility and poor soil drainage. Clays are derived from in situ bedrock weathering.

2.8 Flora and Fauna

The vegetation communities of the lands of the EPEA are predominately Shale Plains Woodland (SPW) or Shale Hills Woodland (SHW). Both are listed sub communities of Cumberland Plain Woodland and are listed as critically endangered ecological communities (CEEC's) under the Biodiversity Conservation Act (BCA) 2016.



The drainage lines leaving the EPL also contain vegetation indicative of River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. This community is also a listed endangered ecological community (EEC) under the BCA.

Flora species of the area include *Eucalyptus fibrosa*, *E. moluccana*, *E. tereticornis*, *Melaleuca decora*, *Pultenaea microphylla*, *Acacia decurrens*, *A. falcata*, *A. parramattensis*, *Burseria spinosa* and *Themeda australis*. The regionally significant species *Grevillea juniperina* and *Pultenaea microphylla* have been previously recorded near the landfill site. Weeds are also present on the site.

A freshwater wetland area appears to be present along the vegetated drainage line adjacent to Lenore Lane. It contains an open sedge land community of Tall Spike Rush *Eleocharis sphacelata* with *Juncus usitatus* growing around the edge of the wetland area. Kangaroo Grass and exotic pasture species dominate the slopes while *Grevillea juniperina* occurs in close proximity to the waterline. Associated wetland trees are Swamp Oak (*Casuarina glauca*) and Forest Red Gum (*E. tereticornis*). This system is heavily infested with *Juncus acutus*, an environmental weed with high tolerance to increased levels of salinity.

A number of fauna surveys have been conducted in the study area. Findings have included fauna that are consistent with urban bushland area such as the house mouse and various feral species including cats, dogs and foxes. The rare *Succinea macgillivrayi* has been previously recorded in the area as well as the endangered Cumberland Plain Land Snail *Meridolum corneovirens*. A search of the Department of the Environment and Energy (Cth) Protected Matters Search Tool shows that there are 5 listed threatened ecological communities, 35 listed threatened species and 15 listed migratory species that may be present in the area. Of these listed threatened species, eight are birds, two are fish, two are frogs, one is an insect and seven are mammals. So far the highest total of fauna species recorded in the area has been 112 species consisting of 74 avifauna, 20 mammal, 12 reptile and 6 amphibian species.

The majority of the EPEA lands and the EPL site are highly disturbed and have been assessed to have limited conservation value. However the forested and wetland areas were noted as having a conservation value as these habitats are limited in the Penrith area and have been incorporated, where possible, into the biodiversity corridors of the EPEA.

2.9 Heritage

An archaeological survey was undertaken in 1983 to determine the existence of aboriginal relics in the area surrounding the Erskine Park Landfill site. Two isolated finds and one open site of a sparse scatter of eight artefacts were located during the survey. The sites were assessed to have limited significance and have since been extensively disturbed due to the quarrying activities. The nature of quarrying effectively removed any potential evidence contained in the ground surface and there are no known heritage sites or archaeological deposits in the landfill area (HLA, 2004). The site is not known to be of historical significance and little evidence remains of the original settlement of the area.

Items of potential heritage significance were located in the surrounding area and included a stockyard and remnant fencing, farm dams, airstrip and building, model plane club and quarry workshop. These items were assessed to have little or no heritage significance (HLA, 2004).



3 Description of Proposed Development

This section provides a general description of the proposed development, as reported in the *Erskine Park Landfill EIS (2005)*, the *Erskine Park Landfill Final Capping and Rehabilitation Landfill Closure Plan (SLR, 2017)* and *Technical Specification (SLR 2017)*.

3.1 General

Cleanaway proposes to continue landfilling of the quarry site with non-putrescible waste and site rehabilitation to a post closure, pre- settlement height of 92m AHD. Landfilling rates will not change from current levels. This would require ongoing use of site facilities including the two existing sedimentation basins. A plan of the final landform and sediment basins is shown on Figure 3, Appendix A.

The final landform has been designed to take account of a number of considerations including:

- The visual prominence of the original landform relating to similar elevations to the south and east of the site;
- Creation of a single primary high point similar to the original landform;
- Side slopes of up to 1:4 gradients similar to the original landform and suitable for long-term stability and for final land use; and
- The need for positive surface drainage to minimise infiltration of water through the capping layer with variation of the side slopes to provide more defined drainage ways on the northern and southern slopes.

3.2 Landfill Capping System

It is proposed in the currently approved landform and in the proposed revised landform, that the capping system will be constructed in accordance with the *Solid Waste Landfill Environmental Guidelines (NSW EPA, 2016)*.

Generally, the capping system will consist of the following layers:

- A minimum 300mm-thick seal bearing layer, comprising of materials presently *in situ* in the landfill mound – maximum elevation at RL 92;
- A minimum 500mm-thick sealing layer, comprising clay from on-site sources – finish at RL 92.5;
- A minimum 900mm-thick revegetation infiltration layer, comprising Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM) – maximum elevation at RL 93.4;
- A minimum 100mm-thick revegetation topsoil layer – maximum elevation at RL 93.5.

A gas drainage layer is excluded due to the provision of a landfill gas collection and treatment system. Figure 4 Appendix A provides an indicative cross section of the restored EPL including soil layers and capping layers.

3.3 Surface Water

There are two existing storm water/sedimentation basins operating on the site. These are located in the north west and south east corners of the site. A surface water management plan is included in the Landfill Closure Plan (SLR, 2017).



4 Landscape Plan

The following information provides an assessment of the opportunities and constraints at the site in relation to landscaping and a detailed description of all activities required to implement the LP. The opportunities, constraints and activities were determined by GHD (2007) using field investigations and desk-top research of existing reports pertaining to the site, and current vegetation maps and restoration guidelines and liaison with DNR, DEC, GANSW, PCC and relevant landowners.

4.1 Site Opportunities and Constraints

The restoration of such a large area provides numerous opportunities and constraints. To ensure the success of the project it is important to identify these prior to developing a design or undertaking any works.

4.1.1 Opportunities

The opportunities that this project provides include:

- Restoring a large area of native vegetation/habitat;
- Providing valuable bird habitat through the mass installation of native shrubs;
- Linking with local habitat corridors;
- Improving aesthetics of the area;
- Converting two existing sediment ponds to act as ephemeral wetlands;
- Providing a passive recreation area for local residents;
- Utilising 'best practice' vegetation restoration techniques specified in DEC (2005);
- Integrating ecological function and engineering design to achieve balanced landscape outcomes; and
- Improving water quality leaving the development site and entering South Creek Catchment.

4.1.2 Constraints

Constraints to be considered during project design include:

- Highly modified/artificial site conditions;
- Shallow capping;
- Depleted natural seed source; and
- Maintenance requirements of the landscaped area.

4.2 Restoration Zones

EPL was divided into four distinct areas that require different vegetation management approaches. These areas are:

Zone 1 – This is the rim of the quarry. Planting on the rim will consist of SHW vegetation to link with the adjacent corridors.

Zone 2 – This is the 12.2 ha capping of the landfill. Due to the shallow capping, the LP for this zone will include a mixture of native shrubs and grasses only. All plants in this zone must have maximum root depth of 1 m.

Zone 3 – This zone consisted of a 4.6 hectare areas on the peak of the landfill capping. It was anticipated that this area be used for passive recreation and therefore recommended to be landscaped by lawn and native gardens. All plants in this zone must have maximum root depth of 1 m.

Zone 4 – This is the wet areas associated with the sediment basins. The landscaping in this area will consist of native wetland species.



Figures 3 and 4 in Appendix A indicate the location of the zones. A species list for each zone is provided in Appendix B, as is an indicative established density for each species. The established density is provided as an average for the total area as denser plantings in patches to represent the shrub layer in SHW.

4.3 Seed Collection

To allow sufficient lead-in time for the propagation of provenance species, seed collection should start as soon as possible. Due to the large volume of seed required for this project, Specialist seed collectors should be engaged to undertake this activity, including gaining licences from OEH, as required. For example, GANSW has an existing seed bank for the EPRA that they may be able to draw on to minimise delays and holds an existing licence for the biodiversity restoration works. Approval would require a letter from the Seed Collector to OEH outlining the additional works required under their collection program.

All seed collection, management, cleaning and storage should be in accordance with *Florabank Seed Collection Guidelines* (prepared by Greening Australia and now accepted as industry best practice). All plant material to be used throughout the project will be of local provenance, collected from within a 5 km radius of the site. The species collected should be consistent with those listed in Appendix B.

4.4 Plant Propagation

Plant propagation refers to the germination of collection seed and the 'growing on' of plants in enviro cells, hiko cells or forestry tubes. This activity should be managed by a suitably qualified and experienced native plant production nursery.

4.5 Site Preparation

4.5.1 Site Protection

Once the bulk earthworks are complete and to ensure the success of the LP, it will be necessary to control access into the area. Fencing of the biodiversity corridor boundary surrounding the EPL shall be consistent with the fence described in the *Biodiversity Restoration Plan*. On-site fencing should be limited to temporary fencing to delineate landscaping zones. No machines should be allowed inside the landscaping zones other than for landscaping purposes and re-shaping areas of erosion or maintaining a free draining surface.

4.5.2 Erosion control

At the completion of earthworks, appropriate sediment control fencing will be installed as necessary and maintained throughout the duration of the program. Installation will be in accordance with Landfill Closure Plan (SLR, 2017) and/or technical specifications issued for construction purposes. Areas of high erosion potential may require the installation of jute matting or 'Wetland' mats. The remaining areas should be sprayed with an appropriate hydro mulch medium. The "mixture" will include a sterile cover crop, jute fibre and a mixture of pre-treated native seed. Experience has shown that using a mixture of native peas and Acacia's in the hydro mulch is an inexpensive way to establish native vegetation at difficult sites.

4.5.3 Litter Removal

All litter from the site should be removed prior to the commencement of landscaping works.

4.5.4 Weed Control

Being highly modified, the site is unlikely to contain significant weed seed loads at the completion of the bulk earthworks, other than those growing on existing batters. Inspection for and removal of any



noxious weeds prior to any landscaping works should be undertaken. All weed control activities are to be completed by a suitably qualified contractor.

Table 1 lists the noxious weeds identified on EPEA site while Appendix C provides a complete list of priority weeds found in the Penrith LGA. Control of these plants usually requires several treatments and is most effective during spring and summer.

Table 1 Noxious Weeds Found on Site

Botanic Name	Common Name	Duty*
<i>Rubus fruticosus</i>	Blackberry	Prohibition on dealings
<i>Lycium ferocissimum</i>	African boxthorn	Prohibition on dealings
<i>Ageratina adenophora</i>	Crofton weed	General biosecurity duty
<i>Opuntia spp</i>	Prickly pear	Prohibition on dealings

*Refer to NSW WeedWise for a full description of the duty for each weed and suggested control measures

GHD (2007) noted that of the above listed species, only blackberry has heavily infested the site with the remaining weeds have only scattered specimens represented across the site.

4.5.5 Installation of Drip Irrigation System

Before revegetation activities commence a drip irrigation system, e.g. T Tape, should be installed throughout Zones 1 and 2 (refer Figure 3) to assist in the watering of the landscaped areas. The system will be installed underground to provide an efficient method of watering (no loss through evaporation) for such a large area for up to three years. Installation of this system helps ensure survival targets are achieved as the contractor can adapt the watering regime to suit the climatic conditions.

4.6 Landscaping

To implement the LP, a combination of landscaping techniques should be employed in each of the zones to maximise the potential for good establishment of plants. Due to the different characteristics of each zone and the different type of vegetation to be established (as described in Section 4.2 and Appendix B), the landscaping techniques recommended for each zone are also different. The landscaping techniques to be used for each zone are summarised in Table 2 and described in more detail below.

Table 2 Landscaping Technique for Each Zone

Technique	Zone 1	Zone 2	Zone 3	Zone 4
Hydromulch	X	X	X	
Tube stock	X	X		X
Native seed	X	X		X
Lawn seed			X	

4.6.1 Hydromulch

Hydromulch is the means by which mulch in the form of plant fibre can be placed onto topsoil using water as a carrier. Pre-treated native seed and fertiliser can be added to the mulch. Hydromulch encourages vegetation cover and provides protection against raindrop erosion. Initially, it is



recommended that blends of the appropriate pre-treated native seed mix be added to the mulch and spread across Zones 1, 2 and 3. It is recommended that 2-3 kg/ha of seed be added to the mulch.

4.6.2 Installation of Native Tube stock

Native tube stock will be used to landscape Zones 1, 2 and 3. The species to be used in each Zone are described in Section 4.2 and Appendix B. The recommended planting density for trees and shrubs for each zone is 1 per 2 m² and for groundcovers it is 1.5 per m².

Most plants will be planted as hiko or enviro cells. Each plant will have a recycled paper disc placed around its base and then bagged using a plastic tree guard, stabilised by three bamboo stakes. This is to prevent herbivory and weed competition and to encourage optimum growing conditions.

In general, autumn is the best season for planting to reduce stress on young plants from high temperatures or frost. Planting in early spring can be effective as long as a suitable watering regime is implemented; however has higher risk of lower survival rates. The larger area of Zones 1 and 2, can be planted using a mechanical planter, such as a Treeliner®, or by hand. Due to site conditions hand planting is the recommended planting method for Zone 4.

4.6.3 Hand Broadcasting of Native Seed

To supplement the establishment of native trees, shrubs and lower storey species in Zones 1, 2 and 4, native grass seed should be hand broadcast throughout the maintenance period of the landscaping program. This will add further diversity to the site, particularly ground covers. It is recommended that 2-3 kg/ha of seed be used.

4.6.4 Hand Broadcasting of Lawn Seed

Similar to above, to supplement the establishment of the lawn in Zone 3, lawn seed should be hand broadcast throughout the maintenance period of the landscaping program.

4.7 Maintenance Program

The completion of the landscaping will be considered the date of 'Practical Completion' for the landscaping works and will signal the commencement of the 36-month maintenance program. The completion of the 36-month maintenance program will be considered as 'Final Completion' for the landscaping works. The maintenance program will optimise plant establishment and weed control.

Activities will include watering, herbicide spraying, replacement planting and general maintenance. The aim of the maintenance program is to ensure a survival rate of 80-85% is achieved at Final Completion.

4.7.1 General Maintenance

Six general maintenance visits have been scheduled throughout the three - year maintenance period. These activities will include repairing and removing tree guards, monitoring survival and growth rates, installing replacement plants as required, weeding inside the tree guards and continued follow-up spot spraying.

4.7.2 Watering

All plants will be 'watered in' on installation, with each plant receiving a minimum five litres. All plantings have been scheduled to receive a further three applications of water during the first 6 weeks to assist establishment, depending on rain fall. Irrigation will be undertaken by drip or sprinkler irrigation or by hand watering, depending on the zone and resources available.

4.7.3 Weed Control

To ensure the success of the revegetation activities it is essential to control weeds. Weeds compete with the newly installed plants for nutrients and water thereby limiting their survival and growth rates.



In Zones 2 and 3, weed control will include the removal of any emergent tree species to minimise the potential for roots to penetrate the landfill capping.

Areas where landscaping activities are dominated by hand planting, spraying will be with suitable selective herbicides using “back packs”.

The maintenance program includes nine scheduled visits targeting maintenance spraying. All spraying will be carried out by suitably trained contractors.

4.8 Monitoring and Reporting

In order to accurately evaluate the success of the landscaping works, the *PCC Landscaping DCP* require that a monitoring and evaluation program be put into place. The monitoring and reporting requirements are:

- An implementation report;
- A maintenance report; and
- A landscape report for Years 1 - 3.

All reports should be prepared by suitably qualified consultants.

4.8.1 Implementation Report

When the landscape works are completed, an Implementation Report is to be provided to Council. This will provide written certification that:

- The individual or company that completed the construction of the landscape component of the development, is listed on Council’s Register of Approved Landscape Consultants and is able to construct that category of work;
- The landscape works have been implemented substantially in accordance with the approved plans. Minor variations to the approved plans, such as small changes in plant quantities, however are acceptable;
- The landscape works have been implemented in accordance with the Landscape DCP;
- The landscape works have been implemented in accordance with best practice industry standards; and
- A landscape maintenance program has been set.

4.8.2 Maintenance Report

Twelve months after the landscaping works have been complete, a Maintenance Report needs to be submitted to Council. This will provide written certification that the approved landscaping has been completed in accordance with the approved landscape plan and consent conditions.

The Maintenance Report should also state that all the work has been completed in accordance with all relevant Australian Standards and that all plants are healthy with no evidence of die-back, stress, disease or loss.

4.8.3 Three Year Landscape Report

Due to the large scale of this project, PCC may require a landscape report three years after the landscaping works have been complete. This report is to certify one of the following:

- Landscaping has matured and is in accordance with original landscape approval; or
- The landscaping has not matured in accordance with the original design philosophy and requires significant restoration. If this is the case restoration plans are to be submitted to Council for approval and implemented at the expense of the property owners.



5 Program of Works

It is envisaged that the site preparation works, which includes; installation of temporary fencing, seed collection and weed control will begin as soon as site conditions allow. This will be followed by the landscaping, maintenance and monitoring works described above. The Gantt chart in Appendix D provides a detailed program of works.



6 Costings

Approximate costs to complete the landscape plan are provided in Table 3. These costs are indicative only (+/- 40% at present value) and are providing for budgeting purposes and should not be used for any other purpose. Detailed costs will need to be requested prior to commencing works.

Table 3 Estimated Costs for Riparian Zone Revegetation Works

Tasks	Estimated Costs
Seed Collection	\$42,350
Weed Control	\$10,550
Hydro mulching	\$149,250
Plant Propagation	\$194,750
Drip Irrigation System	\$100,300
Direct Seeding	\$4,100
Revegetation	\$797,400
Landscaping Zone 3	(To be determined)
Hand Broadcasting	\$5,600
Maintenance	\$237,800
Watering	\$18,000
Project Management	\$19,150
Monitoring and Reporting	\$18,300
Total (ex GST)	\$1,597,500



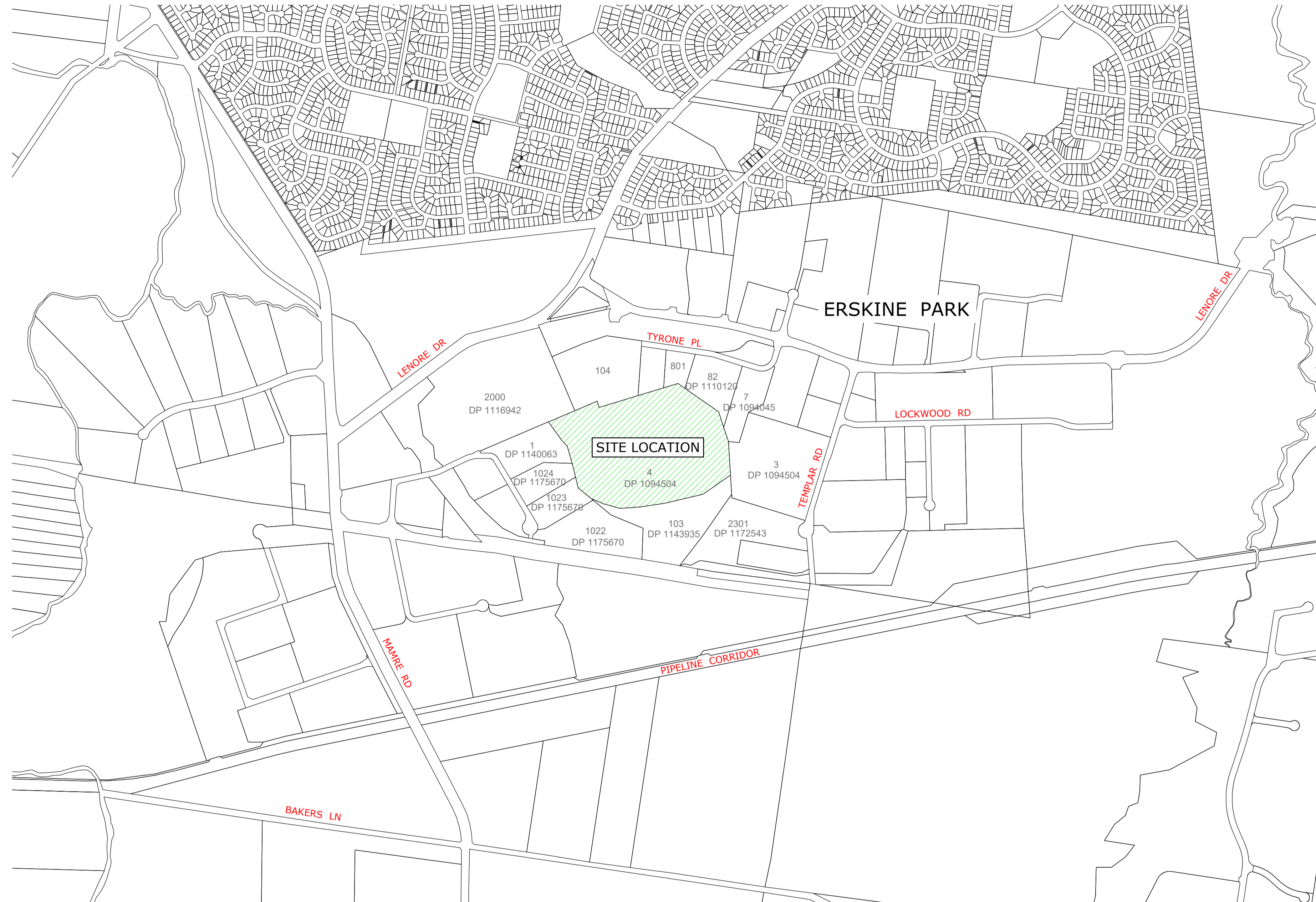
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Appendix A – Figures

ERSKINE PARK LANDFILL



REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	PROJECT LEADER
A	INFORMATION ONLY	05.12.19			

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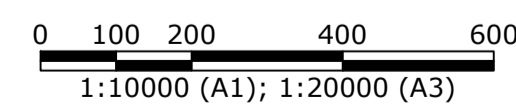
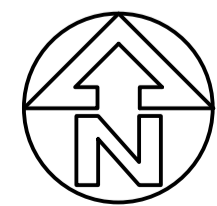
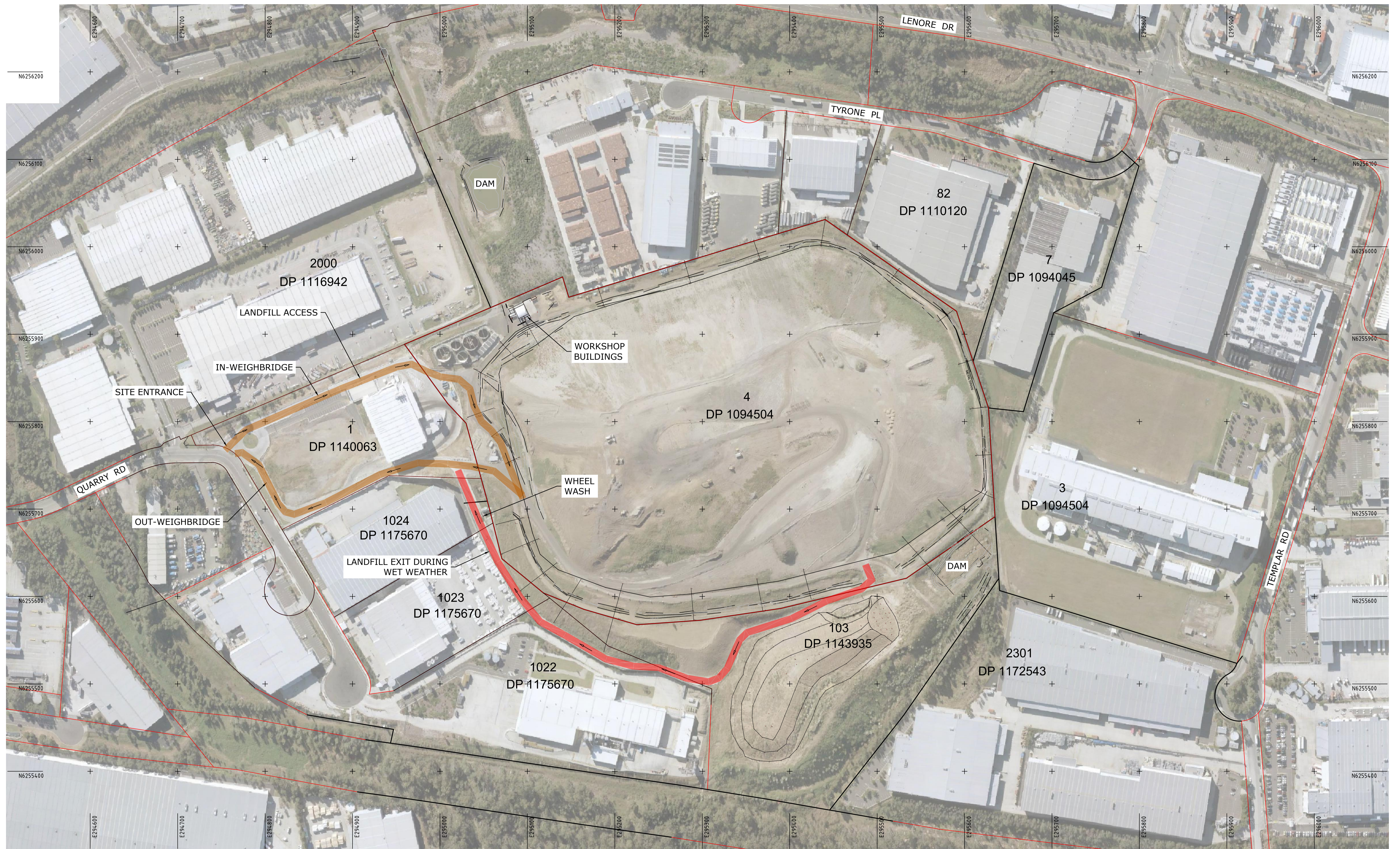


FIGURE 1

CLEANAWAY SOLID WASTE
ERSKINE PARK LANDFILL
LOCATION PLAN



REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	PROJECT LEADER
A	INFORMATION ONLY	05.12.19			

SHEET SIZE
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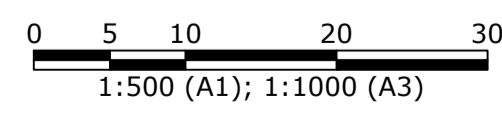
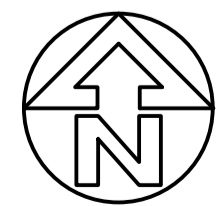
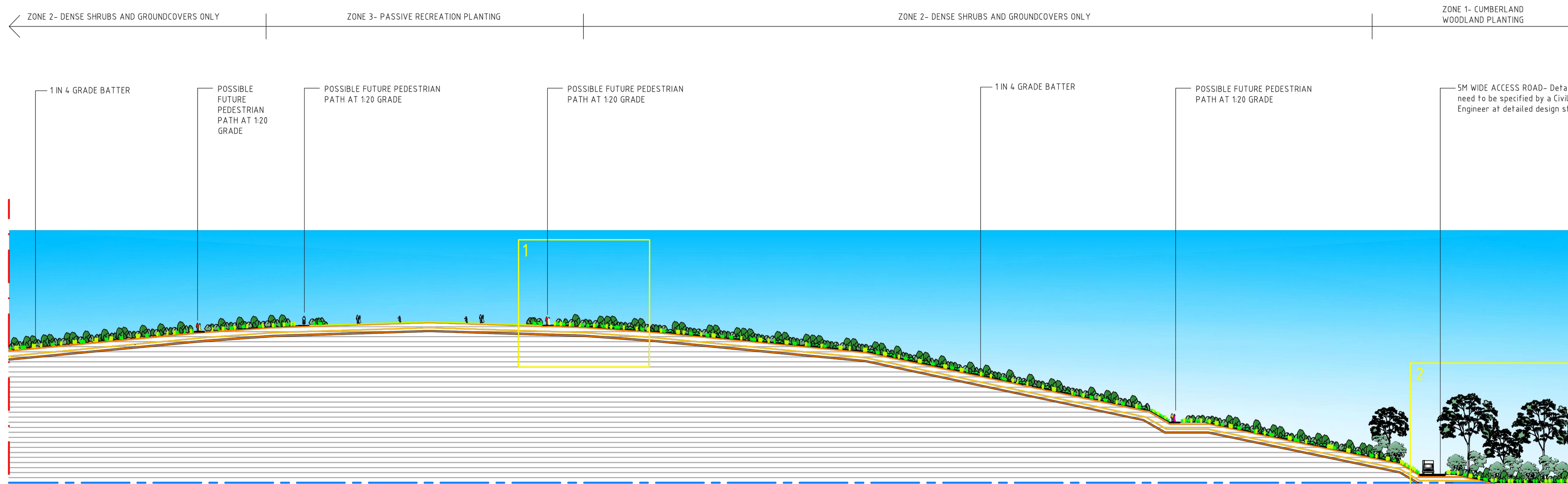


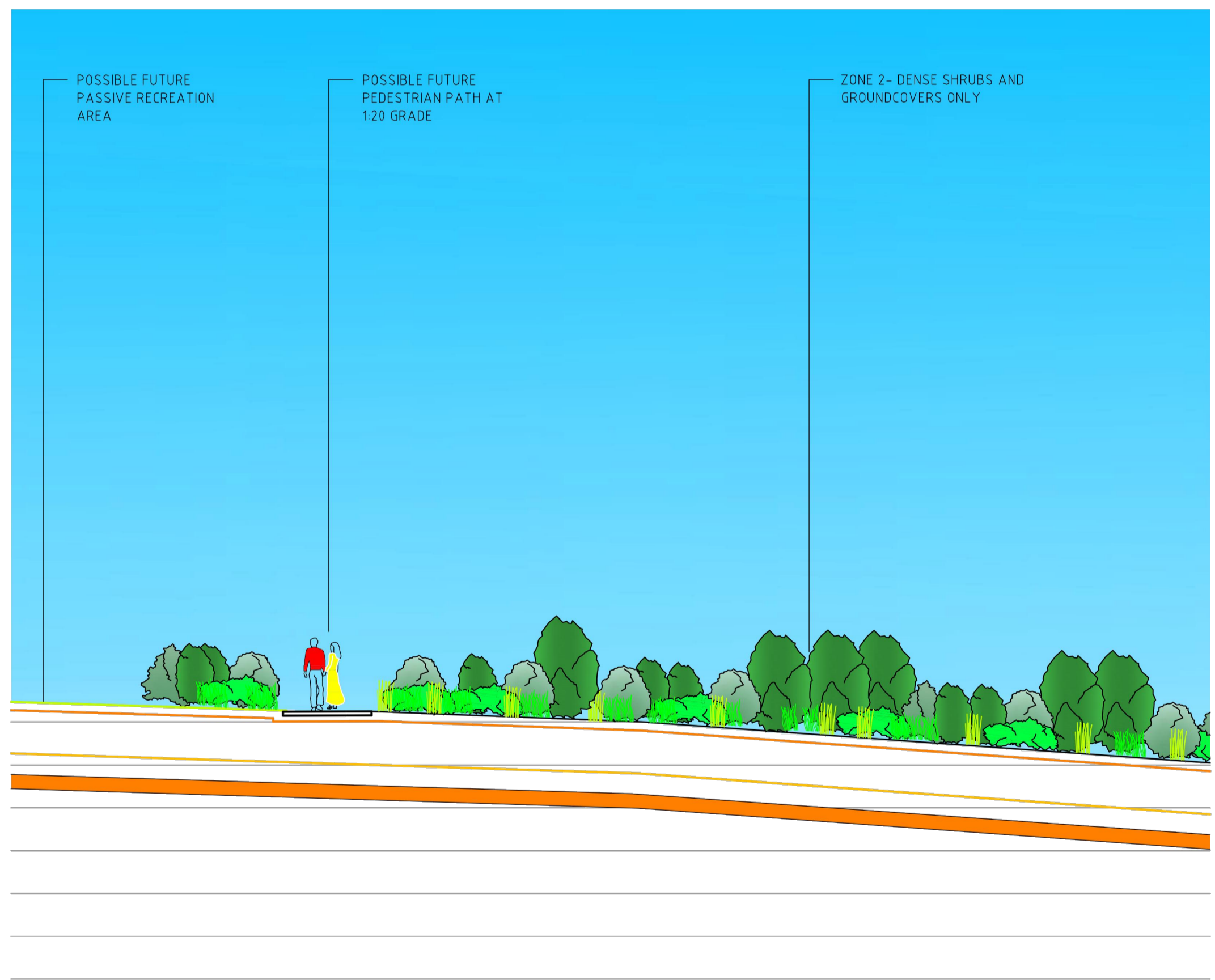
FIGURE 2

CLEANAWAY SOLID WASTE
 ERSKINE PARK LANDFILL
 SITE LAYOUT PLAN



- LEGEND**
- MIN 100mm THICK REVEGETATION TOPSOIL LAYER
 - MIN 900mm THICK REVEGETATION INFILTRATION LAYER
 - MIN 500mm-THICK SEALING LAYER
 - MIN 300mm THICK BEARING LAYER
 - EXTENT OF TYPICAL SECTION
 - PROPOSED LANDFILL CONTOURS
 - ENLARGEMENT AREA

TYPICAL SITE SECTION
SCALE 1:500



ENLARGEMENT 1
SCALE 1:100



ENLARGEMENT 2
SCALE 1:100

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	PROJECT LEADER
A	INFORMATION ONLY	05.12.19			

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 Survey By:
 Survey Date:
 Scale:



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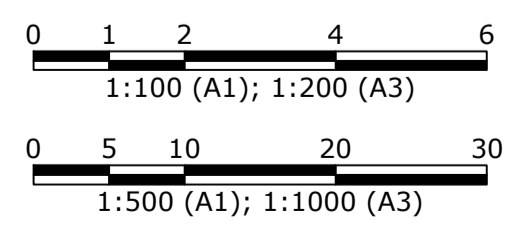


FIGURE 4
CLEANAWAY SOLID WASTE
ERSKINE PARK LANDFILL
TYPICAL CROSS SECTIONS



Appendix B – Species List



Table B1 Species List for Zones 1 and 2 (SPW and SHW)

Scientific Name	Common Name	Density
Canopy		
<i>Angophora floribunda</i>	Rough-barked apple	1 per 5m ²
<i>Eucalyptus amplifolia</i>	Cabbage gum	1 per 10m ²
<i>Eucalyptus crebra</i>	Narrow-leaved ironbark	1 per 10m ²
<i>Eucalyptus eugenioides</i>	Thin-leaved stringybark	1 per 10m ²
<i>Eucalyptus tereticornis</i>	Forest red gum	1 per 10m ²
Middle storey		
<i>Acacia decurrens</i>	Sydney green wattle	1 per 2m ²
<i>Acacia falcata</i>	Hickory wattle	1 per 2m ²
<i>Acacia elongata</i>	Swamp wattle	1 per 2m ²
<i>Acacia parramattensis</i>	Parramatta green wattle	1 per 2m ²
<i>Bursaria spinosa</i>	Black thorn	1 per 2m ²
<i>Clematis glycinoides</i>	Headache vine	1 per 2m ²
<i>Daviesia genistifolia</i>	Broom bitter pea	1 per 2m ²
<i>Daviesia ulicifolia</i>	Gorse bitter pea	1 per 2m ²
<i>Dillwynia sieberi</i>		1 per 2m ²
<i>Melaleuca decora</i>	White feather honey myrtle	1 per 2m ²
<i>Ozothamnus diosmifolium</i>	Rice flower	1 per 2m ²
<i>Pultenaea microphylla</i>	Bush pea	1 per 2m ²
Ground Cover		
<i>Aristida ramosa</i>	Purple wiregrass	4 per m ²
<i>Arthropodium millefolium</i>	Pale vanilla lily	4 per m ²
<i>Brunoniella australis</i>	Blue Trumpet	4 per m ²
<i>Chloris truncata</i>	Windmill grass	4 per m ²
<i>Chloris ventricosa</i>	Plump windmill grass	4 per m ²
<i>Chrysocephalum semipapposum</i>	Clustered everlasting	4 per m ²
<i>Commelina cyanea</i>	Scurvy weed	4 per m ²
<i>Cymbopogon refractus</i>	Barbed-wire grass	4 per m ²
<i>Dianella longifolia</i>	Blue Flax lily	2 per m ²
<i>Dianella revoluta</i>	Blue Flax lily	2 per m ²



Scientific Name	Common Name	Density
<i>Dichelachne micrantha</i>	Shorthair plume grass	4 per m ²
<i>Dichondra repens</i>	Kidney weed	4 per m ²
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Truffled hedgehog grass	4 per m ²
<i>Entolasia stricta</i>	Wiry panic	4 per m ²
<i>Eremophila debilis</i>	Winter apple	4 per m ²
<i>Glycine tabacina</i>	Love creeper	4 per m ²
<i>Hardenbergia violacea</i>	Hardenbergia	4 per m ²
<i>Hibbertia diffusa</i>	Wedge guinea flower	4 per m ²
<i>Hypericum gramineum</i>	Small St John's Wort	4 per m ²
<i>Imperata cylindrica</i>	Blady grass	4 per m ²
<i>Lomandra filiformis</i>	Wattle mat-rush	4 per m ²
<i>Lomandra longifolia</i>	Spiny-headed mat-rush	2 per m ²
<i>Lomandra multiflora</i>	Many-flowered mat-rush	2 per m ²
<i>Lotus australis</i>	Australian trefoil	4 per m ²
<i>Microlaena stipoides</i> var. <i>stipoidea</i>	Weeping Meadow grass	4 per m ²
<i>Oplismenus aemulus</i>	Wavy beard grass	
<i>Rytidosperma tenuius</i>	Wallaby grass	4 per m ²
<i>Themeda triandra</i>	Kangaroo grass	
<i>Tricoryne elatior</i>	Yellow autumn-lily	
<i>Wahlenbergia gracilis</i>	Native bluebell	4 per m ²

Note: Zone 1 includes the full structure of vegetation for planting. Zone 2 includes the use of ground cover and middle storey species only.



Table B2 Species List from Zone 3

Species Name	Common Name	Density
Shrubs		
<i>Bursaria spinosa</i>	Blackthorn	1 per 2m ²
<i>Daviesia ulicifolia</i>	Gorse bitter pea	1 per 2m ²
<i>Dillwynia sieberi</i>		1 per 2m ²
<i>Goodenia ovata</i>	Hop goodenia	1 per 2m ²
<i>Grevillea spp.</i>		1 per 2m ²
<i>Indigofera australis</i>	Australia indigo	1 per 2m ²
<i>Ozothamnus diosmifolium</i>	Rice flower	1 per 2m ²
<i>Pultenaea microphylla</i>	Bush pea	1 per 2m ²
<i>Syzygium australe</i>	Brush cherry	1 per 2m ²
Groundcover		
<i>Brunoniella australis</i>	Blue trumpet	4 per m ²
<i>Cymbopogon refractus</i>	Barbed-wire grass	4 per m ²
<i>Dianella longifolia</i>	Blue Flax lily	2 per m ²
<i>Dianella revoluta</i>	Blue Flax lily	2 per m ²
<i>Hardenbergia violacea</i>	Hardenbergia	4 per m ²
<i>Lomandra longifolia</i>	Spiny-headed mat-rush	2 per m ²
<i>Lomandra multiflora</i>	Many-flowered mat-rush	2 per m ²
<i>Themeda triandra</i>	Kangaroo grass	4 per m ²
<i>Wahlenbergia gracilis</i>	Native bluebell	4 per m ²
* <i>Stenotaphrum secundatum</i>	"Palmetto" – Soft Leaf Buffalo grass	4 per m ²

* introduced species

TableB3 Wetland/Ephemeral species for Zone 4

Species Name	Common Name	Density
<i>Alisma plantago-aquatica</i>	Water plantain	8 per m ²
<i>Bolboschoenus spp</i>	Club-rush	8 per m ²
<i>Carex appressa</i>	Tall sedge	8 per m ²
<i>Cycnogeton procerum</i>	Water ribbons	8 per m ²
<i>Eleocharis sphacelata</i>	Spike-sedge	8 per m ²



Species Name	Common Name	Density
<i>Juncus usitatus</i>	common rush	8 per m ²
<i>Ludwigia peploides</i>	Water primrose	8 per m ²
<i>Machaerina articulata</i>	jointed twig-rush	8 per m ²
<i>Marsilea hirsuta</i>	Nardoo	8 per m ²
<i>Paspalum distichum</i>	water couch	8 per m ²
<i>Persicaria dicipiens</i>	slender knotweed	8 per m ²
<i>Philydrum lanuginosum</i>	Frogsmouth	8 per m ²
<i>Phragmites australis</i>	common reed	8 per m ²
<i>Schoenoplectiella mucronata</i>	Bog Bullrush	8 per m ²
<i>Schoenoplectus validus</i>	Great Bullrush	8 per m ²



Appendix C – Priority weeds for the Penrith LGA



Priority Weeds

The following weeds are declared priority in the Greater Sydney area (including Penrith council area).

*Refer to NSW WeedWise for a full description of the duty for each weed and suggested control measures

Table C1 Priority Weeds in Greater Sydney Area

Scientific Name	Common Name	Duty*
All Plants		General Biosecurity Duty
<i>Lycium ferocissimum</i>	African boxthorn	Prohibition on dealings
<i>Olea europaea subsp. cuspidata</i>	African olive	Regional Recommended Measure
<i>Alternanthera philoxeroides</i>	Alligator weed	Prohibition on dealings
<i>Alternanthera philoxeroides</i>	Alligator weed	Biosecurity Zone
<i>Alternanthera philoxeroides</i>	Alligator weed	Regional Recommended Measure
<i>Eichhornia azurea</i>	Anchored water hyacinth	Prohibited Matter
<i>Asparagus virgatus</i>	Asparagus fern	Regional Recommended Measure
<i>Tamarix aphylla</i>	Athel pine	Prohibition on dealings
<i>Jatropha gossypifolia</i>	Bellyache bush	Prohibition on dealings
<i>Chrysanthemoides monilifera subsp. rotundata</i>	Bitou bush	Prohibition on dealings
<i>Chrysanthemoides monilifera subsp. rotundata</i>	Bitou bush	Biosecurity Zone
<i>Centaurea x moncktonii</i>	Black knapweed	Prohibited Matter
<i>Salix nigra</i>	Black willow	Prohibition on dealings
<i>Salix nigra</i>	Black willow	Regional Recommended Measure
<i>Salix nigra</i>	Black willow	Regional Recommended Measure
<i>Rubus fruticosus species aggregate</i>	Blackberry	Prohibition on dealings
<i>Chrysanthemoides monilifera subsp. monilifera</i>	Boneseed	Prohibition on dealings
<i>Chrysanthemoides monilifera subsp. monilifera</i>	Boneseed	Control Order
<i>Cylindropuntia fulgida var. mamillata</i>	Boxing glove cactus	Prohibition on dealings
<i>Asparagus asparagoides</i>	Bridal creeper	Prohibition on dealings
<i>Asparagus declinatus</i>	Bridal veil creeper	Prohibited Matter
<i>Orobanche species</i>	Broomrapes	Prohibited Matter
<i>Cabomba caroliniana</i>	Cabomba	Prohibition on dealings
<i>Cabomba caroliniana</i>	Cabomba	Regional Recommended Measure



Scientific Name	Common Name	Duty*
<i>Austrocyllindropuntia cylindrica</i>	Cane cactus	Prohibition on dealings
<i>Genista monspessulana</i>	Cape broom	Prohibition on dealings
<i>Dolichandra unguis-cati</i>	Cat's claw creeper	Prohibition on dealings
<i>Dolichandra unguis-cati</i>	Cat's claw creeper	Regional Recommended Measure
<i>Nassella neesiana</i>	Chilean needle grass	Prohibition on dealings
<i>Persicaria chinensis</i>	Chinese knotweed	Regional Recommended Measure
<i>Asystasia gangetica subsp. micrantha</i>	Chinese violet	Control Order
<i>Asparagus africanus</i>	Climbing asparagus	Prohibition on dealings
<i>Asparagus africanus</i>	Climbing asparagus	Regional Recommended Measure
<i>Asparagus plumosus</i>	Climbing asparagus fern	Prohibition on dealings
<i>Opuntia stricta</i>	Common pear	Prohibition on dealings
<i>Hygrophila polysperma</i>	East Indian hygrophila	Regional Recommended Measure
<i>Myriophyllum spicatum</i>	Eurasian water milfoil	Prohibited Matter
<i>Senecio madagascariensis</i>	Fireweed	Prohibition on dealings
<i>Genista linifolia</i>	Flax-leaf broom	Prohibition on dealings
<i>Limnobium laevigatum</i>	Frogbit	Prohibited Matter
<i>Andropogon gayanus</i>	Gamba grass	Prohibited Matter
<i>Solanum chrysotrichum</i>	Giant devil's fig	Regional Recommended Measure
<i>Sporobolus pyramidalis</i>	Giant rat's tail grass	Regional Recommended Measure
<i>Arundo donax</i>	Giant reed	Regional Recommended Measure
<i>Gloriosa superba</i>	Glory lily	Regional Recommended Measure
<i>Ulex europaeus</i>	Gorse	Prohibition on dealings
<i>Ulex europaeus</i>	Gorse	Regional Recommended Measure
<i>Cestrum parqui</i>	Green cestrum	Regional Recommended Measure
<i>Salix cinerea</i>	Grey willow	Prohibition on dealings
<i>Salix cinerea</i>	Grey willow	Regional Recommended Measure
<i>Asparagus aethiopicus</i>	Ground asparagus	Prohibition on dealings
<i>Baccharis halimifolia</i>	Groundsel bush	Regional Recommended Measure
<i>Hieracium species</i>	Hawkweeds	Prohibited Matter
<i>Senecio glastifolius</i>	Holly leaved senecio	Regional Recommended Measure
<i>Equisetum species</i>	Horsetails	Regional Recommended Measure



Scientific Name	Common Name	Duty*
<i>Cylindropuntia pallida</i>	Hudson pear	Prohibition on dealings
<i>Hydrocotyle ranunculoides</i>	Hydrocotyl	Prohibited Matter
<i>Hygrophila costata</i>	Hygrophila	Regional Recommended Measure
<i>Hymenachne amplexicaulis and hybrids</i>	Hymenachne	Prohibition on dealings
<i>Hymenachne amplexicaulis and hybrids</i>	Hymenachne	Regional Recommended Measure
<i>Vachellia karroo</i>	Karoo thorn	Prohibited Matter
<i>Dovyalis caffra</i>	Kei apple	Regional Recommended Measure
<i>Heteranthera reniformis</i>	Kidney-leaf mud plantain	Regional Recommended Measure
<i>Bassia scoparia</i>	Kochia	Prohibited Matter
<i>Clidemia hirta</i>	Koster's curse	Prohibited Matter
<i>Pueraria lobata</i>	Kudzu	Regional Recommended Measure
<i>Lagarosiphon major</i>	Lagarosiphon	Prohibited Matter
<i>Lantana camara</i>	Lantana	Prohibition on dealings
<i>Pereskia aculeata</i>	Leaf cactus	Regional Recommended Measure
<i>Ludwigia peruviana</i>	Ludwigia	Regional Recommended Measure
<i>Anredera cordifolia</i>	Madeira vine	Prohibition on dealings
<i>Prosopis species</i>	Mesquite	Prohibition on dealings
<i>Nassella tenuissima</i>	Mexican feather grass	Prohibited Matter
<i>Miconia species</i>	Miconia	Prohibited Matter
<i>Mikania micrantha</i>	Mikania vine	Prohibited Matter
<i>Mimosa pigra</i>	Mimosa	Prohibited Matter
<i>Asparagus macowanii var. zuluensis</i>	Ming asparagus fern	Regional Recommended Measure
<i>Caesalpinia decapetala</i>	Mysore thorn	Regional Recommended Measure
<i>Carduus nutans subsp. nutans</i>	Nodding thistle	Regional Recommended Measure
<i>Cortaderia species</i>	Pampas grass	Regional Recommended Measure
<i>Parkinsonia aculeata</i>	Parkinsonia	Prohibition on dealings
<i>Parkinsonia aculeata</i>	Parkinsonia	Control Order
<i>Parthenium hysterophorus</i>	Parthenium weed	Prohibited Matter
<i>Parthenium hysterophorus</i>	Parthenium weed	Prohibition on dealings
<i>Annona glabra</i>	Pond apple	Prohibited Matter
<i>Vachellia nilotica</i>	Prickly acacia	Prohibited Matter



Scientific Name	Common Name	Duty*
<i>Austrocyllindropuntia species</i>	Prickly pears - Austrocyllindropuntias	Prohibition on dealings
<i>Cylindropuntia species</i>	Prickly pears - Cylindropuntias	Prohibition on dealings
<i>Opuntia species</i>	Prickly pears - Opuntias	Prohibition on dealings
<i>Cylindropuntia imbricata</i>	Rope pear	Prohibition on dealings
<i>Cryptostegia grandiflora</i>	Rubber vine	Prohibited Matter
<i>Sagittaria platyphylla</i>	Sagittaria	Prohibition on dealings
<i>Salvinia molesta</i>	Salvinia	Prohibition on dealings
<i>Salvinia molesta</i>	Salvinia	Regional Recommended Measure
<i>Cytisus scoparius subsp. scoparius</i>	Scotch broom	Prohibition on dealings
<i>Cytisus scoparius subsp. scoparius</i>	Scotch broom	Regional Recommended Measure
<i>Euphorbia paralias</i>	Sea spurge	Regional Recommended Measure
<i>Gymnocoronis spilanthoides</i>	Senegal tea plant	Regional Recommended Measure
<i>Nassella trichotoma</i>	Serrated tussock	Prohibition on dealings
<i>Nassella trichotoma</i>	Serrated tussock	Regional Recommended Measure
<i>Chromolaena odorata</i>	Siam weed	Prohibited Matter
<i>Limonium hyblaenum</i>	Sicilian sea lavender	Regional Recommended Measure
<i>Asparagus falcatus</i>	Sicklethorn	Regional Recommended Measure
<i>Solanum elaeagnifolium</i>	Silverleaf nightshade	Prohibition on dealings
<i>Sphagnetocola trilobata</i>	Singapore daisy	Regional Recommended Measure
<i>Paederia foetida</i>	Skunk vine	Regional Recommended Measure
<i>Opuntia monacantha</i>	Smooth tree pear	Prohibition on dealings
<i>Asparagus scandens</i>	Snakefeather	Prohibition on dealings
<i>Spartium junceum</i>	Spanish broom	Regional Recommended Measure
<i>Limnobiium spongia</i>	Spongeplant	Prohibited Matter
<i>Centaurea stoebe subsp. micranthos</i>	Spotted knapweed	Prohibited Matter
<i>Opuntia aurantiaca</i>	Tiger pear	Prohibition on dealings
<i>Opuntia aurantiaca</i>	Tiger pear	Regional Recommended Measure
<i>Solanum viarum</i>	Tropical soda apple	Control Order
<i>Opuntia tomentosa</i>	Velvety tree pear	Prohibition on dealings
<i>Trapa species</i>	Water caltrop	Prohibited Matter



Scientific Name	Common Name	Duty*
<i>Eichhornia crassipes</i>	Water hyacinth	Prohibition on dealings
<i>Eichhornia crassipes</i>	Water hyacinth	Biosecurity Zone
<i>Eichhornia crassipes</i>	Water hyacinth	Regional Recommended Measure
<i>Pistia stratiotes</i>	Water lettuce	Regional Recommended Measure
<i>Hydrocleys nymphoides</i>	Water poppy	Regional Recommended Measure
<i>Stratiotes aloides</i>	Water soldier	Prohibited Matter
<i>Heteranthera zosterifolia</i>	Water star grass	Regional Recommended Measure
<i>Rubus niveus</i>	White blackberry	Regional Recommended Measure
<i>Salix species</i>	Willows	Prohibition on dealings
<i>Striga species</i>	Witchweeds	Prohibited Matter
<i>Limnocharis flava</i>	Yellow burrhead	Prohibited Matter



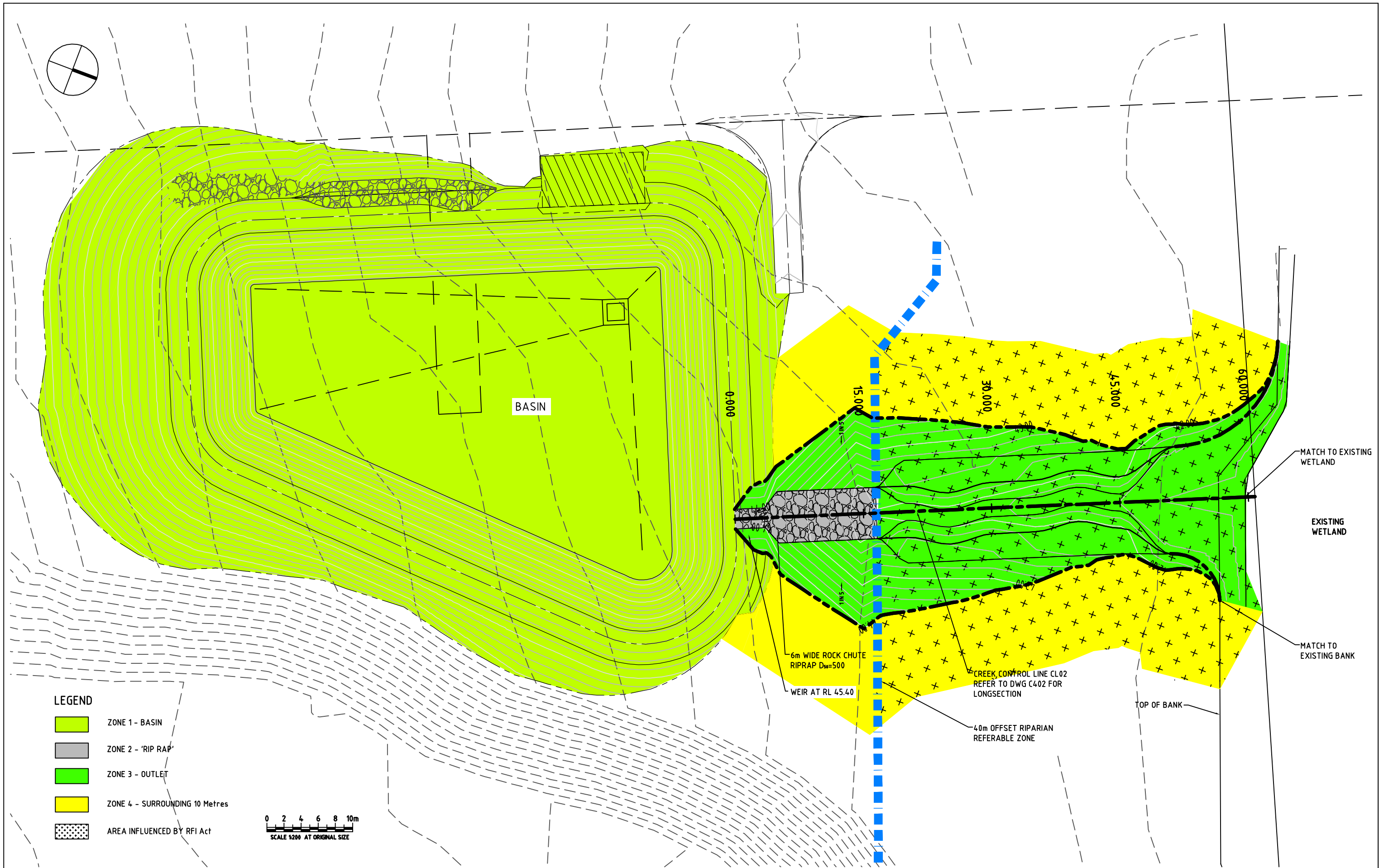
Appendix D – Program of Works Gantt Chart

Provided by Cleanway Waste Management



APPENDIX D

Vegetation Management Plan



- LEGEND**
- ZONE 1 - BASIN
 - ZONE 2 - 'RIP RAP'
 - ZONE 3 - OUTLET
 - ZONE 4 - SURROUNDING 10 Metres
 - AREA INFLUENCED BY RFI Act



No	Revision	Note	Drawn	Checked	Approved	Date

Brown Consulting (NSW) Pty Ltd
 Level 2, 82 Waterloo Road Macquarie Park NSW Australia 2113
 Telephone: 02 9900 1000 Facsimile: 02 9900 1099

BROWN

Sydney
 Canberra
 Brisbane
 Melbourne
 Singapore

GHD CLIENTS | PEOPLE | PERFORMANCE

Suite 1, 62 Clarence Street, Port Macquarie NSW 2444
 PO Box 2875, Port Macquarie NSW 2444
 T 61 2 6586 8700 F 61 2 6586 8701
 E pqg@mail@ghd.com.au W www.ghd.com.au

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Enviroguard

Report for North Western Basin and Outlet Vegetation Management Plan

April 2007

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- C Weed Control Techniques for Common Weeds
- D Noxious Weeds of Penrith LGA
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1. Introduction

1.1 Background

GHD Pty Ltd (GHD) has been engaged by Enviroguard Pty Ltd (Enviroguard) to prepare a Vegetation Management Plan (VMP) for the proposed north-western basin and outlet associated with remediation work for the Erskine Park Landfill (EPL).

The 'tail out' of the basin will be constructed within the Biodiversity Corridors of the Erskine Park Release Area, with a small component within 40m of a prescribed stream under the *Rivers and Foreshore Improvement (RFI) Act, 1948*. The VMP will be prepared for the total area of disturbance during construction of the basin and the surrounding 10m. The estimate of costs for 'setting' the bond with DNR has been calculated for those works inside the 40m from 'top of bank' only (see Appendix A). The surrounding areas will be included in Biodiversity Corridors Restoration Program.

It is assumed that actions described in this VMP will commence at the completion of earth works, including necessary erosion control measures. The VMP includes the following information:

- ▶ Site location and condition;
- ▶ Description of terms and activities;
- ▶ Description of restoration works required;
- ▶ Estimate of costs for setting the bond; and
- ▶ Concept construction drawings.

1.2 Relationship With Existing Reports

As the location of the proposed basin is within the Biodiversity Corridors and with the 'tail out' being located within 40m of a prescribed stream, restoration actions will be guided by the Biodiversity Corridors Restoration Plan and in accordance with the RFI Act. As stated above, the VMP will describe specifics regarding the restoration program of the basin, tail out structure and surrounding 10m only. Issues relating to strategic aims and objectives, description of surrounding vegetation and condition, weed infestation, hydrology and other relevant information is contained in the following reports:

- ▶ Biodiversity Strategy: Erskine Park Release Area, HLA 2005;
- ▶ Biodiversity Restoration Plan, GANSW June 2005;
- ▶ Vegetation Management Plan, HLA March 2005; and
- ▶ Koorong Vegetation Restoration Plan, GHD May 2006.

1.3 Relevant Legislation

The VMP has been prepared in accordance with the provisions contained in relevant legislation and policy guidelines, including but not limited to the following;

1.3.1 Rivers and Foreshores Improvement Act 1948

This VMP, and the subsequent implementation of recommended restoration works, are required to satisfy Part 3A of the *Rivers and Foreshore Improvement (RFI) Act 1948 (NSW)*, in relation to the proposed development. A Part 3A permit is required under the *RFI Act* as a component of the proposed development occurs within 40m of an ephemeral creek, considered a 'protected waterway' under the *RFI Act*. The conditions of the *RFI Act* are administered by the Department Natural Resources (DNR).

1.3.2 Threatened Species Conservation Act 1995

The objectives of the Threatened Species Act (TSC Act) 1995 are to conserve biological diversity and promote ecologically sustainable development, to prevent the extinction and promote the recovery of threatened species, populations and ecological communities, to protect the critical habitat of those threatened species, populations and ecological communities that are endangered, to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities, to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed, and to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.

The TSC Act includes schedules which list threatened species, populations and ecological communities and key threatening processes.

1.3.3 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC Act) makes it an offence for a person to undertake an action that has the potential to significantly impact on a matter of 'national environmental significance' without first obtaining a permit from the Commonwealth Minister for Environment and Heritage. Matters of national environmental significance include: declared World Heritage areas; declared Ramsar wetlands; listed threatened species and ecological communities; listed migratory species; listed marine species; nuclear actions; and the environment of Commonwealth marine areas.

1.3.4 Noxious Weeds Act 1993 (NSW)

This VMP also considers the landowner's obligations to control weeds listed as noxious in the Penrith City Council LGA under the *Noxious Weeds Act 1993 (NSW)*. In this case, the only noxious weeds found on site are African boxthorn, blackberry and prickly pear, listed as a W2 and W4f category weeds respectively under the Act. As such, the owners of the site are legally obliged to 'fully and continuously suppress and destroy' these particular weeds.

1.3.5 Other Legislation and Policies

Other legislation and policies that are relevant to the VMP include:

- ▶ Native Vegetation Act 2003;
- ▶ Hawkesbury Nepean Catchment Blue Print 2002;
- ▶ Local Government Act 1993 and Local Government Amendment (Community Land Management) Act 1998; and
- ▶ Relevant Penrith City Council legislation and Local Environmental Plan.

The above listed legislation has been identified as being highly relevant to the restoration activities outlined in this VMP. This list by no means covers all relevant legislation pertaining to the site.

1.4 List of Abbreviations

The following summarises the various abbreviations used throughout the biodiversity restoration plan.

BRP	Biodiversity Restoration Plan
DNR	Department of Natural Resources
DEC	Department of Environment & Conservation
EPRA	Erskine Park Release Area
EEC	Endangered Ecological Community
GA	Greening Australia
LGA	Local Government Area (Penrith City Council)
REF	River Eucalypt Forest
TSC Act	Threatened Species Conservation Act
VMP	Vegetation Management Plan

2. Site Location

The site is located within the Erskine Park Release Area and is referred to as the Enviroguard Landfill. The basin is to be located to the immediate northwest of the existing landfill and will drain into the unnamed creek running parallel to Lenore Lane as shown in Appendix A.

2.1 Site Description and Condition

The site of the proposed basin and outlet is located inside the Biodiversity Corridors, referred to as zone 3a in the Biodiversity Restoration Plan (BRP). This zone includes re-growth River Eucalypt Forest (REF) along the unnamed creek, with the remainder of the site, including the location of the proposed basin, covered with introduced grasses only. The REF community is listed as endangered under the *Threatened Species Conservation Act, 1995*.

This VMP describes all the actions required to restore native vegetation throughout the outlet structure and immediate surrounds.

Due to variations in conditions on site and restoration actions required, the site has been broken down into four distinct zones. These being:

- ▶ Zone 1 – The basin. Restoration actions will seek to establish native wetland and ephemeral vegetation in the basin and native grasses and some shrubs on the banks;
- ▶ Zone 2 – The ‘rip rap’ chute. Restoration will include broadcast seeding and hand installation of ephemeral species;
- ▶ Zone 3 – The surrounding batters. Restoration will include the installation of native grasses and appropriate shrubs; and
- ▶ Zone 4 – The immediate 10m surrounding the outlet structure. Restoration will include planting of species representative of REF.

See Appendix A for location of these zones.

3. Actions and Descriptions of Restoration Activities

The following information accurately describes all components of the recommended restoration program. The program has been divided into two sections, the first outlines all tasks required to achieve 'Practical Completion' and release of first bond and the second describes the required maintenance period to achieve 'Final Completion' and release of maintenance bond.

The timeline for implementing the restoration program is shown in Appendix B.

3.1 Description of key terms

The following key terms are used throughout the description of the proposed restoration program.

- ▶ **Revegetation** – Refers to the planting of tube stock or similar grown from local provenance seed to re-establish vegetation
- ▶ **Restoration** – Refers to a combination of restoration activities and management techniques to restore native vegetation
- ▶ **Practical completion** – Refers to the completion of installation of revegetation activities and signals release of installation 'bond'
- ▶ **Establishment** – Refers to the minimum 24-month maintenance program applied to revegetation work to ensure plant establishment.
- ▶ **Final Completion** – Refers to the completion of the establishment period and release of maintenance 'bond'

3.2 Actions to Achieve Practical Completion

3.2.1 Installation of temporary protective fencing

GHD recommends installing an appropriate temporary fence around the perimeter of the restoration zone once the basin and outlet structure is complete. This will ensure protection of establishing vegetation and provide safety for restoration contractors operating on the site.

3.2.2 Seed Supply

DNR and DEC will require the use of local provenance seed for this restoration project to maintain genetic integrity of surrounding vegetation. These principles have been promoted throughout the entire Erskine Park development process and will be embraced in restoring the basin and outlet. As collection of provenance seed from REF requires a Section 132C licence from DEC, GHD recommends purchasing seed from the existing Erskine Park seed bank being managed by GANSW. This will ensure the development timeframe is not interrupted and the use of correct seed material will occur in plant propagation.

GANSW already possess a Section 132C licence from DEC for the collection of seed at Erskine Park.

3.2.3 Hydro-mulching

Areas of exposed or re-spread topsoil will be sprayed with an appropriate hydro-mulch medium. The 'mixture' will include a sterile cover crop and a mixture of native seed as suitable.

3.2.4 Plant Propagation

Plant propagation refers to the germinating of collected seed and 'growing on' the plants in hiko cells or forestry tubes. This activity should be managed by an experienced native plant supply nursery. GHD again recommends GA undertake this task at their Wholesale Nursery in Richmond.

3.2.5 Installation of Native Tube Stock

As vegetation is to be established in hollow 'voids' between rocks throughout the structure, plant installation will be by hand. For hand installation the planting hole will be a minimum of 25% larger than the planting container and its edges will be suitably 'roughed' prior to plant installation. The planting hole will then be backfilled with soil and firmly tamped down by hand and foot.

Species suitable for installation in the basin (part of zone 1) and the outlet structure (zone 2) are shown in Table 1 below. Wetland species that have the ability to establish in difficult environments as well as reduce nutrient load of stormwater run off have been selected.

Table 1 Plant Schedule Wetland Species

Species Name	Common Name	Density
<i>Baumea articulata</i>	jointed twigrush	8 per m2
<i>Bolboschoenus spp</i>		8 per m2
<i>Carex opressa #</i>		8 per m2
<i>Dianella spp #</i>		4 per m2
<i>Dicondra repens #</i>	kidney weed	8 per m2
<i>Eleocharis sphacelata</i>	rush	8 per m2
<i>Juncus usitatus #</i>	common rush	8 per m2
<i>Lomandra longifolia #</i>	mat rush	4 per m2
<i>Paspalum distichum</i>	water couch	8 per m2
<i>Persicaria dicipiens</i>	slender knotweed	8 per m2
<i>Philydrum lanuginosum</i>	frogsmouth	8 per m2

Species Name	Common Name	Density
<i>Phragmites australis</i>	common reed	8 per m2
<i>Schoenoplectus mucronatus</i>	Bog Bullrush	8 per m2
<i>Schoenoplectus validus</i>	Great Bullrush	8 per m2

Note: Plants indicated with # are suitable for installation in the 'rip rap' structure.

Species suitable for installation on the basin banks (part of zone 1) and surrounding the 'rip rap' structure (zone 3) are shown in Table 2, below.

Table 2 Native Grasses and Shrubs

Species Name	Common Name	Density
<i>Busaria spinosa</i>	black thorn	2 per m2
<i>Commelina cyanea</i>	scurvy weed	4 per m2
<i>Cymbopogon refractus</i>	barbed wire grass	4 per m2
<i>Dichondra repens</i>	kidney weed	4 per m2
<i>Dianella revoluta</i>		
<i>Einadia hastata</i>	salt bush	4 per m2
<i>Geranium homeanum</i>		4 per m2
<i>Hardenbergia violacea</i>	hardenbergia	4 per m2
<i>Leptospermum polygalifolium</i>	lemon-scented tea-tree	1 per m2
<i>Lomandra longifolia</i>	mat rush	4 per m2
<i>Microlaena stipoides</i>	weeping meadow grass	4 per m2
<i>Oplismenus aemulus</i>		4 per m2
<i>Ozothamnus diosmifolium</i>	everlasting	1 per m2
<i>Pratia purperescens</i>		4 per m2
<i>Themeda triandra</i>	kangaroo grass	4 per m2
<i>Wahlenbergia gracilis</i>	native bluebell	4 per m2

Species suitable for planting in zone 4 are shown in Table 3, below.

Table 3 River Eucalypt Forest

Botanical Name	Common Name	Density
Canopy:		
<i>Angophora floribunda</i>	rough-barked apple	1 per 5m2

<i>Angophora subvelutina</i>	broad-leaved apple	1 per 5m2
<i>Casuarina glauca</i>	she-oak	1 per 5m2
<i>Eucalyptus amplifolia</i>	cabbage gum	1 per 10m2
<i>Eucalyptus tereticornis</i>	forest red gum	1 per 10m2
Middle Storey:		
<i>Acacia parramattensis</i>	Parramatta green wattle	1 per 2m2
<i>Acacia decurrens</i>	Sydney green wattle	1 per 2m2
<i>Bursaria spinosa</i>	black thorn	1 per m2
<i>Callistemon salignus</i>	willow bottlebrush	1 per m2
<i>Leptospermum polygalifolium</i>	lemon-scented tea-tree	1 per m2
<i>Melaleuca linarifolia</i>	snow-in-summer	1 per 2m2
<i>Melaleuca stypheloides</i>	prickly-leaved paperbark	1 per 2m2
<i>Melaleuca decora</i>	white feather honey myrtle	1 per 2m2
<i>Ozothamnus diosmifolium</i>	everlasting	1 per m2
Groundcovers:		
<i>Commelina cyanea</i>	scurvy weed	4 per m2
<i>Dichondra repens</i>		4 per m2
<i>Einadia hastata</i>		4 per m2
<i>Lomandra longifolia</i>	mat rush	4 per m2
<i>Microlaena stipoides</i>	weeping meadow grass	4 per m2
<i>Oplismenus aemulus</i>	basket grass	4 per m2
<i>Themeda triandra</i>	kangaroo grass	4 per m2
<i>Wahlenbergia gracilis</i>	native bluebell	4 per m2

The completion of the revegetation (planting works) will be considered the date of 'Practical Completion' for the restoration works and will signal the commencement of the 24 month maintenance program. This will also allow release of first 'bond' from DNR provided they are satisfied with the initial works.

The completion of the 24-month maintenance program will be considered as 'Final Completion' for the revegetation works. It should be noted that the maintenance program consists of weed control in and around the bagged plants, guard repair and replacement of plants where applicable.

3.3 Actions to Achieve Final Completion

All plantings will be subjected to a minimum 24 – month maintenance program to ensure plant establishment and requirements of the RFI Act are met. Activities will include such things as watering, herbicide spraying and general maintenance.

3.3.1 Watering

All plants will be ‘watered in’ on installation, with each plant receiving a minimum five litres. All plantings will then receive a further three applications of water during the first 6 weeks to assist establishment. Should weather conditions remain dry for an extended period of time follow-up watering may be required. If so, discussion between client and contractor may be necessary to cover the cost of additional watering.

3.3.2 Hand broadcasting

GHD recommends native grass and certain ephemeral plant species be hand broadcast during the initial stages of the maintenance period, particularly *Juncus usitatus* and *Carex opressa* in the ‘rip rap’ and outlet drain. This technique has been used successfully in various restoration projects in Western Sydney.

3.3.3 Maintenance Spraying

To ensure the success of the revegetation activities it is essential to control weed infestation. Weeds compete with the newly installed plants for nutrients and water thereby limiting their survival and growth rates.

The maintenance program includes five scheduled visits targeting maintenance spraying, three in the first year and two in the second. All spraying will be carried out by suitably qualified contractors.

3.3.4 General Maintenance

Five general maintenance visits have been scheduled throughout the two - year maintenance period. These activities will include repairing damaged tree guards, monitoring survival rates, installing replacement plants as required, weeding inside the tree guards and continued follow-up spot spraying.

GHD recommends appropriately qualified bush regeneration contractors carry out all works.

3.3.5 Control of Noxious and Environmental Weeds

Obviously all weeds on site will be removed during the construction phase of the basin and outlet structure. There will be a need however, to monitor and treat any noxious and environmental weeds re-infesting the site during the establishment period. A list of weeds commonly found in Western Sydney and recommended treatment is included as Appendix C. A list of noxious weeds from the Penrith LGA is contained as Appendix D for reference.

3.3.6 Monitoring and Reporting

The restoration program will include the production of five summary reports as required by DNR, the first at practical completion and then every six months throughout the maintenance period. The monitoring and reporting process will be handled by an organisation experienced in native vegetation restoration and management. As this is a relatively small project the reporting process should not be onerous. GHD has included an example field-monitoring sheet in Appendix E to assist with reporting.

4. Estimated Project Costs

The following table summarises the costs associated with the restoration program recommended in this VMP for the area impacted by the RFI Act only (see Appendix A). This table will be used to set the necessary 'bond' with DNR. The remaining areas of work will be completed in accordance with this VMP, however, they do not require 'bonding' under the RFI Act.

Table 4 Estimate of restoration costs

Item No.	Description	Rate	No. req.	Total
1	Installation of temporary fence	LS	1	\$260
2	Hydro-mulching	\$0.65 p/m2	1,605	\$1,043
3	Purchase of provenance seed	LS	1	\$700
4	Plant propagation			
4.1	Enviro cells	\$0.55	6,424	\$3,553
4.2	Hikos	\$0.75	400	\$300
5	Plant installation			
5.1	Plant only	\$0.95	6,424	\$6,103
5.5	Plants with guards and mats (1) #	\$3.45	400	\$1,380
6	General maintenance including watering and maintenance spraying) (2)	\$1,350 per visit	5	\$6,750
7	Hand broadcasting	\$65 p/h	3	\$195
8	Monitoring and reporting	\$550	5	\$2,750
			Sub total	\$28,143
			GST	\$2,814.30
			Total	\$30,957.30

Note:

1. Quoted price includes qualified staff, vehicle, plants and all necessary equipment for installation
2. Quoted price includes 4 qualified staff, vehicle and all necessary equipment to complete maintenance activities

Appendix A

Construction Drawings and Site Plan

Appendix B
Implementation Gantt Chart

Appendix C

Weed Control Techniques for Common Weeds

Recommended Weed Control Techniques

Common Name	Botanical Name	Status	Removal Techniques
African love grass	<i>Eragrostis curvula</i>	Environmental Weed	Slash or mow before it sets seed along roads and in highly disturbed areas. Spot spray with diluted 1:100 Roundup. Hand remove isolated plants.
Dodder	<i>Cuscata sp.</i>	Environmental Weed	Hand remove.
Blackberry	<i>Rubus fruticosus agg. Spp.</i>	Noxious Weed W2	Cut and paint crown/lignotuber with undiluted Roundup or Garlon and diesel immediately for isolated plants. Slash large populations and spray re-growth with selective herbicide Garlon, Grazon or Brushoff at flowering/fruitlet stage.
Cobblers peg	<i>Bidens pilosa</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed. Hand remove isolated plants.
Crofton weed	<i>Ageratina adenophora</i>	Environmental Weed	Hand remove or spray with 1:100 Roundup.
Fireweed	<i>Senecio madagascariensis</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed. Hand remove isolated plants.
Fleabane	<i>Conyza spp.</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed. Hand remove isolated plants.
Green cestrum	<i>Cestrum parqui</i>	Noxious Weed W2	Stem scrape and paint with Garlon and diesel (i.e. both sides of stem)

Common Name	Botanical Name	Status	Removal Techniques
			immediately at flowering stage. Remove and bag fruit.
Inkweed	<i>Phytolacca octandra</i>	Environmental Weed	Hand remove or cut and paint base with undiluted Roundup after removing and bagging fruit.
Kikuyu	<i>Pennisetum clandestinum</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup.
Moth plant	<i>Arauja sericifolia</i>	Environmental Weed	Hand remove or cut and paint base of stems with undiluted Roundup after removing and bagging fruit.
Paddy's lucerne	<i>Sida rhombifolia</i>	Environmental Weed	Hand remove or cut and paint base with undiluted Roundup. Slash large populations and spray re-growth with 1:100 Roundup.
Pampas grass	<i>Cortaderia spp.</i>	Noxious Weed W2	Spot spray with diluted 1:70 Roundup after removing and bagging fruit/flowering stems.
Paspalum	<i>Paspalum dilatatum</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup.
Prickly pear	<i>Opuntia spp.</i>	Noxious Weed W4f	Mattock/hand remove all parts of plant.
Boneseed	<i>Chrysanthemoides monilifera</i>	Environmental Weed	Spray actively growing plants, spray to wet all foliage. Spray Roundup at a ratio of 1:100.
Scotch thistle	<i>Onopordum acanthium</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed. Hand remove isolated plants.
Sowthistle	<i>Sonchus oleraceus</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed. Hand remove isolated plants.

Common Name	Botanical Name	Status	Removal Techniques
Verbena	<i>Verbena spp.</i>	Environmental Weed	Spot spray with diluted 1:100 Roundup. Best done before it sets seed.
Wandering jew	<i>Tradescantia fluminensis</i>	Environmental Weed	Spot spray with 1:50 Roundup or Starane. It is photo-inhibited so should be treated on overcast days after rain. Rake and hand remove all stem fragments in small populations amongst native species.

Appendix D

Noxious Weeds of Penrith LGA

Noxious Weeds in Hawkesbury River County Council

The following weeds are declared noxious in the Hawkesbury River County Council control area (**including Baulkham Hills, Blacktown, Hawkesbury and Penrith Council areas**). The 'details' link on each listing provides further information on the legal requirements of the weed's listing and any variation in status within the local control area.

Common name	Scientific name	Category
African boxthorn	<i>Lycium ferocissimum</i>	W2
Alligator weed	<i>Alternanthera philoxeroides</i>	W1
Bathurst Noogoora Californian Cockle burrs	<i>Xanthium spp.</i>	W3
Black knapweed	<i>Centaurea nigra</i>	W1
Blackberry	<i>Rubus fruticosus (agg. spp.)</i>	W3
Broomrape	<i>Orobanche spp.</i>	W1
Cabomba	<i>Cabomba spp.</i>	W4g
Columbus grass	<i>Sorghum x alnum</i>	W2
Crofton weed	<i>Ageratina adenophora</i>	W2
Dodder	<i>Cuscuta campestris</i>	W2
Giant Parramatta grass	<i>Sporobolus fertilis syn. Sporobolus indicus var. major</i>	W2
Green cestrum	<i>Cestrum parqui</i>	W2
Harrisia cactus	<i>Harrisia spp.</i>	W4f
Hawkweed	<i>Hieracium spp.</i>	W1
Horsetail	<i>Equisetum spp.</i>	W1
Johnson grass	<i>Sorghum halepense</i>	W2
Karoo thorn	<i>Acacia karroo</i>	W1
Kochia	<i>Kochia scoparia</i>	W1
Lagarosiphon	<i>Lagarosiphon major</i>	W1
Ludwigia	<i>Ludwigia peruviana</i>	W2

Common name	Scientific name	Category
Mexican feather grass	<i>Nassella tenuissima</i> syn <i>Stipa tenuissima</i>	W1
Miconia	<i>Miconia</i> spp.	W1
Mother-of-millions	<i>Bryophyllum delagoense</i>	W2
Pampas grass	<i>Cortaderia</i> spp.	W2
Parthenium weed	<i>Parthenium hysterophorus</i>	W1
Paterson's curse, Vipers Italian bugloss	<i>Echium</i> spp.	W3
Pellitory	<i>Parietaria judaica</i>	W3
Prickly pears	<i>Opuntia</i> spp.	W4f
Privet - broadleaf	<i>Ligustrum lucidum</i>	W4b
Privet - narrowleaf	<i>Ligustrum sinense</i>	W4b
Rhus tree	<i>Toxicodendron succedaneum</i>	W2
Salvinia	<i>Salvinia molesta</i>	W2
Senegal tea plant	<i>Gymnocoronis spilanthoides</i>	W1
Siam weed	<i>Chromolaena odorata</i>	W1
Spiny burrgrass	<i>Cenchrus incertus</i>	W2
Spiny burrgrass	<i>Cenchrus longispinus</i>	W2
Spotted knapweed	<i>Centaurea maculosa</i>	W1
St John's wort	<i>Hypericum perforatum</i>	W2
Water hyacinth	<i>Eichhornia crassipes</i>	W2
Water lettuce	<i>Pistia stratiotes</i>	W1
Willows	<i>Salix</i> spp.	W4g

Taken from NSW Agriculture noxious weeds in NSW list

Appendix E
Field Monitoring Sheet

Vegetation Management Plan Monitoring Field Sheet

Project: _____

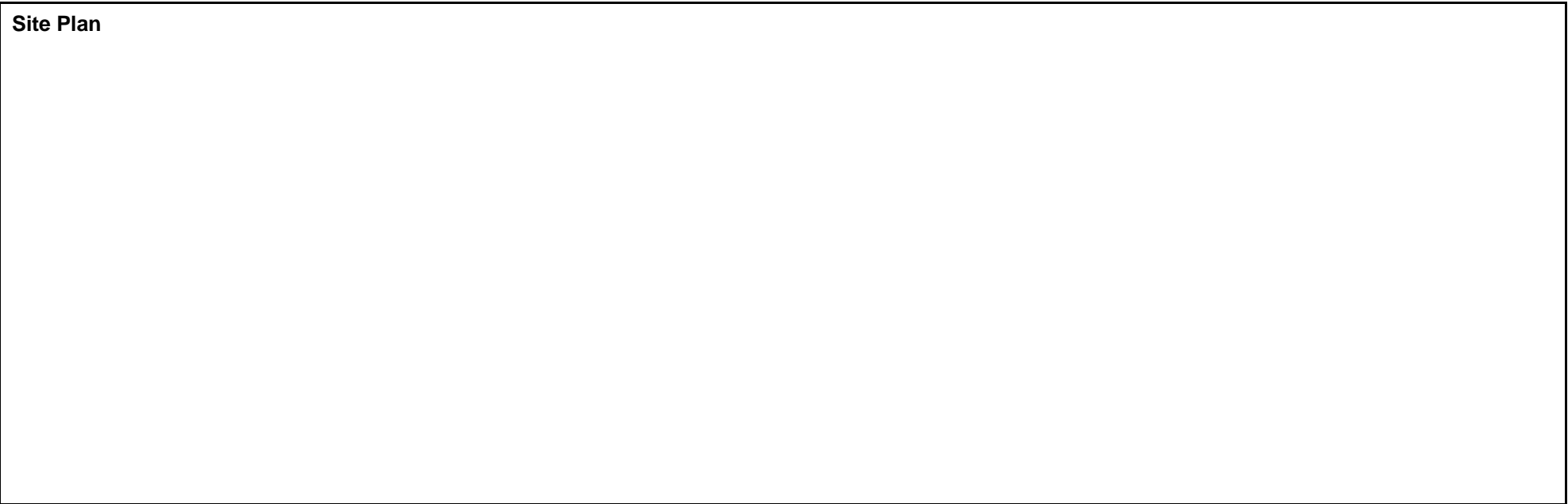
Date: _____

Quadrat: _____

Recorder: _____

Measure	Observation				Comments/Actions Required	Responsibility	Completion Date
Plant Growth (cm):							
Trees	0-5	5-20	20-50	50+			
Understorey	0-5	5-10	10-30	30+			
Ground cover	0-5	5-10	10-20	20+			
Percentage Cover (%):							
Trees	0-10	10-50	50-85	85+			
Understorey	0-10	10-50	50-85	85+			
Ground cover	0-10	10-50	50-85	85+			
Survival Rates (%):							
Trees	0-10	10-50	50-85	85+			
Understorey	0-10	10-50	50-85	85+			
Ground cover	0-10	10-50	50-85	85+			
Plant replacement required/Ha							
Trees	0-5	5-20	20-50	50+			
Understorey	0-5	5-20	20-50	50+			
Ground cover	0-5	5-50	50-100	100+			
Weed regrowth (% cover)	0-10	10-50	50-85	85+			
Condition of Tree Guards	Poor	Ok	Good				
Watering required	Yes	Some	No				
Stream bank erosion	Stable	Slight	Mod.	Severe			
Photographs:							
Number							
Location							
Direction							

Comments: _____



GHD Pty Ltd ABN 39 008 488 373

Suite 1, Level 1, 62 Clarence Street

Port Macquarie NSW 2444

T: (02) 6586 8700 F: (02) 6586 8701 E: pqqmail@GHD.com.au

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
1.	D Williams	J Cummings	<i>J Cummings</i>	D Williams	<i>D Williams</i>	18/04/07

APPENDIX E

Stormwater Management Plan



REPORT

Erskine Park Landfill
Stormwater Management Report

Submitted to:

Enviroguard Pty Ltd
4 Quarry Road
Erskine Park, NSW, 2759

Submitted by:

Golder Associates Pty Ltd
Level 8, 40 Mount Street, North Sydney, New South Wales 2060, Australia

+61 2 9478 3900

19135652-007-R-Rev0

09 April 2020



Distribution List

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APPENDIX A

Catchment Distribution and Channels Layout

APPENDIX B

Important Information

1.0 INTRODUCTION

Golder has been engaged by Enviroguard Pty Ltd to provide design and planning services for a Mechanically Stabilized Earth (MSE) retaining wall for the Erskine Park.

The stormwater management report has been developed as a part of documentations to be submitted with the Development Application to construct the MSE Wall as required by Penrith City Council in their Pre-Lodgement advice.

This stormwater management report reviews the existing stormwater management system and details the proposed stormwater management system. The proposed system comprises a drain on top of the MSE wall, and interfaces with the existing drainage system. The existing drainage system consists of earthen drains and detention ponds. Whereas, the proposed drain shall be lined. The proposed drain on top of the MSE wall runs along the all weather trafficable road in its allocated right-of-way of 2 m.

1.1 Study Area

Erskine Park Landfill located at 4 Quarry Road, Erskine Park is owned and operated by Enviroguard. The landfill is approaching end of life, and Enviroguard is looking to extend the life of the landfill by constructing a MSE wall.

The surface water management system is designed for the final landform. The final landform ranges from RL 92 m at the top of the landform to RL 60 m which is along the rim of quarry, with variable slope from top to toe of the site.

2.0 SCOPE OF ASSESSMENT

This scope of work has been undertaken to review the capacity of the existing stormwater system and updated the design of the stormwater system as required with consideration of the MSW Wall construction and final profile.

The scope of engineering services has the following objectives:

- 1) Develop a 1D hydraulic model in XP-STORM (or similar) to estimate peak flow rates for drainage sizing.
- 2) Provide drainage channels sized in accordance with the latest Australian Rainfall and Runoff Guidelines (Ball et. al., 2019).
- 3) Assess storage sufficiency of the existing two dams using both a continuous rainfall model to estimate long-term trends and for AEP 1% and 0.2EY rainfall events to assess performance when exposed to a short-duration (24 - 72 hour) event.
- 4) Assess the impact of off-site discharge.

3.0 PREVIOUS STUDIES

The information such as, design criteria and design parameters contained in below listed reports has been used in the preparation of this stormwater management report.

- Soil and Water Management Plan (SWMP), Erskine Park Landfill. Enviroguard Pty Ltd, CES, Report ID: CES010408-EGD-01-F

- Erskine Park Final Capping and Rehabilitation Landfill Closure Plan, 610.16277 Landfill Closure Plan R2 (SLR, 2017)
- Stormwater Management Report Erskine Park, Brown Consulting, 2007. Report No. W03033.35-01B (Browns, 2007)

4.0 DESIGN CRITERIA

Design criteria for the Stormwater Management System have been adopted as per the Browns 2007.

5.0 EXISTING STORMWATER MANAGEMENT

The design for the existing stormwater management system is presented in the report Stormwater Management Report, Enviroguard Landfill Erskine Park, Browns Consulting, 2007.

The existing drainage design and catchment layout is shown in Figure 1 below.

Per Browns 2007 report, the existing dams are designed for 2 year ARI 2 hour and the drains are sized to convey 100 years ARI. The surface water management system is designed to capture runoff from quarry area over the period during which it is capped, rehabilitated and revegetated.

The runoff from south eastern areas SE1 and SE2 drains into swale which runs around the perimeter of site before discharging into the existing pond located in southeast corner of site.

Whereas, northwest areas (designated as NW) drains into the swale which extends along northwest and northeast of the site and confluences and Point A as shown in Figure 1.

At this point, the swale discharges into a culvert which conveys flow to north-western basin. This basin ultimately drains into a wetland in the north-western corner of CSR property.

Currently, a catchment area of 14.07 Ha reports to north-western basin and 8.23 Ha reports to south-eastern basin. There is no external area contributing to this drainage system.

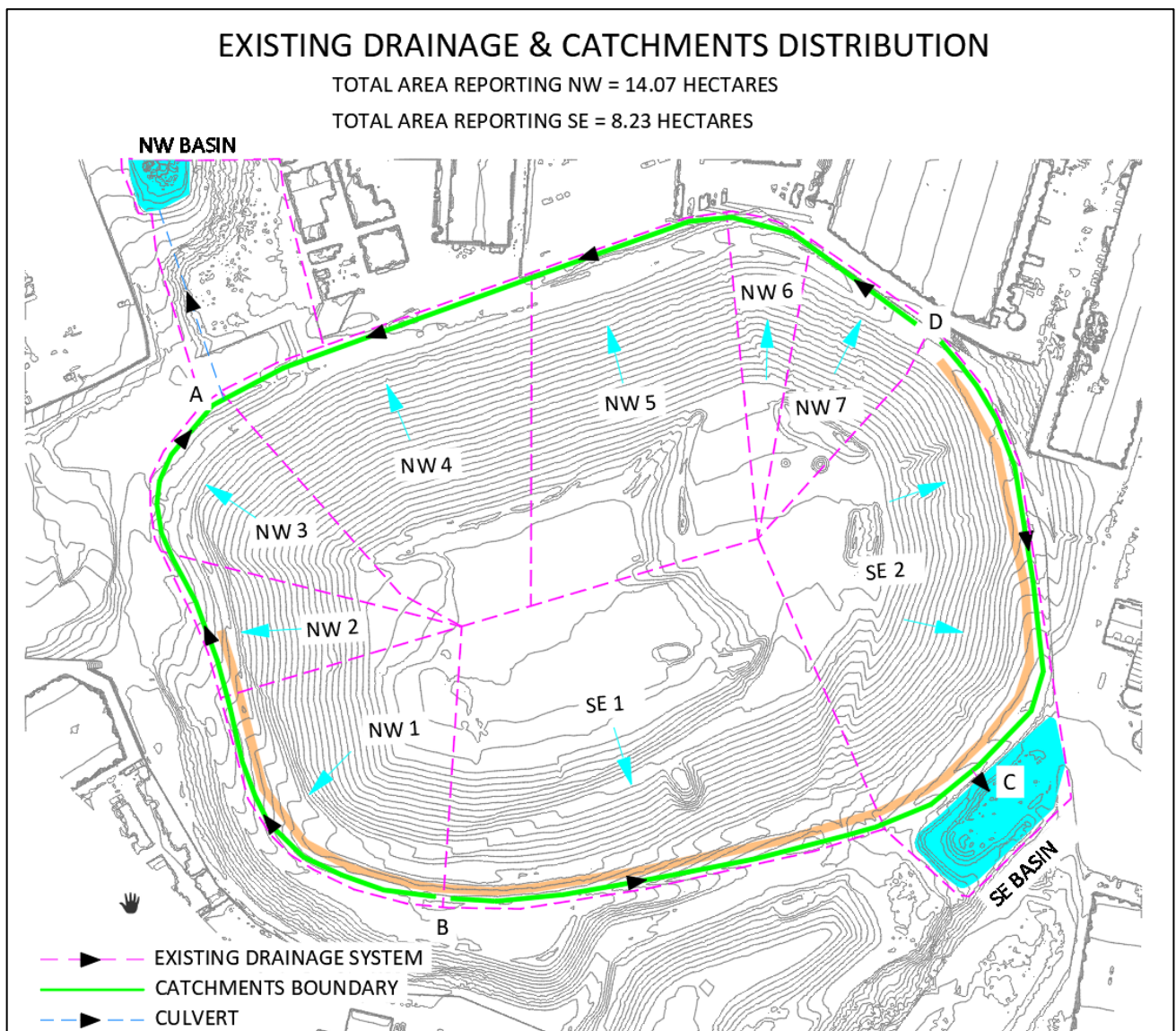


Figure 1: Existing Drainage and Catchment Layout

6.0 PROPOSED STORMWATER MANAGEMENT SYSTEM

The proposed stormwater management system has been selected from three of the options provided at the time of optioneering stage. The other options were complex in nature having longer flow paths and abrupt change in direction of the flow path. This option is selected based on functionality.

The proposed stormwater management system is presented in Figure 2 below.

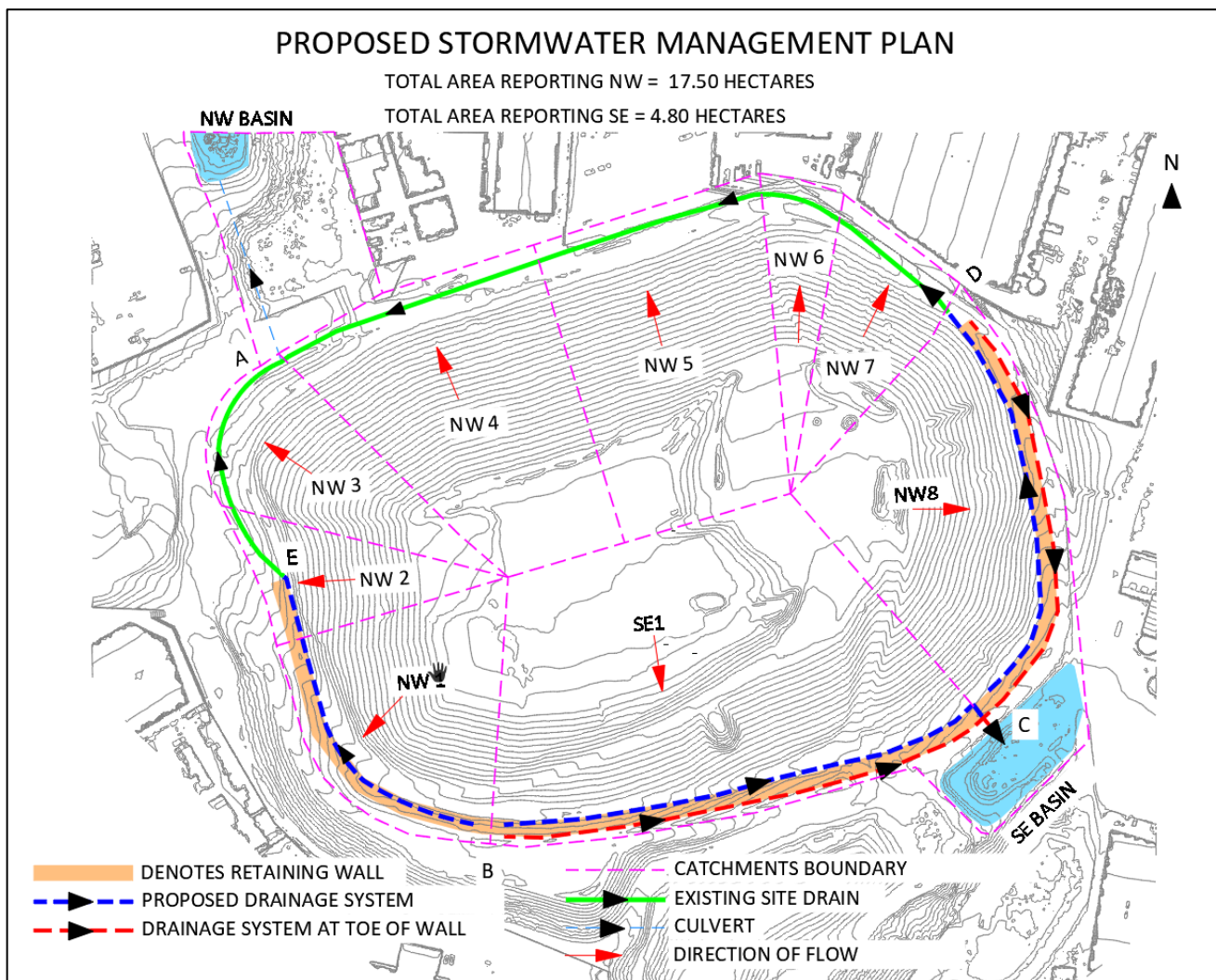


Figure 2: Stormwater Management Plan

The following assumptions were made regarding the runoff properties of the final capped profile and these assumptions are in line with the assumptions in Browns 2007 Report

- 5% impervious area.
- Runoff coefficient C_v 0.6

The proposed drainage system on top of the MSE wall is designed for 1% AEP using the DRAINS model to calculate peak flow and the Hydraulic Toolbox by Federal Highway Administration has been used for the preliminary sizing of trapezoidal swales. This design AEP event is 1% for hydraulic sizing of channels. The system has been designed to cater for flow from the capped site area and the adjacent road surface area. This system accounts for the presence of existing swales along the periphery of site. The proposed swales running at the top of the wall will transition into the existing swales at Point E and D, as shown in Figure 2.

At Point C a downpipe is proposed to convey water from top of the wall into the drainage system at the toe of wall. The discharge from the downpipe is anticipated to have considerable energy. Intermediate clamping will be required in order to firmly restrain the pipe. A catch basin will be installed at the bottom of pipe which will dissipate energy from the downpipe and direct it towards the other side of a peripheral road at the toe of wall through a buried pipe. A schematic layout is shown in Figure 3.

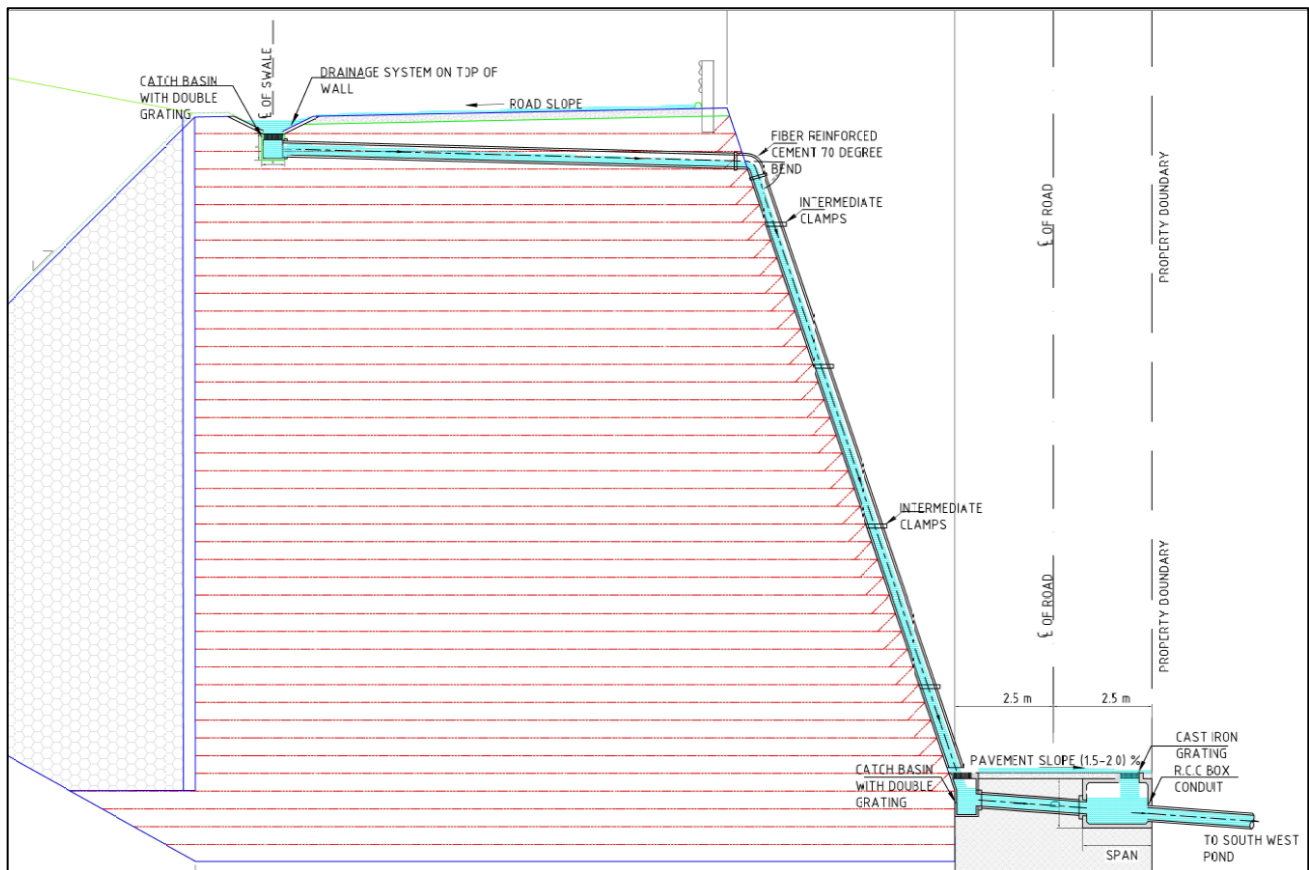


Figure 3: Schematic Layout of Downpipe at Point C, outside wall.

7.0 STORAGE SUFFICIENCY OF THE EXISTING TWO DAMS

The DRAINS model was run for the 1% AEP event to calculate the Peak flows, and the model was also run for the AEP of 50% and 2hour duration to calculate required volumes at the basins.

The design volume of the NW and SE basins were reported in the Browns 2007 report. It is understood the NW pond was constructed larger than designed. Cleanaway has also provided survey dated September 09, 2019, reference 2220DET06 sheet (1 of 1) for the volume of basins.

A summary of the estimated runoff volume and approximate existing basin volumes is reported in Table 1.

Table 1: Volume of Basins

Basin	Volume per Browns Report (m ³)	Existing Volume per Survey 2019 (m ³) ¹	2 yr ARI, 2 Hour Runoff Volume (m ³)
NW Basin	2 900	4 040	3348
SE Basin	2 500	1121	918

¹ While conducting survey the bottom of south eastern dam wasn't reached and the surveyor approximately 1 m from the bottom of the basin. Due to this the current volumes of NW and SE basin are assumed to be 4040 m³ and 1700 m³.

Based on the existing volume of the NW and SE Basins from latest survey, both dams have sufficient volume to provide sufficient detention of the runoff associated with a 0.5% AEP and 2 hour event. This is based on the basins being empty at the start of the design event.

To analyse the storage sufficiency of when exposed 24, 48 and 72 hours a DRAINS model was run for 1%, 20% and 50% AEP event for aforementioned durations. Results in term of estimated runoff volume to each basin are presented in Table 2.

Table 2: Estimated runoff volume for the to 1%, 20% and 50% AEP event for 24, 48 and 72 hours

NW POND	24 Hrs	48 Hrs	72 Hrs
1%	31,357 m ³	42,433 m ³	48,571 m ³
0.2EY	12,678 m ³	16,870 m ³	19,323 m ³
0.5EY	8,773m ³	11,343	12,807 m ³
SE POND	24 Hrs	48 Hrs	72 Hrs
1%	8,601 m ³	11,638 m ³	13,322 m ³
0.2EY	3,477 m ³	4,627 m ³	5,300 m ³
0.5EY	2,406 m ³	3,111 m ³	3,512 m ³

Further assessment of the basin performance based on continuous modelling will be completed during detailed design.

8.0 SIZING OF DRAINAGE CHANNELS

Golder have undertaken a hydrological assessment of the northern and southern portion of the Erskine Park site to assess the required drainage channel sizes to convey stormwater . The information used is presented in a series of figures and tables below.

Design rainfalls for the site for a range of storm durations have been sourced from the Bureau of Meteorology (BoM) (2020) for the 100% and 1% AEP events.

Rainfall intensity-duration-frequency relationships are presented in Table 3.

Table 3: Rainfall IFD (BoM, 2020) mm

Duration	Annual Exceedance Probability (AEP)		
	0.5EY	0.2EY	1%
2hr	36.6	45.6	83.1
24hr	95.9	124	235
48hr	124	165	318
72hr	140	189	364

*Requested coordinate:Latitude-33.79Longitude150.82

*Nearest grid cell:Latitude33.7875 (S)Longitude150.8125 (E)

Peak flows are estimated in accordance with the Australian Rainfall and Runoff (ARR) 2019 guidelines. The 1% AEP peak flow at key locations specified in the Figure 2 are presented in Table 4, Drainage channel sizing below and the catchment area of channels is presented in Appendix-A.

Table 4: Drainage Channel Sizing

Drainage Channel	From Point B to E S-1	From Point B to C S-2	From Point C to D S-3
Design Storm Event (AEP)	1:100	1:100	1:100
Design Catchment Area (ha)	2.26	5.50	3.10
Peak Catchment Runoff (m ³ /sec)	0.8	1.9	1.0
Channel Slope (%)	10 ^(a)	1.5 ^(a)	1.14 ^(a)
Channel Base width (m)	0.50	0.50	0.50
Channel Side-Slope (V:H)	2	2	2
Estimated Peak Water Depth (m)	0.334	0.482	0.384
Required Depth (m)	0.2	0.45	0.35
Top Width of Channel (m)	0.9	1.4	1.2

Note : (a) Estimated from Wall heights.

9.0 WATER QUALITY

As the runoff enters the swales on the MSE wall after travelling through the final landform, there is potential for contaminated runoff to the north western and south eastern basins. We recommend the Water Quality Monitoring continue as per the EPL requirements to confirm any impacts.

10.0 CONCLUSIONS

Based on results of hydrological modelling and discussion above it is concluded that basins in northeast and southwest have capacity to detain 50% AEP, 2 hr event also, hydraulic sizing of proposed channels have sufficient capacity to cater 1% AEP runoff without overtopping.

The sizing of existing channels from Point D to A (Figure 2) and sizing of the pipe culvert from (point A) to northwest basin will be reviewed during detailed design. Furthermore, connection works required at southeast pond in order to connect pipe from point C into the basin will be developed during detailed design.

11.0 REFERENCES

Stormwater Drainage Specification for Building Developments policy.

Water Sensitive Urban Design Policy and Technical Guidelines.

Bureau of Meteorology. (2016). Design Rainfall Data System. Retrieved from

<http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016>

Stormwater Management Report, Enviroguard Landfill Erskine Park Report, by Brown Consulting (NSW) Pty Ltd (2007)

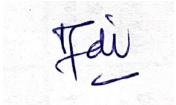
Soil and Water Management Plan by Enviroguard Pty Ltd, Report ID: CE000102-EGD-156-01-F, Revision 1.

Ball, J., Babister, M., Nathan, R., Weeks, W., Weinmann, E., Retallick, M. and Testoni, I. (editors) (2019) *Australian Rainfall and Runoff, A Guide to Flood Estimation*, Commonwealth of Australia

Plan showing detail, locations of monitoring wells and dams volumes, Cleanaway, Quarry Road Erskine Park Penrith City Council by Keatley Surveyors. Dated 22/09/2019, reference 2220DET06 (Sheet 1 of 1)

Signature Page

Golder Associates Pty Ltd



Adil Younas
Civil Design Engineer



Nigel Moon
Principal Engineer

AY/NM/ay

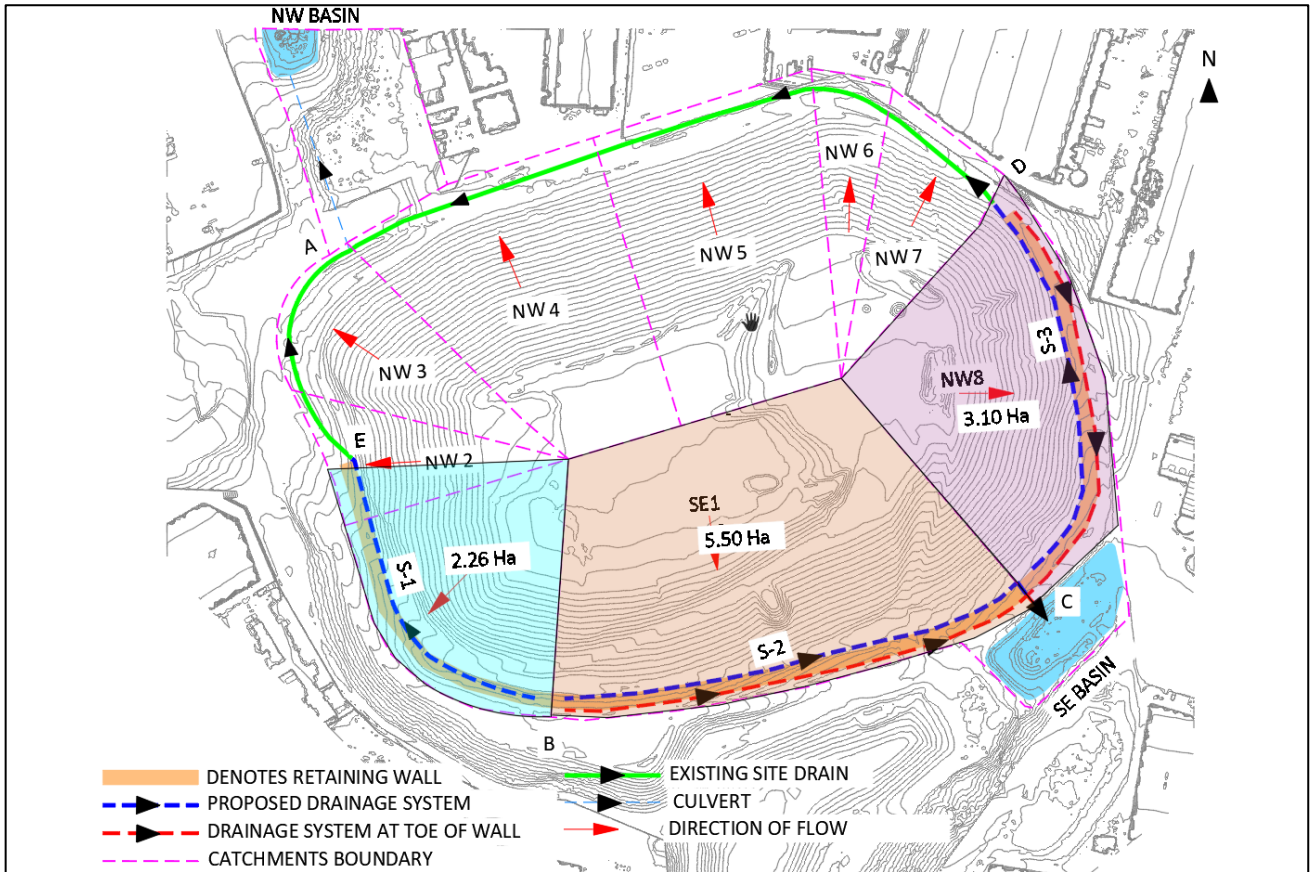
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APPENDIX A

Catchment Distribution and Channels Layout



Appendix-A: Catchment Distribution and Channels Layout

APPENDIX B

Important Information

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APPENDIX F

Landfill Closure Plan



REPORT

Erskine Park Landfill

Final Capping and Rehabilitation

Landfill Closure Plan

Submitted to:

Enviroguard Pty Ltd

Quarry Road
Erskine Park
NSW, 2759

Submitted by:

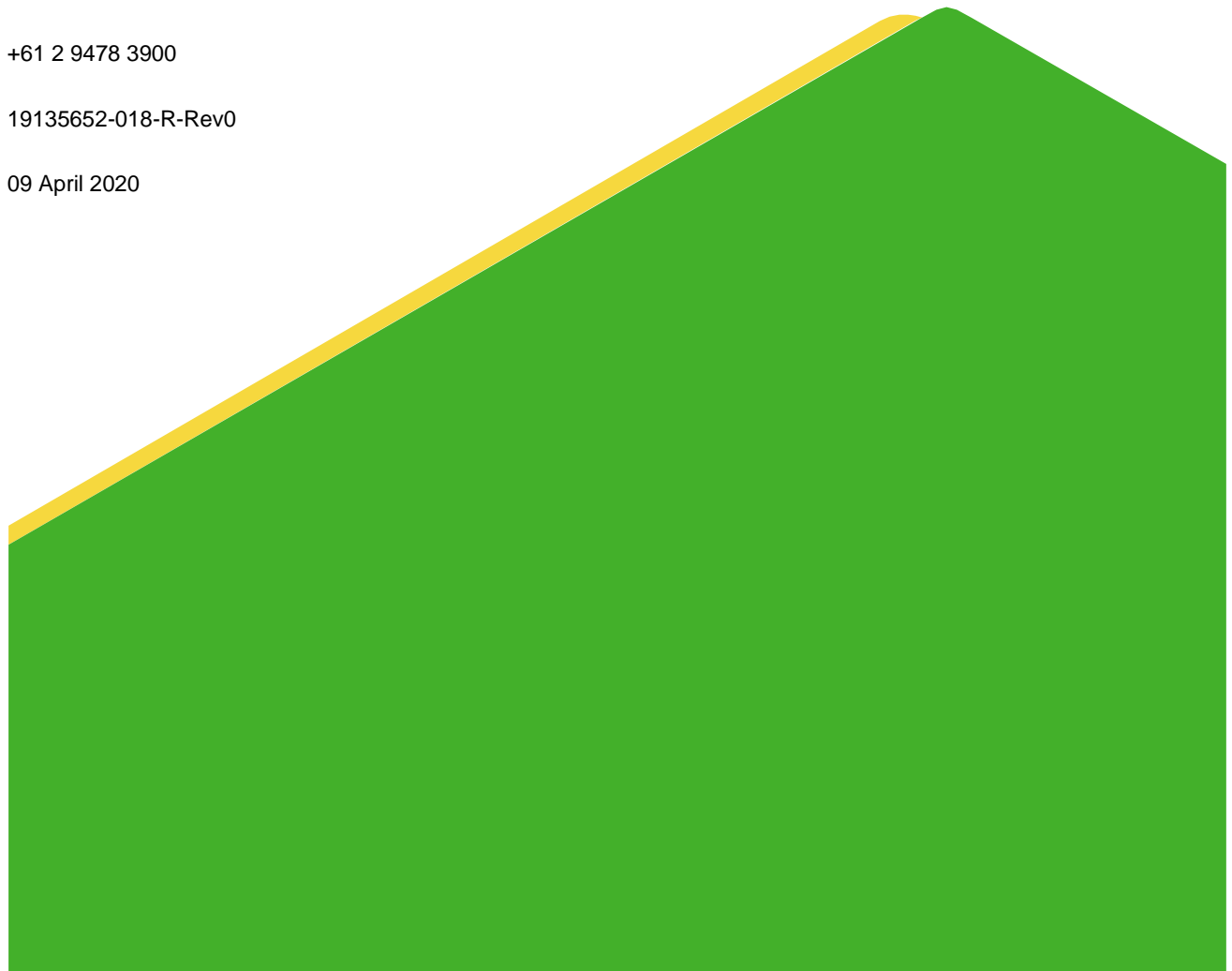
Golder Associates Pty Ltd

Level 8, 40 Mount Street, North Sydney, New South Wales 2060, Australia

+61 2 9478 3900

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ABBREVIATIONS

AS	Australian Standards
AHD	Australian Height Datum
BOD	Biological Oxygen Demand
BT	Benchmark Technique
CES	Consulting Earth Scientists
CQA	Construction Quality Assurance
EBT	Effluent Balancing Tank
EPA	Environment Protection Authority
EPL	Environment Protection Licence
FML	Flexible Membrane Liner
IBT	Inflow Balancing Tank
LEL	Lower Explosive Limit
LEMP	Landfill Environmental Management Plan
LEP	Local Environmental Plan
LTP	Leachate Treatment Plant
mAHD	metres Australian Height Datum
NSW	New South Wales
OMC	Optimum Moisture Content
POEO	Protection of the Environment Operations Act 1997
PCA	Pollution Control Approval
SEPP	State Environment Planning Policy
SLR	SLR Consulting Australia Pty Ltd
SMDD	Standard Maximum Dry Density
SMS	SCADA Management System
QA	Quality Assurance

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1.0 INTRODUCTION

1.1 General

This document presents an update to the Erskine Park Landfill Final Capping and Rehabilitation Closure Plan prepared by SLR dated 23 June 2017 reference 610.16277 Landfill Closure Plan R2.

The Erskine Park Landfill Final Capping and Rehabilitation Closure Plan prepared by SLR dated 23 June 2017 was approved by NSW EPA in 2017.

The updates have been generally limited to the following.

Table 1: Updates to the Closure Plan

Aspect	Description
Final Landform	The final landform was approved by NSW EPA in 2017. Final Landform has been updated to reflect the MSW Wall Application
Surface Water	Surface Water updated to reflect the MSE Wall Application and final profile

Enviroguard Waste Management Ltd (Enviroguard) own and operate the Erskine Park Landfill, 4 Quarry Road, Erskine Park, New South Wales.

The site is located on the former CSR quarry that mined breccia from the Erskine Park diatreme.

Landfilling operations at the site are subject to conditions of Environment Protection Licence (EPL) 4865 issued under the Protection of the Environment Operations (POEO) Act and administered by the NSW Environment Protection Authority (EPA).

Pursuant to Section 76 of the POEO Act and Section 10 of the EPA *Environmental Guidelines: Solid Waste Landfills, Second edition 2016* (Guidelines), a Closure Plan is to be submitted to the EPA on behalf of the owner and 'last licensee', Enviroguard.

Section 10 of the Guidelines states that the Closure Plan is to be submitted for approval no later than 12 months before the completion of the landfill's waste receipt operations and that the Closure Plan should include a post-closure monitoring and maintenance programme intended to ensure the long-term integrity of the landfill.

Post-closure monitoring and maintenance should address the assessment of multiple environmental receptors including emissions to water, the atmosphere, the protection of land use and local amenity. The proposed monitoring and maintenance programme shall be continued until the landfill does not pose a threat to public health & safety and the environment.

1.2 Requirements of the Closure Plan

The requirements of this Closure Plan, as outlined within the Guidelines must address the following issues:

- A description of the proposed closure and rehabilitation works, including a description of the final capping layer for the site and the rehabilitation strategy;
- Specifying the steps taken, or to be taken in closing and stabilising the premises including a proposed timeframe for doing so;

- Ensure that all leachate collection, gas collection, stormwater sediment controls, monitoring and reporting practices are maintained to a standard equivalent to that employed during the operational life of the landfill;
- Ensure that neighbouring residents are advised of contact persons to discuss any problems, such as odour emissions etc. Records of complaints should be kept in the same manner as required during the operational phase of the landfill; and
- Ensure that waste materials are not received for disposal at the facility after operation cease. Waste materials that are intended for use in the remediation should be documented and reported in the same way as for an operating facility.

The monitoring and maintenance obligations outlined in this Closure Plan may only be reduced or modified with the approval of the EPA. Changes or reductions in the scope of post-closure obligations may be possible as the landfill and associated waste mass stabilises with time after closure.

The licensee or occupier (Enviroguard) may seek to complete all obligations and retrieve the financial assurance when it can be demonstrated that the landfill is “stable and non-polluting”, in accordance with the Guidelines. This approach is to be implemented by submitting a certified statement of completion for consideration by the EPA to the effect that the site rehabilitation work has been completed and further environmental management of the premises is not required. Generally this statement will be expected to show that:

- Gas concentrations in all perimeter gas wells have fallen to less than 1% methane (v/v) and less than 1.5% carbon dioxide for a period of 24 months;
- Analysis of the leachate composition indicates low levels of contamination posing no hazard to the environment, and surface water and groundwater monitoring indicates no water pollution (with respect to relevant published water quality guidelines).
- The landfill capping system has been assessed over some years and is considered to be stable with acceptable surface-water drainage;
- The level of suspended solids in rainwater running off the final capping should be less than 50 mg/L;
- The methane concentration at the surface of the final capping should not exceed 500 ppm at any point;
- The closed landfill no longer poses and adverse amenity risk. It does not generate offensive or excessive odour, dust, noise, litter and debris, present a fire risk, or attract scavengers and vermin; and
- Documentation to demonstrate that all functions in this Closure Plan have been completed with accompanying written confirmation of procedures.

Upon approval of the certified statement of completion by the EPA, the “last licensee” can cease post-closure maintenance and monitoring of the site, and any requirements for financial assurance will lapse.

This Closure Plan has been prepared in a manner that is generally consistent with the approach for landfill closure outlined in the Guidelines. The strategy for site closure and post-closure care involves the following elements:

- A final landform design has been developed. The landform incorporates the effects of consolidation of the waste following closure and has been designed to be sympathetic with the surrounding contours;
- On-going implementation of leachate management and landfill gas control and monitoring systems at the site following closure and capping;

- The site will be capped with a seal-bearing layer, sealing layer or clay cap, infiltration drainage layer and revegetation layer comprised of growing medium to ensure that the final surface provides a barrier to the migration of stormwater into the waste, controls emissions to surface water and atmosphere, promotes sound land management and conservation, prevents hazards and protects amenity;
- Conceptual plans are included for primary and secondary re-vegetation. Initially, the site will be re-vegetated with native grass species;
- Implementation of a maintenance programme; and
- Staging of inspections, monitoring and maintenance programmes to assess the effectiveness of the post-closure strategy.

2.0 FACILITY DETAILS

2.1 Site Location

The landfill is located approximately 39 km west north-west of central Sydney, and some 2 km south west of Erskine Park in the Penrith City Council LGA (see **Figure 1**). Erskine Park Road forms the northern boundary of the site, whilst Quarry Road and commercial warehousing forms the western boundary. The southern and eastern boundaries are dominated by recent commercial warehouse developments, open scrub land and clay stockpiles (south).

2.2 Site Description

Landfill operations have been ongoing within the void created by the former CSR mining operations. Volcanic breccia was extracted from the original elevated landform at RL 87m Australian Height Datum (AHD) to RL - 40 m AHD at the base of the void prior to filling. The rim of the landfill is at approximately 55m AHD.

The void was mined with terraced sides for access and stability. Prior to commencement of quarrying activities, overburden was removed and stockpiled around the quarry rim.

Imported clay and soils stockpiles are present on site, specifically those stockpiles on the south-east boundary of the site. These stockpiles are to be utilised for the capping and rehabilitation of the site. Stockpiles are currently stabilised with grass and in some cases mature trees.

Waste placement has been ongoing within the base of the void by progressive waste lifts.

2.3 Environment Protection Licence

EPL 4865 was issued to Enviroguard Pty Ltd to permit the disposal of wastes to land as provided in EPL 4865 Administrative Condition A1.

2.4 Site Access

The site is accessed through Quarry Road, which adjoins Mamre Road to the west of the site. An internal bitumen sealed road provides access from Quarry Road to the site offices, weighbridge, gatehouse, and a workshop/maintenance area. Table 2: Accepted Wastes (as EPL 4865)

Waste	Description	Activity
General Solid Waste (non-putrescible)	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste Disposal (application to land)
Asbestos Waste	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste Disposal (application to land)
Waste Tyres	As defined in Schedule 1 of the POEO Act, as in force from time to time	Waste Disposal (application to land)
General Solid Waste (non-putrescible)	Immobilised waste which is assessed as General Solid Waste (non-putrescible) and are subject to general or specific immobilisation approvals	Waste Disposal (application to land)

Waste	Description	Activity
Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-

2.5 Zoning and Lot

Zoning of the site is administered under *State Environmental Planning Policy (Western Sydney Employment Area) 2008*. The site is predominantly zoned E2 Environmental Conservation, with a small section on the north-west corner zoned IN1 General Industrial.

The site is identified as Lot 4 in Deposited Plan (DP) 1094504 and comprises approximately 21.94 Ha. The site is occupied by the existing Erskine Park Landfill within the Penrith Local Government Area.

2.6 Site Services

Site offices, gatehouse, weighbridge and a workshop/maintenance area are currently located at the site. Refer **Figure 2**. These facilities are connected to permanent water supply, sewer, electricity and telephone services.

2.7 Geology

Erskine Park Landfill lies in the centre of the Cumberland Plain, a low lying, undulating shale landscape composed of the Triassic Wianamatta Group. These rocks were deposited on a broad, low lying coastal plain between 190 and 225 million years ago (Herbert, 1980). The Cumberland Plain was punctured by a series of volcanic vents or diatremes during the Tertiary period (65 and 190 million years ago). Breccia extracted from the diatreme by the CSR operation was formed by the transformation of country rock (shale) that slumped into the vent under conditions of extreme heat and pressure.

The Wianamatta Group of rocks belonging to the Bringelly Shale Formation dominate the surrounding geology to the site, and in fact cover vast areas of the Cumberland Plain. The Bringelly Shale grades upwards from a lagoonal coastal marsh sequence at the base to increasingly terrestrial, alluvial plain sediments towards the top of the formation. The Bringelly Shale Formation is underlain by the Triassic Hawkesbury Sandstone Formation. The Bringelly Shale has a maximum thickness of 257m near Campbelltown and is approximately 60m thick at Eastern Creek.

2.8 Hydrogeology

The Bringelly Shale has a very low permeability, with results typically exceeding the Landfill Guidelines leachate barrier recomacted clay or modified soil liner in-situ coefficient of permeability requirement of less than $1 \times 10^{-9} \text{m/s}$. It is due to the low permeable nature of the Bringelly Shale that a large proportion of Sydney's landfills are sited within this geological unit.

Rates of groundwater movement are likely to be low as a result of low relief, low altitude (approximately 50 mAHD) and low permeability of the Wianamatta Shale and volcanic breccia in which the landfill is constructed (Herbert, 1980).

Groundwater associated with the Wianamatta Shale is characterised by high salinity (Wooley, 1980; Kruminis et al., 1998) and high ammonia concentrations ($>10 \text{ mg L}^{-1}$, Old, 1942). Naturally occurring high levels of these parameters reflect the deposition of organic-rich sediment in low energy coastal environments and may

be incorrectly attributed to leachate contamination. Perched groundwater is often evident within the interspersed sandstone horizons and laminite within the Bringelly Shale.

2.9 Topography and Surface Water Hydrology

Ongoing landfilling operations will be undertaken to produce the final landform as shown in **Figure 4**. Final landform consists of a final landform at 92 mAHD (settling to 87 mAHD) designed to a single peak ridge. Following the creation of the final landform, the landfill will be closed, capped and rehabilitated.

Prior to capping and rehabilitation, any incidental rainfall within the boundary of the landfill will infiltrate the waste mass and contribute to leachate generation.

Surface water drainage from the final landform shall be intercepted by grass lined open swales constructed upon the rehabilitated soil surface. Swales will divert stormwater run-off at an approximate 1:25 gradient to the perimeter surface water drains at the toe of the site. The toe drain that intercepts the swales on the landfill mound shall direct the surface water run-off around the landfill to the south-east, west and north-west where it is discharged to two existing sedimentation dams (see **Figure 6**).

The two dams are located in the following areas:

- NW pond (this serves as the primary dam situated offsite approximately 350m north-east of the current weighbridge)
- SE pond (existing pond also called the “Horse Shoe” pond) situated approximately 700m south-east of the weighbridge)

The landfill is located in the catchment of South Creek which flows into the Hawkesbury River at Windsor.

2.10 Climate

The nearest automated weather station (AWS) operated by the Bureau of Meteorology from which climate data can be obtained is Orchard Hills Treatment Works, Site Number 067084. A summary of the rainfall and temperature data obtained from the Bureau of Meteorology for AWS 067084 is provided below in **Table 3**.

The site also maintains its own weather station as a condition of EPL 4865.

Table 3: Summary of Climate Data from AWS 067084

Weather Station	Value	Years
Operating Years	Commenced 1970	
Rainfall		
Mean annual rainfall (mm)	839.7	1970 – 2015
Temperature		
Mean maximum temperature (°C)	23.3	1970 – 1989
Mean minimum temperature (°C)	11.6	1970 – 1989

3.0 SITE OPERATION

3.1 Waste Placement and Compaction

All waste landfilled is understood to have generally been placed in layers and compacted using typical landfilling equipment, including landfill compactors and dozers. There were no formal specifications with regards to waste and cover material compaction requirements at the landfill. SLR noted that a waste compaction goal of 850 kg/m³ (excluding cover material) was the EPA expectation for landfills receiving over 50,000 tonnes of waste per annum. The landfill is currently achieving over 1.3t/m³ and expected to achieve 1.8t/m³ moving forward.

3.2 Waste Covering

3.2.1 Interim Cover

It is understood exposed waste surfaces were generally covered with a layer of clean fill or similar material. The material used for covering of waste is assumed to be quite variable, as a number of different material sources have been used by the various landfill operators in order to attain the required amount of suitable cover material.

3.2.2 Final Cover Layers

The Guidelines require the following outcomes to be achieved by the final cover/cap layer:

- Reduce rainwater infiltration into the waste, thereby minimising the generation of leachate. Infiltration from the base of the final cap should be less than 5% of the annual rainfall;
- Stabilise the surface of the completed part of the landfill;
- Reduce suspended sediment and contaminated runoff;
- Minimise the escape of untreated landfill gas;
- Minimise odour emissions, dust, litter, the presence of scavengers and vermin, and the risk of fire; and
- Prepare the site of its future use.

During a meeting between Enviroguard and EPA on 1 June 2016, it was agreed that Section 9.1 of the Guidelines did not apply to the site, because the site is not:

- Classified as a restricted solid waste landfill; or
- A general solid waste (putrescible) landfill receiving more than 20,000 tonnes of waste per year.

As such, it was agreed that Section 9.3 *Justification of alternative capping* of the Guidelines would apply to the design for the final cap for the site. The alternative capping and rehabilitation profile for the site is presented within **Figures 5 and 6** and generally comprises:

- A minimum 300mm-thick seal bearing layer, comprising of materials presently in situ in the landfill mound;
- A minimum 500mm-thick sealing layer, comprising clay from on-site sources;
- A minimum 900mm-thick revegetation infiltration layer, comprising Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM);
- A minimum 100mm-thick revegetation topsoil layer.

A gas drainage layer is excluded due to the provision of a landfill gas collection and treatment system (refer to Section 3.5).

3.3 Existing Landform and Vegetation

The site comprises a single, large landfill cell. As the site is currently active, final landform profiles have not yet been achieved.

The Guidelines state that the final settlement of the seal-bearing surface should leave a gradient of greater than 5% to defined drainage points.

No part of the landfill currently has had final capping layers applied to it or have been formally revegetated. Rather, the landfilled waste has been covered with daily and intermediate cover layers comprised of variable soils and revegetated naturally within various areas of the landfill. Vegetation on the site is quite uneven with substantial areas of sparse vegetation.

Some re-profiling works will be required before the final capping layer is installed to promote effective drainage of stormwater run-off from within the landfill footprint. Establishment of a firm and unyielding subgrade below the final capping layer will reduce long-term maintenance costs associated with differential settlement and should minimise ongoing leachate generation by minimising infiltration.

The current surface water management run-off control measures include provision of a perimeter surface water drain at the base of the landfill. Additional surface water management run-off control measures have been proposed to effectively manage surface water run-off from the proposed final capped landform via a series of swales which shall connect to the current perimeter drains, which in turn convey stormwater to the two existing sedimentation dams.

Placement of rehabilitation soils should be undertaken from the base upwards and graded to reduce incising of water channels through the rehabilitation profile. Localised slumping of soils should be remediated to minimise exposure of the underlying seal-bearing surface

3.4 Leachate Management

Leachate is extracted from leachate riser LP003 at a rate of approximately 60 m³/day.

Enviroguard has constructed a leachate treatment plant (LTP) close to the landfill infrastructure and sewer outlet (see **Figure 3**).

The LTP is designed to reduce leachate levels, and allow the levels to be managed and monitored, to thus reducing the potential for leachate migration off-site. The treated leachate is discharged from the LTP to the sewer system in accordance with a Sydney Water Trade Waste Agreement 35835.

Enviroguard monitor the performance of the LTP via a supervisory control and data acquisition (SCADA) system. The quality of the outflow will be continuously monitored via SCADA. The flow rate at the outlet will be measured by a calibrated mag flow meter. Monitoring and reporting of the effluent is undertaken in accordance with the Sydney Water Trade Waste Agreement.

Enviroguard has installed a Sequencing Batch Reactor (SBR) using a biological nitrification process to treat leachate at the site for operational flexibility, simplicity and economy. The SBR process is similar to traditional activated sludge treatment, with the exception that an SBR is operated in recurring batch cycles rather than in continuous flow-through mode. SBR technology has been widely used for domestic and industrial wastewater treatment processes and has proven to be more cost-effective than continuous activated sludge processes in small volume applications.

The management of leachate onsite works by the leachate being pumped from the existing leachate riser within the landfill to an Inflow Balancing Tank (IBT); this is to provide more uniform leachate and to provide flow equalisation for the proposed batch process. In the first stage of the cycle, leachate will be pumped from the IBT to the SBR. During the second stage, the SBR will be aerated to promote biological oxidation of ammonia and biological oxygen demand (BOD). Aeration is accomplished using blowers and a fine pore membrane diffused air system. Caustic soda is dosed into the system to control pH. During the third stage of the cycle, the blowers are turned off and the biomass will be allowed to settle quiescently. During this stage, sludge will be drawn off, if necessary, from the SBR to the Effluent Balancing Tank (EBT). Drawing off of the sludge from the SBR will provide control of the sludge inventory. In the fourth stage of the SBR cycle, the treated water from the SBR will be decanted to the EBT, the decanter will be operated to avoid scouring of the settled sludge blanket. The EBT is gently mixed and the effluent discharged to sewer.

Landfill Gas Management

Management measures for landfill gas at the site include compaction and covering of the landfilled waste (daily and intermediate cover layers) which reduces rainfall infiltration and landfill gas generation. Furthermore, placement of intermediate cover limits discharge of landfill gas to the atmosphere.

The site was granted development consent in December 2010 (DA 10/0429) for a landfill gas management system at the Site.

In 2014 development consent was granted (DA13/0655) for the installation of a 4.7km gas pipeline between the site and the Austral brick manufacturing plant at Horsley Park. The pipeline recovers all landfill gas from the Erskine Park landfill and is utilised to fire kilns used for brick manufacturing. It should be noted that this development consent was not issued for the site but to the Austral Brick site at Horsley Park.

The landfill gas collection system understood to be generally installed at the site is shown in **Figure 8**.

The site's landfill gas management system is detailed further, as follows;

Landfill Gas Extraction Wells

A vertical cylindrical hole is excavated into the refuse from the surface, using an auger type drilling rig. A partially slotted uPVC or HDPE pipe is placed in the hole, extending up the hole to just below surface level, and the void around the pipe is filled with uniformly sized gravel.

Near the surface of the landfill, the hole around the pipe is sealed with bentonite and soil to minimise air entering the well. Above the seal, a manhole structure is installed to protect the head of the well, including control valves and sampling points.

Each well is placed under vacuum from a central point and landfill gas is extracted. The vacuum extends beyond the immediate structure of the well and landfill gas can be collected from within the waste material.

Header System

The vertical extraction wells and other collection points will be connected by a header system to a central point, where a blower will draw the gas out of the landfill under a vacuum. The header system generally consists of welded HDPE pipes and fittings of varying types and sizes.

In areas where the header system passes below the final cover system and is located in waste materials, bentonite and soil seals will be provided to minimise landfill gas escape or air entry along the header bedding and backfill. Valves will be provided to control the LFG extraction rate at different parts of the site.

Condensate, which forms when landfill gas cools as it leaves the landfill through the header system, will be controlled by in-line condensate traps located at various low points within the collection system. Outside the

limits of waste placement, condensate re-injection to the landfill or disposal into the leachate management system will be used.

Collection Piping to Austral Brick

Landfill gas collected from the landfill mound is diverted through the manifolds and condensate traps via a solid HDPE collection ring main pipe along the southern boundary of the site to the Austral Brick facility where it is used as a partial fossil fuel substitute in the production of bricks and tiles etc.

Flare Station

Enviroguard has the ability to flare landfill gas on site through an existing high temperature flare, should the supply to Austral Brick be interrupted. In this case, the collected landfill gas would be conveyed to an enclosed flare located inside a fenced compound and treated by burning. The open flare(s) is designed and operated in accordance with USEPA regulations, 40 CFR Section 60.18. A typical enclosed flare includes an electrical control system and safety devices. The safety devices include:

- Continuous flame sensor with automatic shutdown following flame failure;
- Automatic, timed, start-up and restart sequence;
- Flame arrestor;
- Automatic and manually controlled, fail-safe, rapid closing valve; and
- auto-dialler or other emergency call-out system.

The USEPA has found that this type of enclosed flare can achieve over 99.5% destruction efficiency of non-methane organic compounds (NMOCs).

The flare has a stack height of approximately 8 metres maximum above ground level.

3.5 Environmental Monitoring

Enviroguard have a formal monitoring program employed at the site for groundwater, leachate and landfill gas in accordance with the requirements of EPL 4865. The environmental monitoring program specified in EPL 4865 includes the following parameters.

- Leachate quality;
- Surface water and groundwater quantity;
- Noise;
- Dust; and
- Surface and sub-surface landfill gas emissions.

Environmental monitoring points are shown on **Figure 3**.

4.0 LANDFILL CLOSURE AND REHABILITATION

4.1 Objectives and Strategy

The objectives of site closure and rehabilitation are to ensure that:

- The final landform remains stable and is suitable for the post-closure land use;
- The site has a minimal impact on the surrounding environment; and
- Appropriate measures are implemented to detect and manage impacts on the surrounding environment and minimise degradation of the management infrastructure.

The strategy for the site closure and rehabilitation commences with the cessation of waste-disposal activities followed by development of the engineered capping subgrade, construction of final capping layers and documentation of the closure works. This Closure Plan has been produced to ensure that the closure of the landfill is conducted in an ordered, effective and environmentally responsible manner.

Site related considerations including dust generation, noise impacts, rehabilitation procedures, erosion and sediment control are considered in this plan. The Closure Plan requirements consist of two distinct activities:

- 1) Landfill closure and rehabilitation; and
- 2) Post-closure monitoring, inspections and maintenance or remediation (where necessary).

Requirements for each activity are outlined in **Table 3** below.

Table 4: Closure and Rehabilitation Strategy

Main Activities	Strategy Components
Landfill Closure and Rehabilitation Works	<ul style="list-style-type: none"> ■ Waste emplacement to the approved final landform contours and cover with intermediate cover layer; ■ Engineered capping works; ■ Leachate collection and treatment; ■ Surface water and erosion controls during and post-rehabilitation; ■ Landfill gas control to minimise odour emissions and gas migration; ■ Amenity and risk control; ■ Revegetation to stabilise rehabilitation soils and enhance visual amenity; and ■ Noise control.
Post-Closure Monitoring	<ul style="list-style-type: none"> ■ Pollution Monitoring; ■ Maintenance Program; ■ Recording and Reporting Procedure; and

Main Activities	Strategy Components
	<ul style="list-style-type: none"> ■ Site Remediation Action Plans.

4.2 General Proposal and Staging

4.2.1 Proposed Final Landform

The final landform is designed in level and form to be comparable to the original pre-quarry landform, having a crown elevation of RL 87 mAHD. The design features a single ridgeline at RL 92 m AHD settling to RL 87 mAHD. Furthermore, the final landform design generally recreates the original hill slope gradient of up to 1(H):4(V).

It is understood that settlement of the landfilled waste is still occurring at Erskine Park. The final landform is also designed to meet the following requirements:

- Is achievable, practical and will blend in to the surrounding landforms;
- Will effectively shed stormwater run-off (and minimise rainfall infiltration into the landfilled waste), allowing for future stabilisation and settlement of the landfilled waste;
- Can be readily capped with minimal specialist engineering works;
- Is amenable to the ultimate likely future land use; and
- Is amenable to post-closure monitoring and maintenance.

Following settlement, the maximum depth of waste in the landfill will be approximately 125m.

Permanent access roads shall be constructed as the final lifts of waste are placed within the landfill area. The access roads shall be used to support the surface water management system, as well as provide access to maintain the final capping layers, environmental control and monitoring systems.

Upon completion of the waste placement, the area shall be capped with engineered clay and rehabilitated in accordance with this Closure Plan, relevant sections of the Guidelines and applicable conditions of EPL 4865.

Fill materials used for closure and rehabilitation works are proposed to be clay from on-site sources, imported VENM and ENM as well as topsoil. All materials used are subject to acceptance criteria as presented in the Technical Specification.

The stormwater management infrastructure, including the construction of additional rehabilitation swales will be upgraded to provide sufficient controls at least until vegetation becomes established, as outlined within **Section 4.4**.

The profile of the site will be graded to promote surface water run-off.

4.2.2 Current Infrastructure Area

The current surfaced area to the west of the landfill mound incorporates the site offices, weighbridges, workshops, and waste transfer station.

4.2.3 Site Closure

The landfill is expected to be operational until 2024 subject to approval of proposed MSE Wall and consumption of gained airspace.

4.3 Capping Works

4.3.1 Design

The final capping over the landfilled waste is designed to:

- Prevent exposure of the landfilled waste, minimise the potential for leachate seepage (surfacing), and minimise the potential for contamination of surface water run-off;
- Reduce rainfall infiltration into the landfilled waste and associated leachate generation, reducing the potential impact of landfill leachate on local groundwater and surface water quality; and
- Minimise uncontrolled emissions of landfill gas to the atmosphere.

The final capping will comprise the following layers, starting from the surface down;

a) Revegetation layer consisting of:

- A minimum 100mm-thick topsoil cover layer, preferably sourced on-site or from an adjacent site covered with primary or secondary vegetation;
- A minimum 900mm-thick infiltration drainage layer comprising Virgin Excavated Natural Material (VENM) and/or Excavated Natural Material (ENM), each with a maximum permeability of 1×10^{-5} m/s;

b) A minimum 500mm-thick sealing layer comprised of compacted clay exhibiting a permeability of less than 1×10^{-9} m/s; and

c) A minimum 300mm thick seal bearing layer comprised of intermediate cover. It is understood the seal bearing layer is already in place over the majority of the landfill mound at the time of preparation of this LCP.

The extent and construction cross sections through the capping design are shown on **Figures 5 to 6**. As noted in **Section 3.2.2**, provision of a gas drainage layer has been excluded due to the provision of a landfill gas management system.

4.3.2 Construction Quality Assurance Protocols

Prior to commencement of the capping and rehabilitation works, a Construction Quality Assurance (CQA) Plan, including methods of capping materials placement and design drawings shall be submitted to the EPA for approval.

Placement of the clay sealing layer shall be undertaken under the supervision of an independent CQA Consultant. A CQA report documenting that the closure works were undertaken in accordance with the EPA-approved CQA Plan shall be submitted to the EPA for approval.

4.3.3 Placement Procedure

The capping system will be progressively constructed in accordance with EPL 4865 and the EPA-approved closure design drawings, specification and CQA Plan (SLR, 2017). The capping components shall be undertaken in discrete sections typically starting at the perimeter of the landfill and working towards the centre of the site for final operational considerations. Placement towards the centre of the site is also considered best practice to minimise instability of placing and spreading soils down slope. Post-rehabilitation swales and other erosion control measures will be established progressively during construction.

The following procedure will be adopted:

- 1) Final waste placement and profiling.

- 2) Final site survey to confirm required post-settlement levels.
- 3) Trimming/finishing of the seal-bearing layer.
- 4) Placement and compaction of the minimum 500mm-thick compacted clay sealing layer. Placement shall be under continuous CQA supervision and in accordance with the EPA-approved CQA Plan. Moisture conditioning may be necessary to ensure the optimum moisture content is maintained for compaction and throughout the period in which the clay cap is exposed to the elements. Clay shall be placed in layers not exceeding 200 mm thickness and compacted along slope contours using a sheep's-foot roller or other approved compaction equipment to the CQA Plan requirements which will typically be 98% SMDD as determined by AS1289.5.11. Each compacted layer shall be moisture conditioned and scoured along slope contours to ensure adequate adhesion of successive layers and erosion resistance during construction.
- 5) Construction of the revegetation infiltration drainage layer comprised of a minimum 900mm-thick infiltration drainage layer comprising VENM and/or ENM each exhibiting a maximum permeability of 1×10^{-5} m/s placed over the compacted clay sealing layer.
- 6) Construction of the revegetation topsoil layer comprised of a minimum 100mm-thick topsoil layer comprising ideally of sandy loam.
- 7) The completed topsoil surface is to be ploughed along contour to a depth of 50mm to ensure erosion resistance during revegetation, aid moisture retention and aeration of soil. Ploughing or scouring should not penetrate beneath 100mm into the sub-soil layer;
- 8) Establishment of erosion and sediment controls including construction of the swales to transfer run-off water from the landform to the perimeter collection ditches.
- 9) The final placed surface shall be re-vegetated.

Access roads shall be designed and constructed within the final rehabilitated landform to provide adequate access for environmental monitoring, maintenance and firefighting. Following seeding and planting, a series of jute strips, or other material strips, may be installed on the final landform in accordance with Landcom (2004) guidelines to provide further erosion control.

4.4 Erosion Measures and Surface Water Controls

The final capped landform will have side slopes of approximately 1(V):5(H) which provide long straight runs along which run-off may accommodate significant speeds. Steeper slopes will be prone to erosion and particular attention should be paid to earthworks on the north-western face of the cap where grades may potentially steepen. The need for swales that cut across the face can be avoided if continuous grass cover is established and maintained. SLR (2017) recommends utilising bush regeneration techniques and investing in a minimum 6 month vegetation establishment period to ensure greater success of vegetation cover.

During vegetation establishment or following dry spells, reduced grass cover may result in the concentration of run-off into preferential flow paths leading to rill erosion and loss of topsoil. Regular irrigation should be considered, ideally during the first 3 months of vegetation establishment. Supply of stormwater for irrigation is discussed below.

Layers of mulch (minimum 100mm-thick) or pinned open weave jute mesh should be integrated to bare soil during prolonged exposure and plant establishment. Pinned open weave jute mesh shall be applied to all areas shown on the design drawings.

Additional localised cut off swales across the face of the post closure landfill may be required to divert run-off at a reduced grade of 1(V):25(H) to reduce the potential loss of topsoil and deposition of sediment in stormwater drainage assets around the base of the mound. This should be considered if planned maintenance does not allow for a 6 month vegetation establishment period.

The final land surface will form two mild valleys that drain the north and south faces from the top saddle. Addition of structural mesh grids within these mild valleys is considered appropriate due to increased erosion risk from concentrated stormwater flows.

Reno mattresses or placed rock chutes may be required where flows are concentrated within swales 1(V):5(H). This excludes areas where run-off is distributed across regions of continuous vegetation. Stepped rock chutes will not be required due to 1:5 being the maximum grade.

Swale dimensions around the ring road accept a 1 in 100 year, one-day-duration storm event. These swales have been reviewed and will accommodate the proposed final landform layout design. Culverts sized by Brown 2007 will convey flows beneath the ring road to the NW and SE sedimentation dams.

The NW and SE sedimentation dams are adequate for sedimentation and detention for the final design. Run-off volumes collected in the SE and NW dams will most likely be insufficient to support the irrigation or watering of the entire site but will support staged vegetation establishment of up to one quarter of the site at a time.

The permanent volume of stored water within the NW and SE dams is approximately 5,400m³ which will provide sufficient irrigation for between one quarter and a half of the entire site between rain events. This supply will need to be supplemented with an alternative water source to keep up irrigation to the entire site during dry spells.

The current existing and proposed measures include:

- Swales constructed upon the rehabilitated landform designed at a 1(H):25(V) fall to connect to the perimeter drainage ditches;
- A ring of perimeter drainage in the form of drains positioned at the toe of the landfill to collect the surface water run-off from the swales and sides of the rehabilitated landform;
- Use of the south-eastern dam to retain surface water run-off from the south-eastern end of the completed landfill;
- Use of the offsite dam to the north-west of the site to collect surface water run-off from the northern end and south-western corner of the finished landfill;
- A channel on the northern end of this NW Dam to transfer overflow into the South Creek system;
- Perimeter drains in the south-western corner, graded to the south-east and extending directly into the existing south-eastern basin;
- Pipe culverts and drainage lines to transfer flow from the remaining perimeter drains into the north-western dam;
- Regrading of existing overburden where necessary and establishing a vegetation cover of grass to prevent soil erosion;
- Placement of jute strips, or other material strips, at regular intervals over the cover crops along the finished hill slope to prevent destabilisation of the finished form before the vegetation cover has become

established, and preventing coarse sediment from accumulating further down in the sedimentation dams;
and

- Progressive planting of bands of trees confined to the lower slopes of the rehabilitated landform. Trees will be planted generally on the lower slopes to ensure that the integrity of the proposed clay capping layer can be maintained.

4.5 Revegetation Plan

Revegetation will provide protection against erosion and allow effective monitoring and maintenance of the capping layer. The revegetation must not present a risk to the integrity of the landfill capping layer. The grass/plant seed mix is to be determined as part of the landfill closure detailed design works. Where required, the thickness and characteristics of the revegetation layer would be changed to suit changes to the onsite vegetation, and to ensure the long term integrity of the landfill capping layer.

It is proposed that the site is revegetated with a combination of primary and secondary vegetation. Primary vegetation will be used to stabilise exposed areas and the landfill surface following the installation of the cap. Secondary vegetation involves the reintroduction of selected natural species to enhance the natural aesthetics and ecological value of the site.

Revegetation of the site will be divided into four distinct zones that will require different management approaches. These zones are:

- Zone 1 – The rim of the quarry - planting on the rim will consist of woodland vegetation to connect with the adjacent corridors (primary and secondary vegetation);
- It is noted that in Zone 1, along the alignment of the wall, Cumberland Woodland Mix would not be planted on the MSE wall structure or wall facing, however would be retained south of the wall.
- Zone 2 – The 17ha capped area of the landfill - the landscape plan for this zone will include a mixture of native shrubs and grasses only. All plants in this zone will have a maximum root depth less than 1m (primary and secondary vegetation) due to the location of the sealing layer;
- Zone 3 – This zone consists of two 1ha areas on the peak of the landfill capping. It is anticipated that these areas will be used for passive recreation and will therefore be landscaped by lawn and native gardens. All plants in this zone will have a maximum root depth less than 1m (primary vegetation) again due to the location of the sealing; and
- Zone 4 – These are the wet areas associated with the sedimentation dams. The landscaping in this area will consist of native wetland species (secondary vegetation).

4.5.1 Primary Vegetation

The primary vegetation for the rehabilitated site will involve seeding, with a combination of annual and perennial grasses compatible to the area, applied within an erosion resistant and moisture retaining mulch. It is recommended that the seed be dispersed by hand broadcasting or alternatively by hydro-seeding with a blend of seed, fertiliser and paper or wood pulp with mulch laid on top.

Irrigation of the topsoil shall be conducted to ensure acceptable soil moisture is maintained during dry spells and to assist initial germination of seeds and subsequent rapid growth. Stormwater retained in the sedimentation dams may be used for this purpose.

Quality assurance procedures will be followed to ensure that all organic material used in site rehabilitation is fit for the purpose intended, is installed effectively and is free of noxious weeds. Suppliers of seed and mulch will be required to provide a certificate of quality and each load of material will be inspected.

Recommendations of specialists in the field, including the Department of Agriculture, will be sought with regard to choice of seed, application and maintenance

4.5.2 Secondary Vegetation

Secondary vegetation will comprise selected trees and shrubs that will be planted on the rehabilitated landfill. Tree and shrub species will be selected with shallow root spread such that they do not extend below 1m and potentially interfere with the integrity of the clay capping. It is envisaged that the secondary vegetation placed on the landfill will be dominated by small shrubs and native grasses.

4.6 Closure Schedule

The timing of the proposed closure works will need to be carefully considered. In order to allow establishment of revegetation grasses, the works may be undertaken over a number of separate stages taking into account the seasonal variations and proposed gas extraction infrastructure installations.

The proposed works will typically be as follows;

- 1) Progressive grading of side slopes to required landform.
- 2) Progressive filling and grading of the site to required landform.
- 3) Progressive capping of side slopes and top of landform.
- 4) Rehabilitate and revegetate side slopes and top of landform.
- 5) Install lower slope storm water swales connecting into existing perimeter ditches.
- 6) Install/extend landfill gas and leachate extraction pipework/infrastructure to side slopes and to top of landform.
- 7) Extend storm water swales to top of rehabilitated landform.
- 8) Construct site access tracks and final fencing.

5.0 POST CLOSURE PLAN

An aftercare period of the site following final closure may typically last for more than 30 years as the waste stabilises and the risk of pollution of groundwater and emissions to atmosphere decreases. During this time regular inspections and maintenance will need to be maintained.

A post-closure plan provides a framework for monitoring the effectiveness of any remedial measures implemented during the closure and post-closure periods.

5.1 Site Inspection and Monitoring

Ongoing inspection, maintenance and environmental monitoring are to be carried out during the closure works and also during the post-closure period. Initially, the programme and schedule of monitoring will be in accordance with the EPL 4865. In the longer term, the programme of monitoring would expect to be reduced as monitoring results demonstrate the stabilisation of the waste mass.

5.1.1 Inspection of Final Landform

Site inspections and reporting will need to be undertaken to assess the ongoing condition of the site, since rehabilitated sites can consolidate and be prone to erosion. Such inspections of the site, including surrounding boundaries will need to check for the following;

- Excessive and differential settlement allowing surface water ponding;
- Erosion, cracking or deterioration of the capping or soils layers;
- Leachate seeps and outbreaks;
- Evidence of landfill gas escape / odours and landfill fires;
- Vandalism, including damage to leachate / gas extraction infrastructure and monitoring probes;
- Illegally dumped waste;
- Condition of surface water management system; and
- Vegetation coverage and condition.

5.1.2 Soil and Vegetation Inspections

Quarterly inspections of all rehabilitated areas and irrigation systems, including swales, perimeter ditches and dams will be conducted. Six monthly detailed inspections of plant growth and an assessment of fertiliser and ongoing irrigation requirements for all areas of the site will also be required.

Bi-annual inspections to assess the condition of the primary vegetation grasses will be undertaken for the first three years after establishment of the capped and rehabilitated section.

Failed areas (e.g. dead or unhealthy primary vegetation) will be assessed and reinstated appropriately. Remedial works shall be undertaken in areas requiring topsoil replacement, re-seeding, weed control, fertiliser application etc. in order to maintain a dense, even grass coverage over the final rehabilitated cap.

All primary vegetated grassed areas will be cut at suitable intervals (to suit weather conditions and growth rates). Continual maintenance of roads on the final landform will also be required in order to allow for safe access for monitoring, site maintenance and in case of a fire.

Assessment and subsequent re-planting of shrubs and trees will occur in areas of significant die-off or erosion damage. Replaced saplings are to be supported where necessary and protected from predation, damage from grass cutting etc. Determination of any weed control will also be decided during the site inspection.

5.1.3 Leachate Management

The management of leachate will continue at the landfill well into post-closure of the site until the waste has stabilised. Management will include collection, treatment and disposal.

Enviroguard shall continue to implement a pump and treat program for the leachate generated in the landfill to reduce leachate levels. The method of extraction shall involve the removal of leachate from the riser, and treatment within the LTP prior to discharge into the local Sydney Water sewer network.

The leachate collection and treatment system will require ongoing maintenance to ensure all aspects of the system, such as pumps etc. are working adequately.

The pump and treat operation should also continue post-closure until such a time that the leachate level does not require pumping.

Any leachate outbreaks reported by a site inspection should be investigated to determine the nature of the breach, and should be rectified as soon as possible.

The generation of leachate within the site is expected to diminish over time, especially after final capping of the site, falling to a relatively constant level. Some infiltration through the final capping layer is to be expected and allowed for within the proposed capping design.

5.1.4 Landfill Gas Mitigation System

The management of landfill gas will continue at the landfill well into the post-closure period until such time that the production of methane has been demonstrated to consistently fall within acceptable levels.

The active gas control system (including the export to Austral Bricks) currently in place shall remain operational as necessary during periods when high volumes and concentrations of landfill gas are detected at the site.

The gas extraction infrastructure will need to be regularly inspected, maintained, monitored and adjustments made as necessary to ensure a consistent volume and quality of gas and to maintain emission levels as necessary to comply with EPL 4865 and the Guidelines.

The volume and quality of landfill gas is expected to diminish as the emplaced waste degrades over time.

5.1.5 Surface Water Management

Surface water management measures installed at the site during closure will be maintained at the site during the post-closure period such that the landfill does not impact the surrounding surface water drainage. Maintenance works will be required to maintain the efficiency of the drainage swales, perimeter ditches and sedimentation dams.

The potential impacts on surface water will decrease as the site is progressively capped and rehabilitated and vegetation becomes established.

5.1.6 Site Security and Signage

Security fencing will be maintained and repaired if necessary during the post-closure period as it will continue to provide security against unauthorised entry and vandalism. Access gates are to be inspected and maintained in an operational condition. Gates and site access points are to remain locked to prevent unwanted intrusion.

Clear signage will be maintained at the site to prohibit unauthorised access to the site, identify emergency contact numbers, relevant contact person and contact telephone numbers.

5.2 Maintenance Program

Site inspections and maintenance will be conducted by trained personnel who are deemed competent in accordance with conditions of EPL 4865 and the Guidelines. Should any damage, vandalism or degradation to capping layers or environmental control infrastructure which would significantly affect their performance be observed on site, EPA shall be notified and remediation shall be undertaken in a timely manner.

The proposed maintenance and inspection schedule for the site post closure is presented in **Table 5** below. Should significant inclement weather occur or after a natural disaster, site inspections of all environmental control systems shall occur as soon as safe access to the site can be confirmed.

Table 5: Maintenance Program

Component	Frequency
Environmental Monitoring Systems	During Monitoring
Rehabilitated Landform	Quarterly
Erosion and Stormwater Controls	Quarterly and after major storms (>1 year ARI)
Leachate Controls	Quarterly
Fencing	Quarterly
Vegetation	See Section 5.2.1
Litter Control	Quarterly
Vandalism	Quarterly

Taken from CES Landfill Closure Plan, 2007

5.2.1 Maintenance of Planting

All planting will be maintained, fertilised and watered as necessary. Water from the on-site dams may be used to provide irrigation during dry spells. Irrigation is especially important immediately after planting to allow an adequate level of root growth.

5.3 Pollution Monitoring and Reporting

5.3.1 Pollution Monitoring

A summary of the pollution monitoring programme during the post-closure period is provided in **Table 6** below. Monitoring to the requirements of **Table 6** will continue until such time that the EPA approves the site's certified statement of completion.

The monitoring program will be reviewed during the post-closure period to account for changes in conditions within the rehabilitated landfill.

Monitoring and reporting is to be conducted by personnel suitably trained and competent by qualification or experience in conducting such testing. Laboratory analysis is to be conducted by a NATA accredited laboratory with appropriate levels of field and laboratory quality control.

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Table 6: Summary of Pollution Monitoring

Medium	Parameter	Location	Frequency		
			During rehabilitation and closure	First Two years after closure	Third and subsequent years after closure
Water Pollution	Surface water quality	South-eastern sedimentation dam	Quarterly	Quarterly	Annual
	Surface water quality	North west sedimentation dam	Quarterly	Quarterly	Annual
	Surface water quality	South creek	Quarterly	Quarterly	Annual
	Leachate quality	Leachate riser	Monthly	Monthly	Six monthly
	Groundwater quality	As per landfill licence	As per landfill licence	As per landfill licence	As per landfill licence
Air Pollution	Landfill gas – surface and subsurface methane gas concentration	As per landfill licence	As per landfill licence	As per landfill licence	As per landfill licence
	Dust deposition rates	As per landfill licence	Monthly	Not required	Not required
Weather	Daily rainfall	Monitoring location as per licence	Daily	Daily	Not required

5.4 Pollution Reporting Procedures

Enviroguard or the licensee will appoint a responsible staff member as the Site Coordinator to manage all environmental monitoring, site inspections, preparation and submission of reports to the EPA, during the post-closure period in accordance with EPL 4865 and the Guidelines.

5.5 Emergency Response Protocol

A detailed protocol will need to be drafted which can be initiated during an emergency. Triggers for an emergency response may be as follows;

- Landfill gas migration from site;
- Leachate egress from the site;

- Exceedance of allowable water quality targets;
- Instability / failure of landfill cap or rehabilitation soils; and
- Fire.

6.0 SITE REMEDIATION PLANS

6.1 Landfill Gas Emission Remediation Plan

The site has a landfill gas extraction system installed to manage the migration of landfill gas from the boundary of the site. This infrastructure includes a series of landfill extraction wells drilled within the landfill waste mass, connected to well heads and collection manifolds. Landfill gas is currently diverted to either off-site to the nearby Austral Brick facility or to the on-site high temperature flare.

However, should landfill gas odours be detected over the rehabilitated landform during inspections or by members of the public, an assessment of the level, nature and extent of potential gas emissions will be undertaken (e.g., gas survey). The EPA will be notified as required by EPL 4865 if monitoring indicates the presence of methane levels in excess of 1% (v/v) in the surface, subsurface or within buildings.

A remediation plan in accordance with the Guidelines will be developed and submitted to the EPA and further monitoring undertaken within 14 days from the initial detection to assess the hazards presented by the emissions. A remediation plan may involve collection and flaring as required to reduce detectable concentrations of methane.

6.2 Water Contamination Remediation Plan

A water contamination remedial plan will be required should any water-quality monitoring results indicate that contamination has occurred. Upon detection, the affected location will be re-sampled as soon as possible after initial detection. If the contamination is confirmed by the re-sampling event, the EPA will be notified in writing within 14 days.

A water contamination remediation plan will need be prepared within 28 days of the initial written notification to the EPA. The plan will identify the specific contaminants of potential concern, the extent of pollution of the surrounding environment and the mitigation measures to be put in place in accordance with the Guidelines. This plan will be submitted to the EPA for approval prior to implementation.

6.3 Certified Statement of Completion

Monitoring of the rehabilitated site will continue until the EPA has approved the certified statement of completion. Upon confirmation of EPA approval, monitoring and maintenance at the site will cease and any financial assurance requirements will lapse.

In accordance with the Guidelines, a certified statement of completion will be submitted to the EPA at the appropriate time to demonstrate that:

- Gas concentration levels in all perimeter gas wells have fallen to less than 1% methane (volume/volume) and less than 1.5% carbon dioxide (volume/volume) above the established natural background for a period of 24 months.
- Analysis of the leachate composition indicates low levels of contamination posing no hazard to the environment, and surface water and groundwater monitoring indicates no water pollution. These matters should be addressed in accordance with the relevant published water quality guidelines.
- The landfill final capping has been assessed over some years and found to be in good condition and stable, with acceptable stormwater drainage and with no evidence of erosion, cracking, dead vegetation, ponding, differential settlement or slope instability.
- The level of suspended solids in rainwater running off the final capping should be less than 50 milligrams/litre.

- The methane concentration at the surface of the final capping should not exceed 500 parts per million at any point.
- The closed landfill no longer poses an adverse amenity risk. It does not generate offensive or excessive odour, dust, noise, litter and debris, present a fire risk, or attract scavengers and vermin.
- All other requirements of the Closure Plan and Surrender Notice have been completed and/or satisfied.

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Signature Page

Golder Associates Pty Ltd



Jacinta McMahon
Principal Environmental Engineer



Gary Schmertmann
Associate

JM/GS/jm

A.B.N. 64 006 107 857

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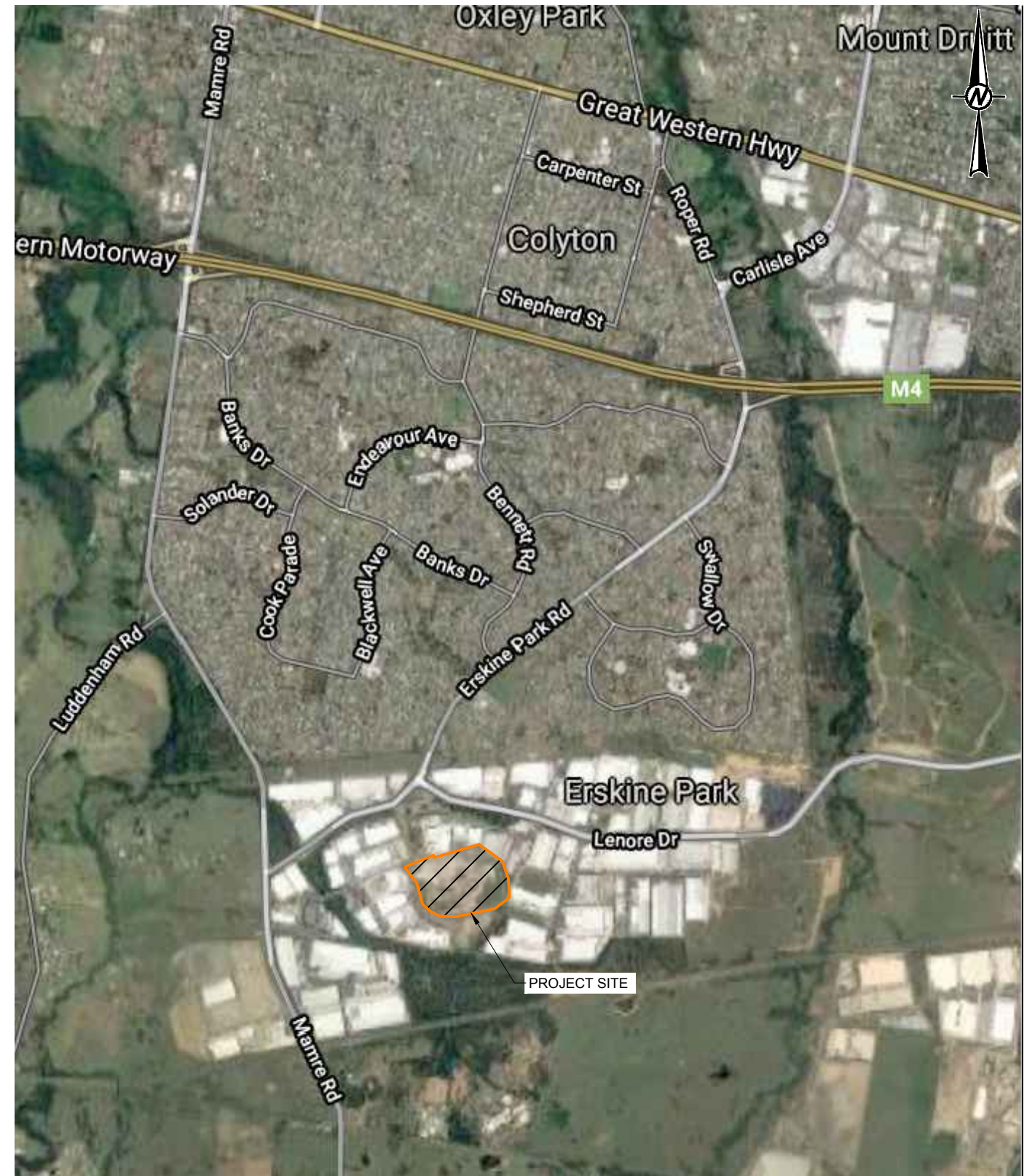
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APPENDIX A
Figures

REGION



SITE LOCATION



NOTE(S)
NOT TO SCALE

NOT FOR
CONSTRUCTION

CLIENT
ENVIROGUARD PTY LTD

PROJECT
ERSKINE PARK LANDFILL

CONSULTANT

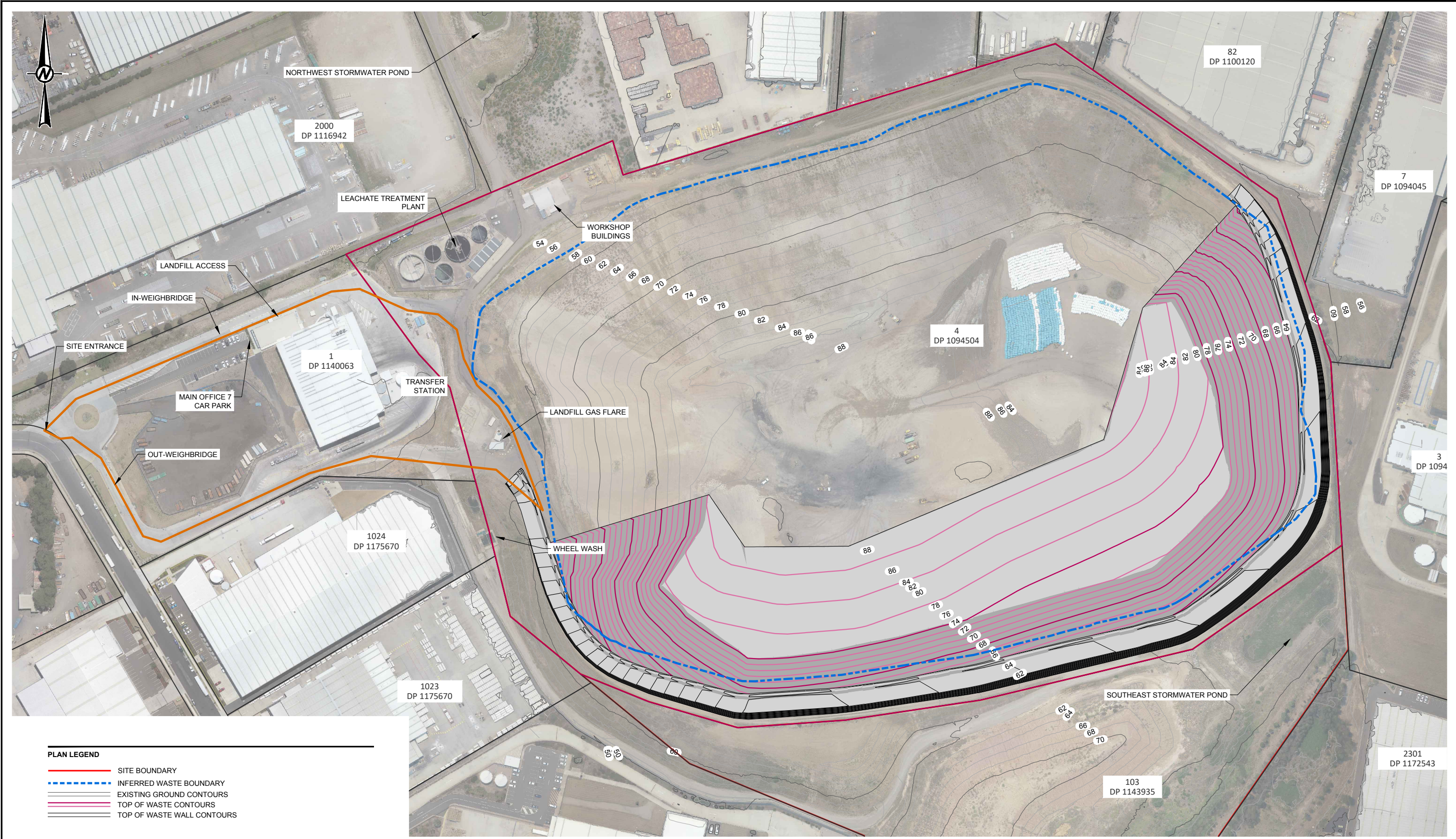


YYYY-MM-DD	2020-04-08
DESIGNED	JM
PREPARED	BK/SF
REVIEWED	JM
APPROVED	JM

TITLE
SITE LOCALITY PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
19135652	018	0	F001

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PLAN LEGEND

—	SITE BOUNDARY
- - -	INFERRED WASTE BOUNDARY
—	EXISTING GROUND CONTOURS
—	TOP OF WASTE CONTOURS
—	TOP OF WASTE WALL CONTOURS



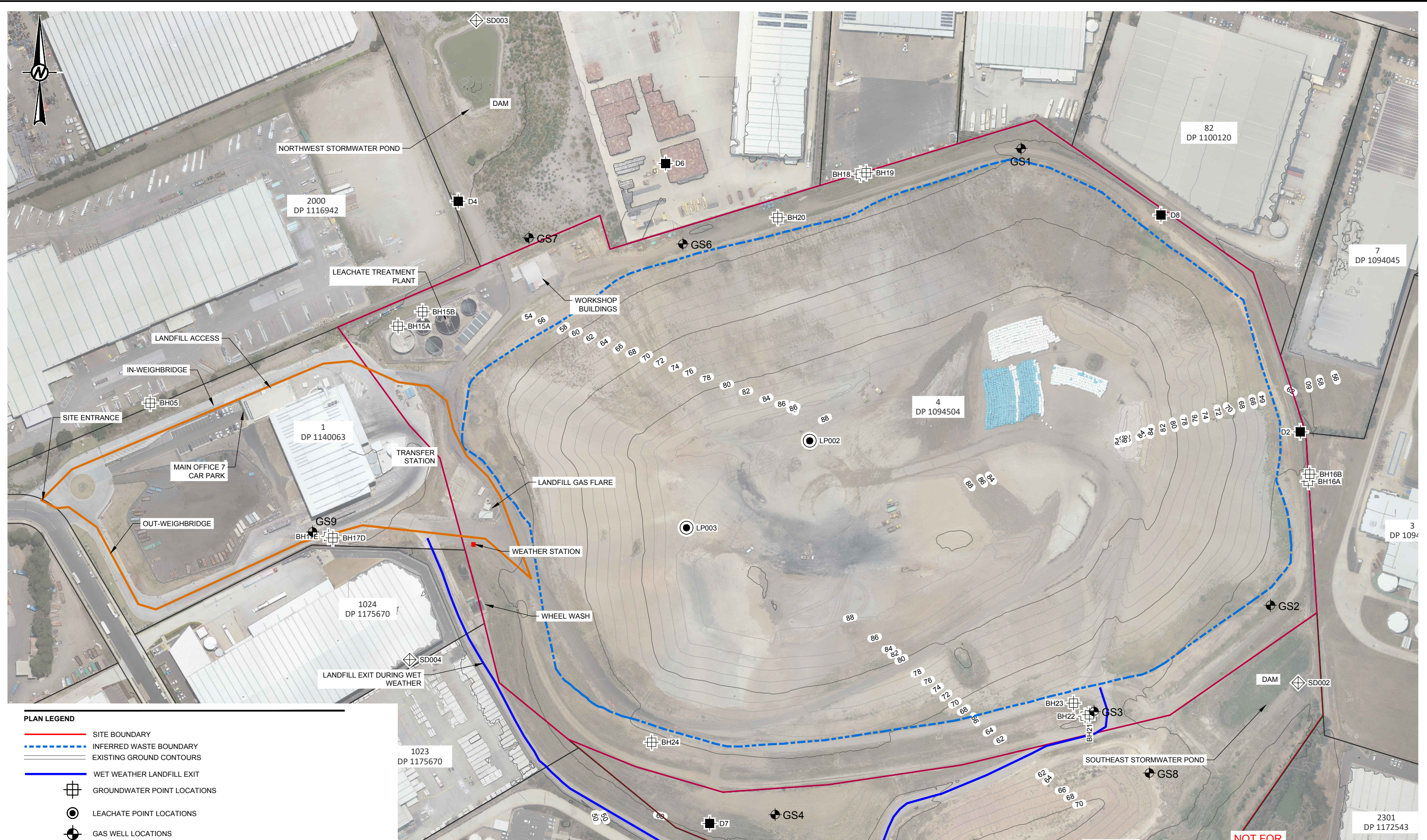
NOT FOR CONSTRUCTION

	CLIENT ENVIROGUARD PTY LTD	PROJECT ERSKINE PARK LANDFILL	
	CONSULTANT	TITLE SITE LAYOUT PLAN	
0 2020-04-08 NOT FOR CONSTRUCTION	JM BK/SF JM JM	PROJECT NO. 19135652	CONTROL 018
REV. YYYY-MM-DD DESCRIPTION	DESIGNED PREPARED REVIEWED APPROVED	BRISBANE OFFICE 147 CORONATION DRIVE MILTON, QLD 4064 AUSTRALIA [+61] (7) 3721 5400 www.golder.com	REV. of FIGURE 0 of F002



25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

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- PLAN LEGEND**
- SITE BOUNDARY
 - - - INFERRED WASTE BOUNDARY
 - EXISTING GROUND CONTOURS
 - WET WEATHER LANDFILL EXIT
 - + GROUNDWATER POINT LOCATIONS
 - LEACHATE POINT LOCATIONS
 - + GAS WELL LOCATIONS
 - ◇ SURFACE WATER POINT LOCATIONS
 - DUST GAUGE POINT LOCATIONS

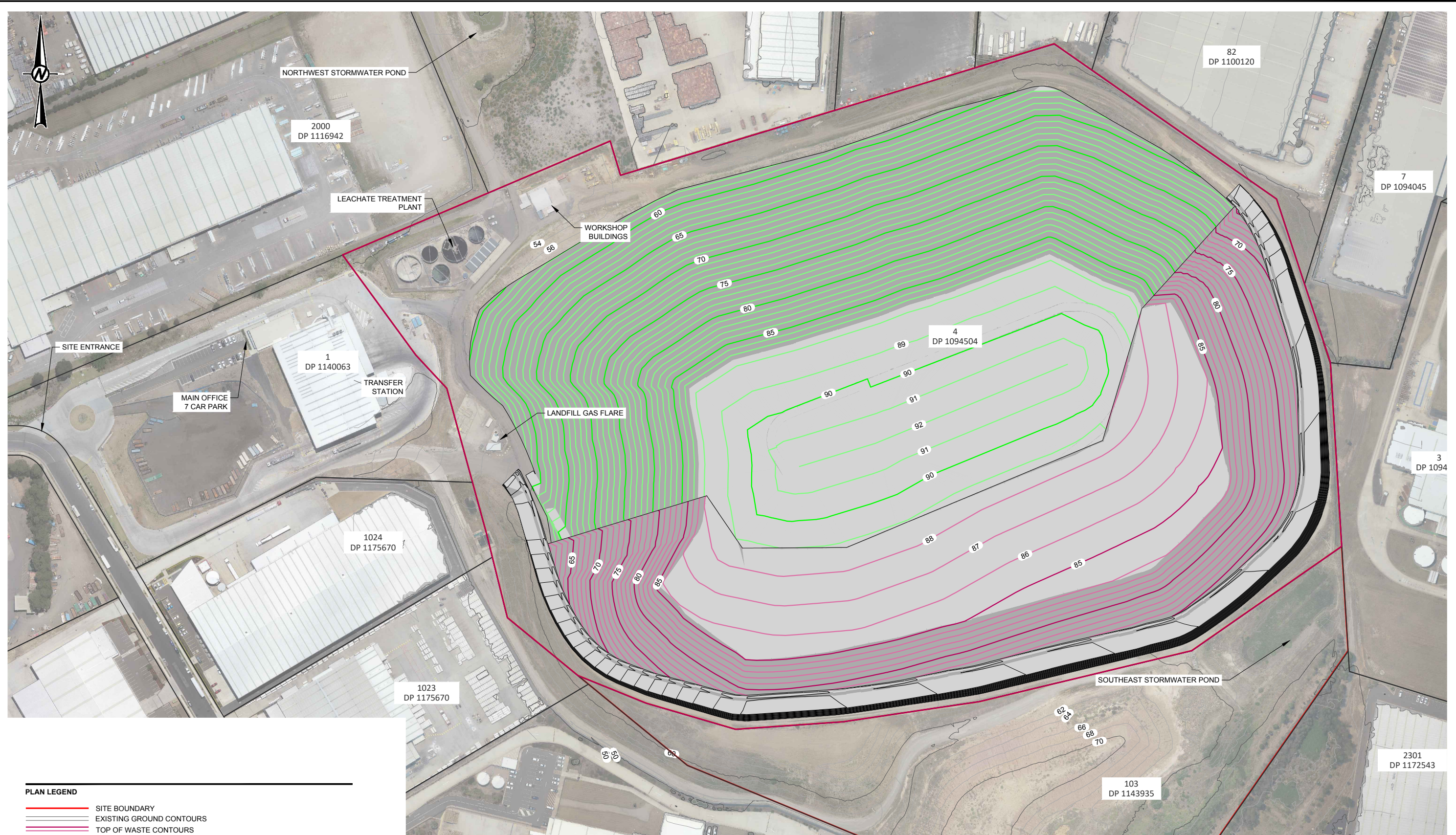
NOT FOR CONSTRUCTION

	CLIENT ENVIROGUARD PTY LTD	PROJECT ERSKINE PARK LANDFILL
	CONSULTANT	TITLE ENVIRONMENTAL MONITORING PLAN
0 2020-04-08 NOT FOR CONSTRUCTION	JM BK/SF JM JM	PROJECT NO. 19135652 CONTROL 018 REV. 0 of FIGURE F003
REV. YYYY-MM-DD DESCRIPTION	DESIGNED PREPARED REVIEWED APPROVED	

BRISBANE OFFICE
 147 CORONATION DRIVE
 MILTON, QLD 4064
 AUSTRALIA
 (+61) (7) 3721 5400
 www.golder.com

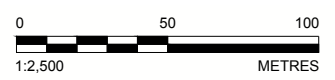
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PLAN LEGEND

	SITE BOUNDARY
	EXISTING GROUND CONTOURS
	TOP OF WASTE CONTOURS
	MSE WALL CONTOURS
	GHD TOP OF WASTE CONTOURS

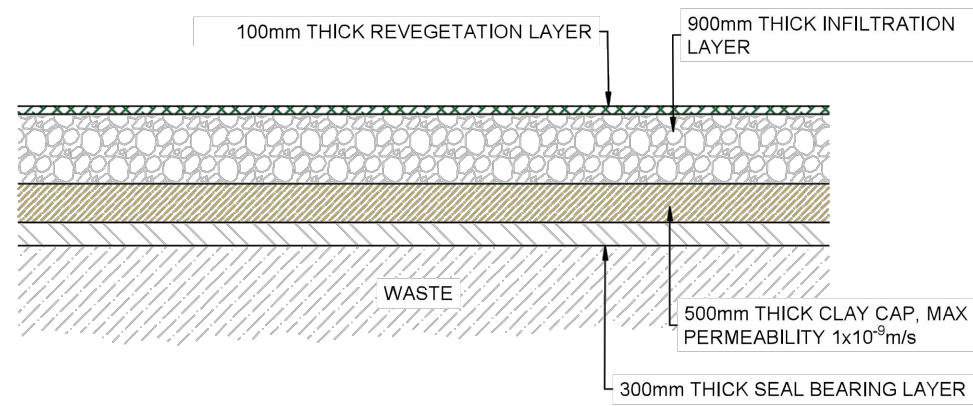


NOT FOR
CONSTRUCTION

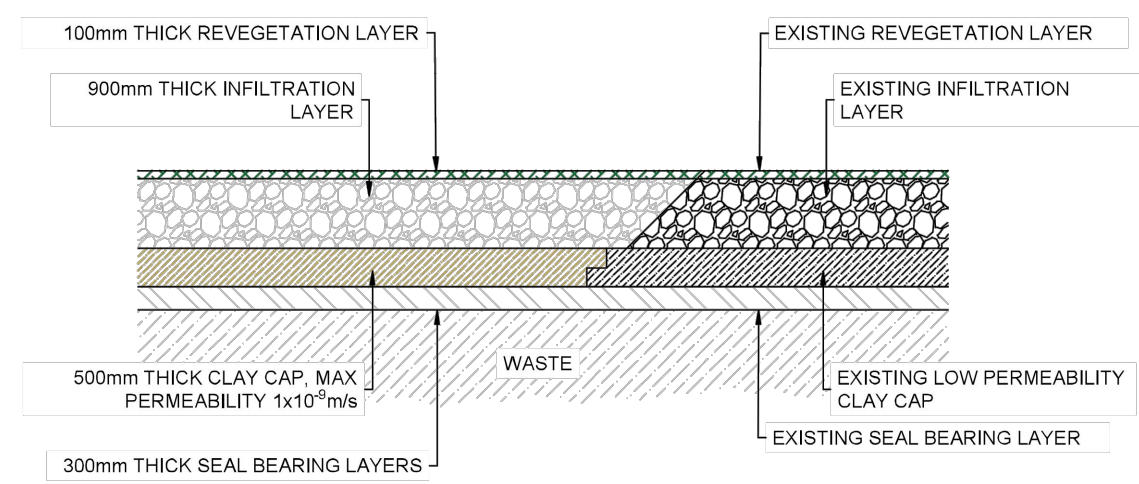
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0	2020-04-08	NOT FOR CONSTRUCTION	JM	BK/SF	JM	JM

CLIENT ENVIROGUARD PTY LTD	PROJECT ERSKINE PARK LANDFILL
CONSULTANT GOLDER	TITLE EXTENT OF CAPPING WORKS
BRISBANE OFFICE 147 CORONATION DRIVE MILTON, QLD 4064 AUSTRALIA [+61] (7) 3721 5400 www.golder.com	PROJECT NO. 19135652 CONTROL 018 REV. 0 of 0 FIGURE F004

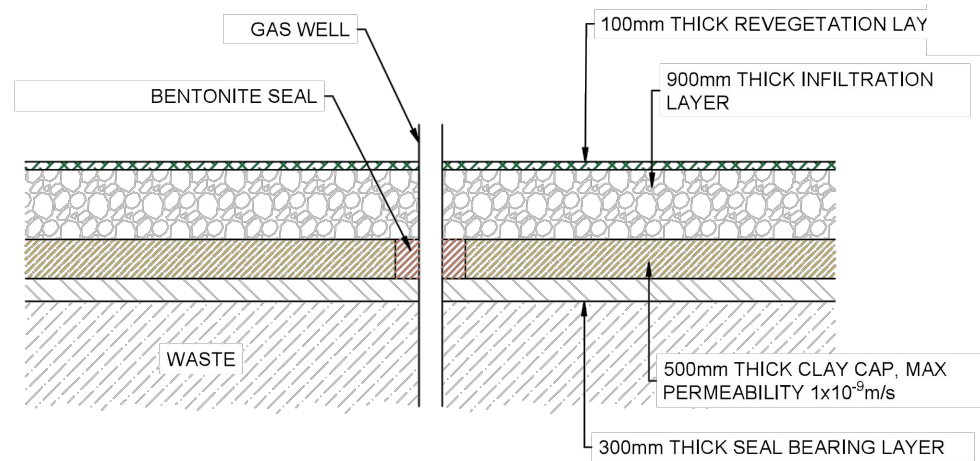
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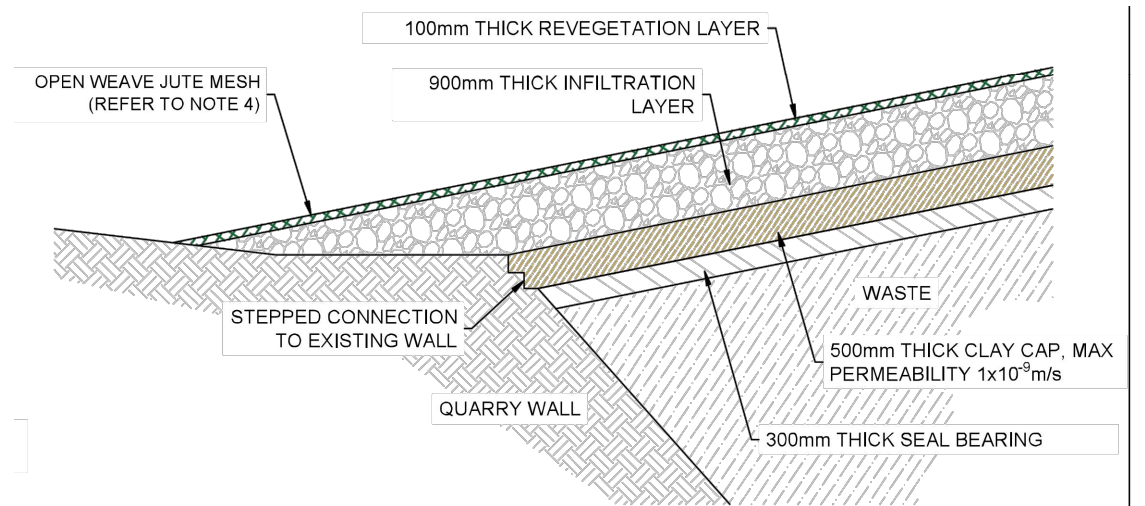
CAPPING DETAIL
SCALE 1:100



SECTION THROUGH TIE-IN WITH ANY PREVIOUS CAPPING PHASE
SCALE 1:100



SEALING DETAIL AROUND PENETRATIONS THROUGH CLAY CAP
SCALE 1:100



TYPICAL SIDEWALL CONNECTION
SCALE 1:100

REFERENCE(S)
ERSKINE PARK LANDFILL FINAL CAPPING AND REHABILITATION, LANDFILL CLOSURE PLAN
PREPARED BY SLR CONSULTING AUSTRALIA PTY LTD, DATED 23 JUNE 2017.

**NOT FOR
CONSTRUCTION**



CLIENT
ENVIROGUARD PTY LTD

PROJECT
ERSKINE PARK LANDFILL

CONSULTANT

YYYY-MM-DD 2020-04-08

TITLE

CAPPING DETAILS SHEET 1 OF 2



DESIGNED JM

PREPARED BK/SF

REVIEWED JM

APPROVED JM

PROJECT NO.
19135652

CONTROL
018

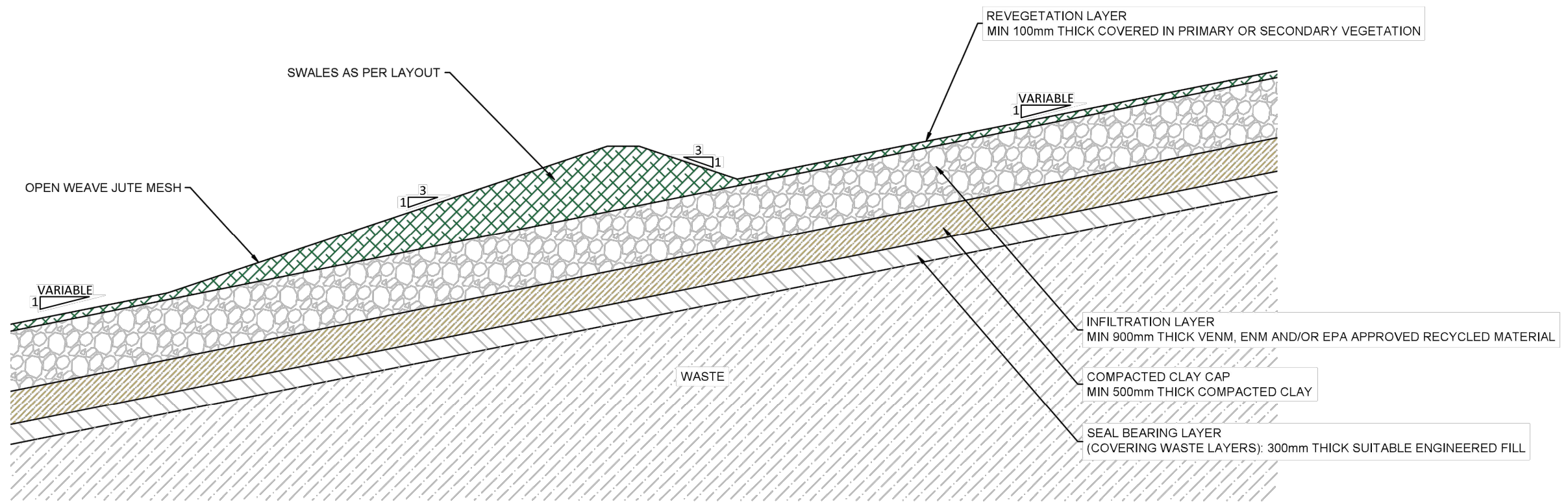
REV.
0

FIGURE
F005

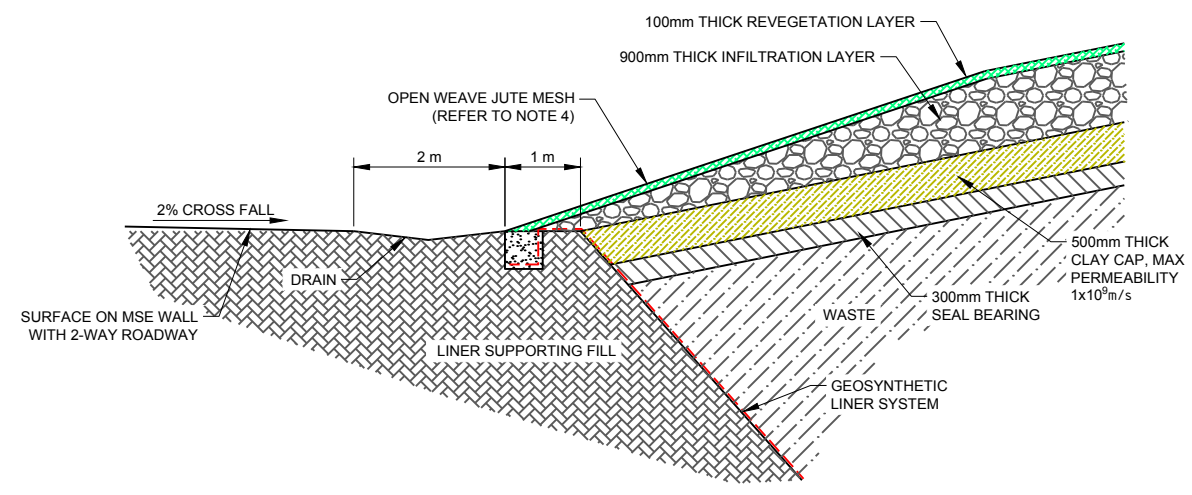
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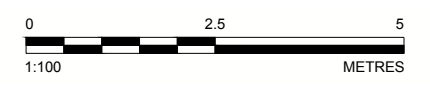
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TYPICAL SECTION THROUGH PROPOSED LANDFILL CAPPING
SCALE 1:75

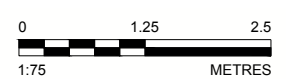


TYPICAL MSE WALL CONNECTION
SCALE 1:100 m



REFERENCE(S)
ERSKINE PARK LANDFILL FINAL CAPPING AND REHABILITATION, LANDFILL CLOSURE PLAN
PREPARED BY SLR CONSULTING AUSTRALIA PTY LTD, DATED 23 JUNE 2017.

**NOT FOR
CONSTRUCTION**



CLIENT
ENVIROGUARD PTY LTD

PROJECT
ERSKINE PARK LANDFILL

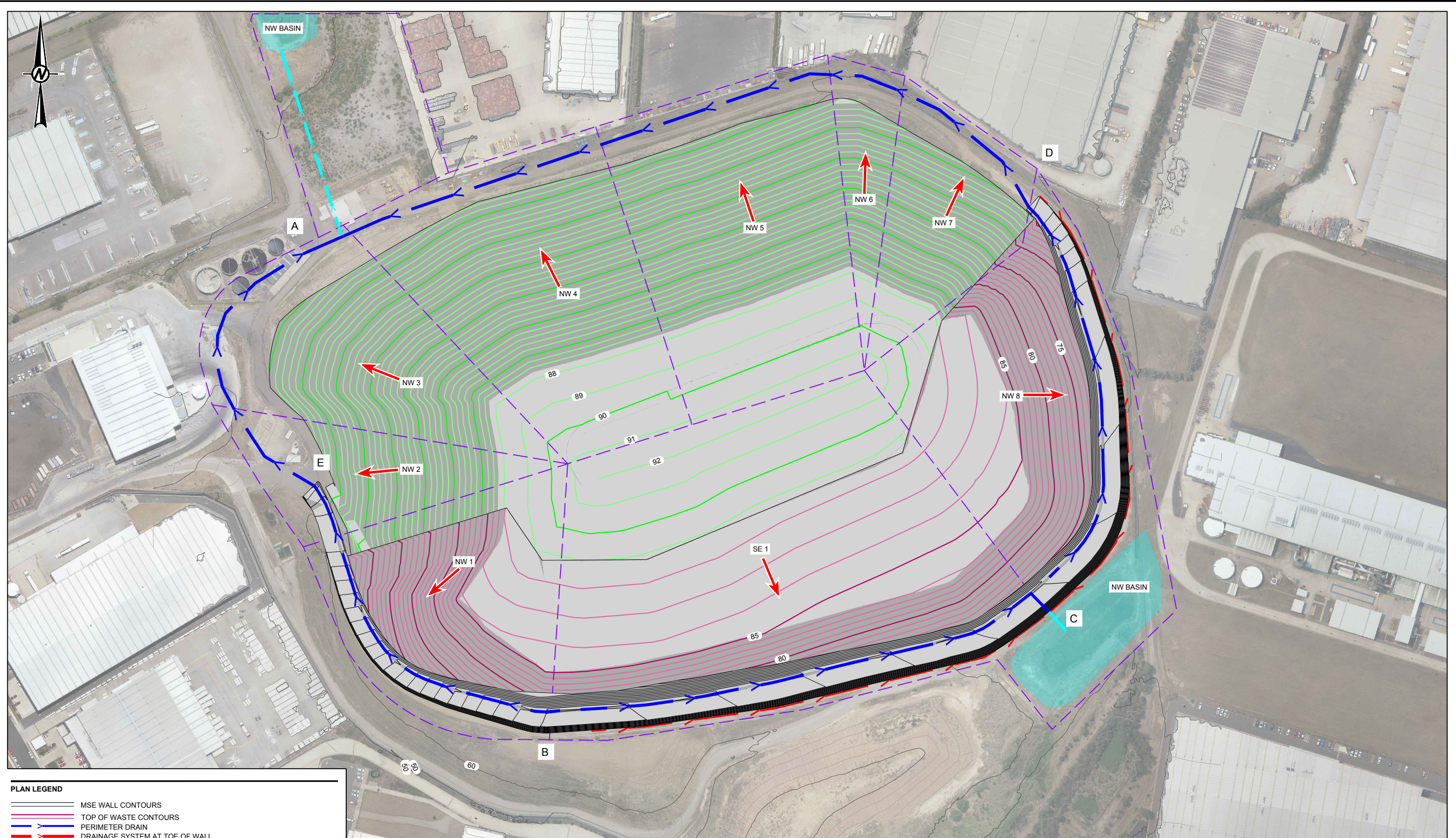
CONSULTANT	YYYY-MM-DD	2020-04-08
	DESIGNED	JM
	PREPARED	BK/SF
	REVIEWED	JM
	APPROVED	JM

TITLE
CAPPING DETAILS SHEET 2 OF 2

PROJECT NO.	CONTROL	REV.	FIGURE
19135652	018	0	F006

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

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- PLAN LEGEND**
- MSE WALL CONTOURS
 - TOP OF WASTE CONTOURS
 - PERIMETER DRAIN
 - DRAINAGE SYSTEM AT TOE OF WALL
 - - - CATCHMENTS BOUNDARY
 - CULVERT
 - ➔ DIRECTION OF FLOW



NOT FOR
CONSTRUCTION

0	2020-04-08	NOT FOR CONSTRUCTION		
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	APPROVED
			JM BK/SF JM JM	

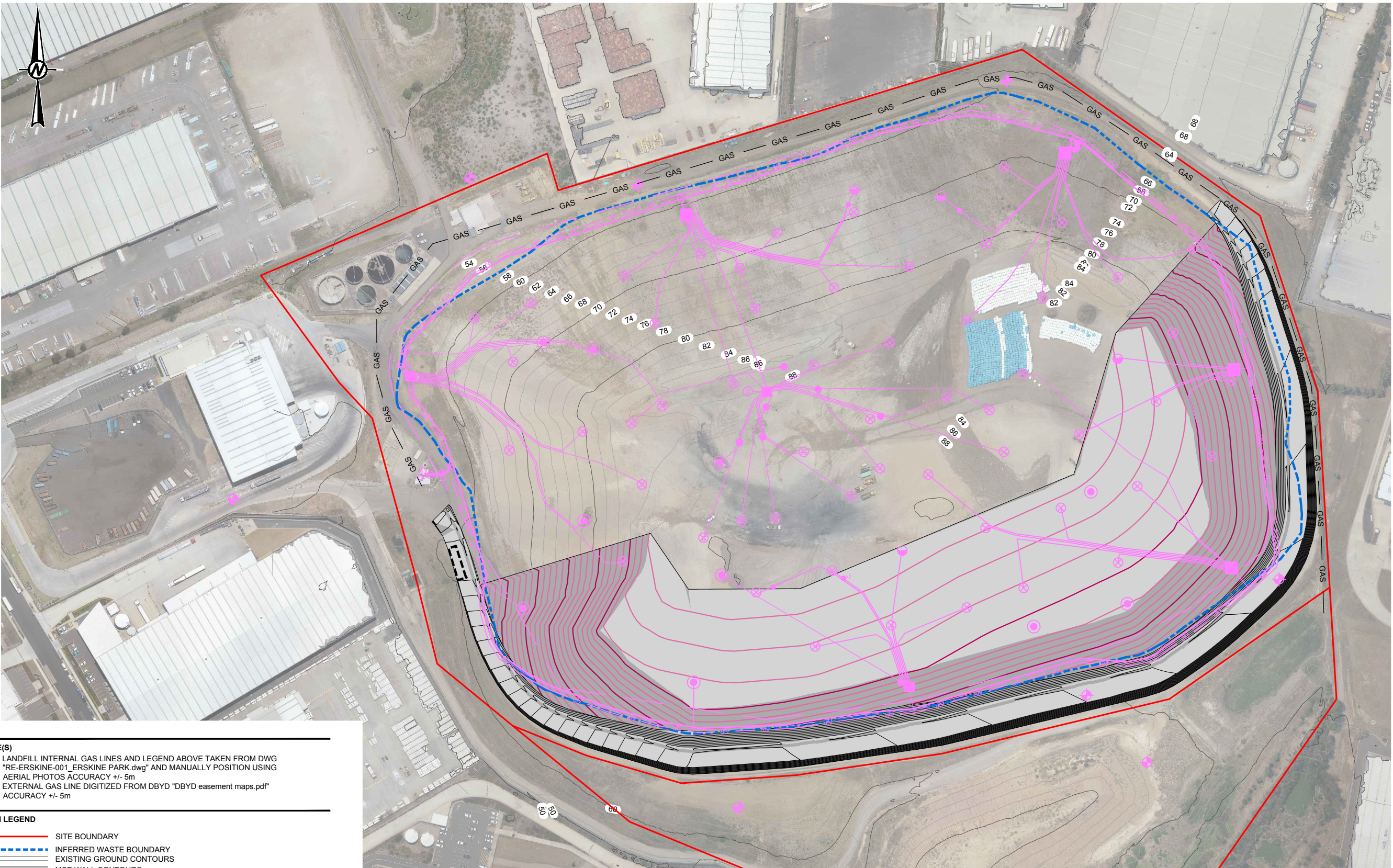
CLIENT
ENVIROGUARD PTY LTD

CONSULTANT

BRISBANE OFFICE
 147 CORONATION DRIVE
 MILTON, QLD 4064
 AUSTRALIA
 [+61] (7) 3721 5400
 www.golder.com

PROJECT		ERSKINE PARK LANDFILL	
TITLE		SURFACE WATER MANAGEMENT PLAN	
PROJECT NO.	CONTROL	REV.	of
19135652	018	0	FIGURE F007

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

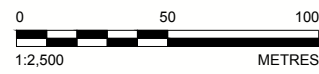


NOTE(S)

1. LANDFILL INTERNAL GAS LINES AND LEGEND ABOVE TAKEN FROM DWG "RE-ERSKINE-001_ERSKINE PARK.dwg" AND MANUALLY POSITION USING AERIAL PHOTOS ACCURACY +/- 5m
2. EXTERNAL GAS LINE DIGITIZED FROM DBYD "DBYD easement maps.pdf" ACCURACY +/- 5m

PLAN LEGEND

- SITE BOUNDARY
- INFERRERD WASTE BOUNDARY
- EXISTING GROUND CONTOURS
- MSE WALL CONTOURS
- TOP OF WASTE CONTOURS
- GAS — FUTURE GAS LINE



NOT FOR
CONSTRUCTION

	CLIENT	ENVIROGUARD PTY LTD			
	CONSULTANT	GOLDER BRISBANE OFFICE 147 CORONATION DRIVE MILTON, QLD 4064 AUSTRALIA [+61] (7) 3721 5400 www.golder.com			
0	2020-04-08	NOT FOR CONSTRUCTION	JM	BK/SF	JM JM
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED APPROVED

PROJECT		ERSKINE PARK LANDFILL		
TITLE		LANDFILL GAS PLAN		
PROJECT NO.	CONTROL	REV.	of	FIGURE
19135652	018	0		F008

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25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

APPENDIX B

Important Information

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification



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APPENDIX G

Correspondence

APPENDIX H

Correspondence

Our reference : DOC06/53280
Licence No. : 4865

Mr Phil Carbins
Regional Manager
Enviroguard Pty Limited
PO Box 804
ST MARYS NSW 1790

STANDARD POST & FACSIMILE

31 October 2006

Dear Mr Carbins

**Enviroguard Pty Ltd - Erskine Park Landfill – Mamre Road Erskine Park – Proposal to
install gas and groundwater monitoring wells**

I refer to correspondence from Consulting Earth Scientists (on behalf of Enviroguard Pty Ltd) dated 16 October 2006, outlining a proposal to install subsurface gas and groundwater monitoring wells at the above premises. I also note the proposal includes works to decommission and replace the damaged BH11 groundwater monitoring well.

The Department of Environment and Conservation (DEC) has considered the proposal and considers the proposed works to be satisfactory. Accordingly, the DEC has no objections to the wells being installed as proposed.

Yours sincerely

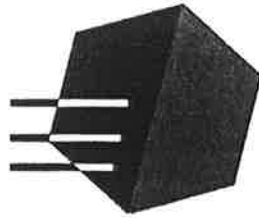


JULIAN THOMPSON
Unit Head Waste Operations
Department of Environment and Conservation

CC: Consulting Earth Scientists, 1/111 Moore St, Leichhardt NSW 2040

PO Box A290 Sydney South NSW 1232
59-61 Goulburn St Sydney NSW 2000
Tel: (02) 9995 5000 Fax: (02) 9995 5999
TTY (02) 9211 4723
ABN 30 841 387 271
www.environment.nsw.gov.au

Department of **Environment and Conservation** NSW



CONSULTING EARTH SCIENTISTS

Telephone: 02 8585 4888 • Fax: 02 9550 9566 • 1/111 Moore St • Leichhardt, NSW 2040 • Australia

Julian Thompson
Department of Environment and Conservation
59-61 Goulburn Street
Sydney NSW 2000

16 October 2006

Dear Julian,

Consulting Earth Scientists have been engaged by Enviroguard Pty Ltd to undertake various environmental consulting services relating to the proposed final landform at their Enviroguard Erskine Park Landfill. The tasks to be undertaken by CES are required to satisfy licence DEC conditions and development consent conditions imposed by Penrith City Council. Additionally, an existing well labelled BH11, has been damaged and is required to be decommissioned and replaced. It is proposed to undertake this work in conjunction with the work required to satisfy relevant licence conditions.

A summary of the proposed work, including both gas and groundwater well installations and the decommissioning of BH11, is provided below for your review.

1. GAS MONITORING

The following gas wells need to be installed and monitored at the site in accordance with the following consent condition:

- **Item 3.3 Part (ii):** *a proposal to install and undertake subsurface gas monitoring at the premises, taking into account benchmark techniques 15 and 16 of the Environmental Guidelines: Solid Waste Landfills.*

Gas Well Installations

Taking into account benchmark techniques 15 and 16 of the NSW EPA (1996) *Environmental Guidelines: Solid Waste Landfill*, CES propose to install six (6) subsurface gas monitoring wells located approximately equidistance around the perimeter of the entire site.

The spacing of the wells is considered to be sufficiently small to be able to detect potential off-site migration. However, it should be noted that proposed installation of six subsurface gas monitoring wells should be considered to be a preliminary exercise designed to assess subsurface gas conditions across the site. If subsurface gas is encountered then the monitoring well network may be augmented and if necessary additional wells installed.

The construction of the new bores will be undertaken with the assistance of Macquarie Drilling Pty Ltd, under contract to CES. Subsurface gas monitoring wells will be drilled using 125 mm diameter solid flight augers with a tungsten carbide drilling bit. If bedrock is encountered, down-hole hammer will be used. Each bore will be logged by an experienced environmental scientist. The wells will be constructed in accordance with Benchmark Technique 15 of the NSW EPA (1996) *Environmental Guidelines: Solid Waste Landfills*.

Wells will be installed to a depth equivalent to the top of the water table. Wells will be installed as follows:

- Wells are to be constructed of slotted PVC pipe of approximately 50 mm diameter;
- Wells are to be installed just above the water table;
- The slotted screen interval will be from the base of the well to approximately one metre below ground level, with unslotted casing to the surface. An end cap will be placed at the base of the well;
- A coarse gravel pack will be installed in the annulus between the well and the borehole;
- A bentonite seal will be placed above the gravel pack to prevent surface water seepage into the well;
- The well will be finished at the surface by the installation of a concrete monument and above-ground steel casing; and
- Specialised gas caps will be installed to form a seal on the top of the well and will be fitted with a barb onto which tubing for gas meters may be fitted. These caps minimise gas losses from the well and also minimise the potential for dilution of gases in the well with ambient air.

Following installation each well will be developed using nitrogen gas to ensure the screen is not clogged which will allow gas migration.

Sub-Surface Gas Monitoring

CES consider that quarterly monitoring (*ie.* every 3 months) of subsurface gas monitoring wells is a sufficient monitoring frequency to assess whether subsurface methane gas is an issue at the site.

Monitoring will be undertaken in accordance with procedures developed by CES based on techniques for soil-gas studies and landfill surface gas surveys. The procedure for monitoring landfill gas wells involves the following stages:

- Initial measurements and observations;
- Purge well by the application of a vacuum (if required); and
- Gas measurements in the well.

The following initial measurements and observations are then made upon arrival at each gas well:

1. Measure concentrations of combustible gases in the ambient air using a calibrated Flame Ionisation Detector (FID) or landfill gas analyser;
2. Inspect the well;
3. Estimate the air volume in the gas monitoring well;
4. Measure formation pressure (gas pressure in well before venting) using a series of pressure gauges;
5. Measure the initial concentrations in the well with a calibrated Landfill Gas Analyser;
6. Vent gas while taking care not to breathe in the emissions. Note the response of the well to venting (*eg*, no response; brief initial pulse (typically 1-2 s), long pulse (>5 s) or continuous gas emission);
7. Measure the flow rate of gas exiting the well with a flow rate meter (if required); and
8. If the flow rate is continuous, flow rates and methane concentration were measured at regular intervals.

The procedure for purging gas wells is summarised as follows:

1. Generate a vacuum in a pressure vessel fitted with a compressor motor;
2. Open the vacuum to the well while noting the initial vacuum applied;
3. Measure recovery time, defined as the time required for the well to return to atmospheric pressure after vacuum has been applied;
4. Measure gas concentrations in the well upon return to atmospheric pressure; and
5. Repeat purging and measurement cycle until concentrations stabilise to within +/-10% or three well volumes have been purged.

It should be noted that recovery times of greater than 10 minutes are considered to be suspect, as the effect of sample train leakages is increased with long recovery times. If recovery times of greater than 10 minutes occur, the operator should conclude that the formation has a low permeability to gas, record the final vacuum (small gauge) and take no further action.

2. GROUNDWATER WELL INSTALLATIONS

A number of groundwater monitoring wells need to be installed in accordance with the following consent conditions:

- **Item 3.3 Part (iii):** *a proposal to install at least three groundwater monitoring bores within 10 m of the landfill's intended footprint which are screened from near the surface to about 20m AHD, unless it can be demonstrated (with existing bores logs and their construction details) that existing bores can be used to monitor groundwater quality within this upper zone.*

Note: There are currently no wells installed across the site which would be suitable for this purpose. Therefore three wells will need to be installed to approximately 20m AHD.

- **Item 3.3 Part (iv):** *a proposal to install a groundwater monitoring bore on the southern side of the landfill screened from near surface to -40m AHD.*

Note: In accordance with the ARMCANZ (1997) *Minimum Construction Requirements for Water Bores in Australia*, it is not recommended to install a single well screened from the near surface to -40m AHD, which equates to approximately 103m depth based on an existing RL of the surface of 63m AHD. Best practice is to install nested wells at the same location which are screened over separate intervals. CES propose to install three nested wells with the shallowest well installed to approximately 20m AHD to cover item 3.3 Part (iii) above.

Additionally, CES understands that a new monitoring well is required to replace BH11 which is located on the northern side of the landfill. BH11 was installed to approximately -40m AHD and became damaged and partially filled, preventing it from being adequately sampled. It is understood that three nested wells are to be installed at this location to replace BH11 with the shallow well installed to approximately 20m AHD to cover item 3.3 Part (iii) above.

In summary, the required groundwater well installations required to satisfy the development conditions and to replace BH11 are as follows:

A. Installation of 3 x nested wells at southern side of landfill extending to -40 m AHD

- The shallowest well will be installed to approximately 20m AHD and be within 10m of the landfill's intended footprint. Consequently will form part of the required 3 wells as required by Condition 3.3 Part (iii).
- All three wells combined will cover the depth from the near surface to -40 m AHD. Consequently will satisfy Condition 3.3 Part (iv).

A summary of the proposed scope of work is provided below:

Anticipated Geology

- 15 m of fill comprising loose uncompacted rock boulders in a soil matrix.
- 5m natural soil
- Remaining depth is expected to comprise bedrock

Depths of proposed wells

Surface level at this location is approximately 63m AHD. Therefore the deepest well will need to extend approximately 103 BGL.

BH1 – 103m

BH2 – 70 m

BH3 – 45m

Well Installation

It is assumed that up to 15 m of screen will be used in each well although exact length of screen will be determined by the encountered lithology. Each well will be installed using Class 18 UPVC with 50 mm internal diameter.

Well Development

Following installation, each well will be developed by nitrogen gas lift (sparging) to remove fines from the borehole, and to allow the flow of representative formation groundwater into the bore for subsequent sampling. To ensure sufficient water was removed, the process will be repeated three times.

B. Installation of 3 x nested wells at northern side of landfill extending to -40 m AHD

- The shallowest well will be installed to approximately 20m AHD and be within 10m of the landfill's intended footprint. Consequently will form part of the required 3 wells as required by Condition 3.3 Part (iii).
- All three wells combined will cover the depth from the near surface to -40 m AHD. Consequently will be a suitable replacement of BH11.

A summary of the proposed scope of work is provided below:

Anticipated Geology

- 5m natural soil
- Remaining depth is expected to comprise bedrock

Depths of proposed wells

Surface level at this location is approximately 53m AHD. Therefore the deepest well will need to extend approximately 93m BGL.

BH1 – 93m

BH2 – 65 m

BH3 – 35m

Well Installation

It is assumed that up to 15 m of screen will be used in each well although exact length of screen will be determined by the encountered lithology. Each well will be installed using Class 18 UPVC with 50 mm internal diameter.

Well Development

Following installation, each well will be developed by nitrogen gas lift (sparging) to remove fines from the borehole, and to allow the flow of representative formation groundwater into the bore for subsequent sampling. To ensure sufficient water was removed, the process will be repeated three times.

C. Installation of 1 well to 20m AHD within 10m of the landfill's intended footprint

- This well, combined with the two shallow wells included above, is proposed to satisfy Condition 3.3 Part (iii).

A summary of the proposed scope of work is provided below:

Anticipated Geology

- 5m natural soil
- Remaining depth is expected to comprise bedrock

Depths of proposed well

The surface level is approximately 53m AHD therefore the depth of this well is expected to be 35 m.

Well Installation

It is assumed that up to 25 m of screen will be used although exact length of screen will be determined by the encountered lithology. The well will be installed using Class 18 UPVC with 50 mm internal diameter.

Well Development

Following installation, the well will be developed by nitrogen gas lift (sparging) to remove fines from the borehole, and to allow the flow of representative formation groundwater into the bore for subsequent sampling. To ensure sufficient water was removed, the process will be repeated three times.

3. DECOMMISSIONING OF BH11

CES propose to decommission BH11 in general accordance with the *Minimum Construction Requirements for Water Bores in Australia* (ARMCANZ, 1997).

The proposed method for well decommissioning is outlined below:

- The well casing will be filled from the bottom up using a tremmie pipe with a flowing cement/bentonite grout mixed at a rate of approximately 48% builders cement : 48% potable water : 4% bentonite powder.
- The grout will be finished to the top of the well casing and steel monument surrounding each well.

4. REPORTING

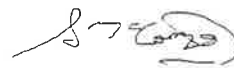
Once all gas and groundwater monitoring wells have been installed, CES will prepare a report detailing the methods used to install and develop each gas well and each groundwater monitoring bore. The report will also include borehole logs showing the relevant screen installation depths.

It would be appreciated if you could review the proposed environmental services described above and provide comment on their suitability in satisfying the various development consent conditions. If you have any questions, please contact either Michael Petrozzi or Stephen McCormack on 02 – 8585 4888.

Yours sincerely



Michael Petrozzi
Principal



Stephen McCormack
Senior Environmental Engineer

APPENDIX H

PIRMP



ERKSINE PARK LANDFILL NSW
EMERGENCY MANAGEMENT PLAN

ADDRESS: 4 Quarry Road, accessed via 85-87 Quarry Road
Erskine Park, NSW, 2759, Australia

TELEPHONE: 02 8602 8714

SITE MANAGER: Chris Watkins

TELEPHONE: 0413 734 204

EMERGENCY CONTROLLER: Westley Trist

TELEPHONE: 0412 840 568

SITE EMERGENCY MANAGEMENT PLAN

HSE MANAGEMENT SYSTEM

Revision History:

Date	Issue	By	Checked	Approved
03.02.10	1	Amanda Broadbridge	Chris Watkins	<i>Eric Le Provost</i>
07.06.11	2	Katrina Pereira	Chris Watkins	<i>Eric Le Provost</i>
23.11.11	3	Katrina Pereira	Chris Watkins	<i>Eric Le Provost</i>
29.08.12	4	Mumtaz Siddiqui	Chris Watkins	<i>Eric Le Provost</i>
29.08.13	5	Katrina Pereira	Chris Watkins	<i>Eric Le Provost</i>
26.05.14	6	Melanie Dickason	Chris Watkins	<i>Eric Le Provost</i>
24/08/15	7	Alex Tomic	Chris Watkins	<i>Sanjev Chetty</i>
15/12/16	8	Mark Kutzer	Chris Watkins	<i>Alex Hatherly</i>
03/05/2018	9	Paul Spolder	Chris Watkins	<i>Alex Hatherly</i>
26/02/2019	10	Fay Malwatte	Chris Watkins	<i>Alex Hatherly</i>

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SITE EMERGENCY MANAGEMENT PLAN

HSE MANAGEMENT SYSTEM

Section 1 – Details and Communication

Branch Activities

Activities undertaken at the Branch	<ul style="list-style-type: none">• Solid non-putrescible waste landfill, leachate treatment plant
Property Size (total)	<ul style="list-style-type: none">• 23.9 hectares
Number of personnel	<ul style="list-style-type: none">• 5
Number and description of buildings	<ul style="list-style-type: none">• Weighbridge• Lunchroom & change rooms• Workshop• Leachate treatment plant
Location of site Hazardous Chemical Register	<ul style="list-style-type: none">• Office co shared with Erskine Park Transfer Station

Neighbouring Facilities

Refer annex A: Pollution Incident Response Management Plant (PIRMP) for full details of neighbouring sites.

Business name	Contact Number
Erskine Park Transfer Station	Wes 412 840 568
Aussie Table Tennis Sydney	(02) 9670 0670
Bluescope	02 9670 8625
CEVA	02 9670 9300
Darley Aluminium P/L	(02) 8887 2888
Devondale Murray Goulburn	(02) 8857 4500
DHL	02 9566 2800
Dinzel Construction Systems	(02) 9670 1633
Dutt Transport	1300 883 477
ILG	02 9675 8400
Independent Liquor Group	(02) 9675 8400
Linfox	02 8882 5000
Mulgoa Quarries	02 4723 9900
Rand Refrigerator Logistics	(02) 9670 0000
Stramit	02 9834 0900
Viridian	1800 810 403

SITE EMERGENCY MANAGEMENT PLAN

HSE MANAGEMENT SYSTEM

Site Emergency Response Team Contact List

Position	Name	Contact	
		Site	After Hours/Mobile
Emergency Controller (Chief Warden)	Westley Trist	Emergency Muster Area	0412 840 568
Technical Supervisor	Chris Watkins	As Required	0413 734 204
Area Warden	Brent O'Brien	Landfill/workshop/Muster Room / Toilet Block/ Leachate Plant	0423 494 126
First Aider	Rodney Sneesby	Weighbridge	0428 987 556
Environmental Specialist	Orhan Cambaz	As Required	0407 923 305

External Emergency Contacts

Service Provider		Name	Work Number
Crisis Counsellor	AUSTRALIA	LifeWorks	1300 361 008
	NEW ZEALAND	EAP Works	1800 735 353
Company Medical Practitioners		Sonic Health	Kildare Road Medical Centre
			Mount Druitt Hospital
Run Energy		Alan Jones 0400 156 423	
WHS Regulatory Authority		131 050	
Environmental Regulatory Authority		131 555	
Police / Fire / Ambulance	AUSTRALIA	Telephone 000 Fixed line or 112 Mobile	
	NEW ZEALAND	Telephone 111 Fixed line and Mobile telephones	
Poisons Information Centre		Australia	13 11 26
		New Zealand	0800 764 766
Electrical Authority		131 909	
Water Services Authority		131 090	
Gas Services Authority		131 245	
Local Regulatory Council		02 4732 7777	
Bureau of Meteorology		02 9296 1555	
State Emergency Service		132 500	
Disaster Recovery Centre		1800 018 444	
Other	St Marys Police Station	02 9677 7499	

Section 2: Emergency Equipment Register

Response Equipment	Type of Part	Location	Last Inspection/ Test
Fire Fighting	Fire extinguishers	Plant equipment	6 monthly
	Fire extinguishers	Leachate treatment plant	6 monthly
	Fire extinguishers	Office	6 monthly
	Fire extinguishers	Workshop	6 monthly
First Aid			
	First Aid Station	Workshop	3 monthly
	First Aid Station	Office	3 monthly
Emergency Showers & Eyewash stations	Eye wash	Workshop	6 monthly
	Eye wash & Showers	Leachate treatment plant	6 monthly
Spill Response	Spill kit	Workshop	Annually
Emergency Evacuation Alarm	Alarm	Rear of Main Admin office (EWIS)	Annually

Section 3: Emergency Preparedness & Response

Identify Emergency Type and Risk Rating

Emergency Type	Likelihood	Consequence	Rating
Fire and/or Explosion	Rare	Major	High
Medical Emergency	Unlikely	Moderate	Medium
Personal Threat	Rare	Moderate	Medium
External Emergency impacting Premises	Rare	Minor	Low
Bomb / Substance Threat	Rare	Moderate	Medium
Product Spill or Environmental incident	Unlikely	Moderate	Medium
Gas Leak	Unlikely	Moderate	Medium
Natural Events	Unlikely	Minor	Low

*For each emergency identified above, prepare a response plan for each and attach as Appendix 1.

Section 4: Training

All personnel shall be provided with general Emergency Awareness Training as part of the induction process and within 6 months of their employment, and will cover at a minimum;

- Location of all emergency equipment and training in its use (if required);

- Provide awareness of the types of emergencies that may occur at this site and appropriate response plans for these.

Personnel who have assigned emergency team responsibilities shall be provided with additional Emergency response training specific to their roles and responsibilities. This must be included in the Training needs analysis and on the training matrix.

Section 5: Raising the Alarm

In the event of an emergency at this site the following process for the communications systems shall be utilised, as appropriate:

Step 1. Area Warden notified of emergency and activates alarm and advises weighbridge

Step 2. Notify Chief Warden, if not on site notify Chief Warden's relief person

Step 3. Weighbridge announces over "2-way" radio on both channel 24 & 25 of emergency and request evacuation.

Step 4. Weighbridge to contact landfill personnel on site (check visitors' book) and advise landfill warden of any additional visitors on site.

Step 5. Move to the evacuation point muster point taking the "Weighbridge Sign In Register".

Emergency Assembly Point



Section 6: Testing and Recording Drills

The implementation of this plan shall be physically tested on a minimum 6 monthly basis. All implementation tests (or drills) shall include, but not be limited to, the following aspects;

- Activation of the emergency alarm/s;
- Evacuation of all areas on site, including timing of evacuation times
- Include a variety of scenarios applicable to this site i.e. spills, threats, explosion etc.

Drills are conducted and then evaluated using **Emergency Drill Debrief Form**. A record shall be kept at site and date and time of Drill recorded in the Vault (Risk Management Module, Emergency Management, Checks and Registers, Facility/Site Evacuation).

Section 7: Evacuation Plan

The site evacuation plan details all buildings, plant, utilities mains, exit points, evacuation assembly area(s), first aid facilities, emergency alarm locations and fire extinguisher equipment location.

Appendix 1: Emergency Response Guidance

Fire/ Explosion Response

All attempts to respond to an emergency situation should at all times ensure personal safety and only be attempted if within the capabilities of the individual.

Upon discovering a Fire, the First Responder should:

- Alert and evacuate nearby personnel located in the vicinity of the affected area.
- Immediately notify Emergency Response Team personnel and emergency services (if required).
 - When contacting emergency services, state the following:
 - Your name
 - Company name
 - Type of incident
 - Address of incident and nearest cross street, state and suburb
 - Types of injuries
 - Any other relevant information
- Where safe shutdown plant as per shutdown procedure.
- Where safe isolate power source and ignition sources.
- Stay in communication until told otherwise.
- Attempt to contain, control and extinguish the fire (if safe and you are trained to do so).
- The Emergency Response Team will raise the alarm and proceed with evacuation if necessary.
- Ensure the safety and well-being of personnel and attend to the injured.
- Secure the scene and assist external emergency services.
- Institute a roll-call of personnel, contractors and visitors.

Terminating Emergency:

- After all clear is given from emergency services and Chief Warden.
- Chief Warden in conjunction with site management to debrief staff.
- Controlled / Orderly return to work.
- Damaged and affected areas to be barricaded or locked out until repairs are carried out.
- Ensure preservation of evidence and provide cooperation with statutory investigations.
- Notify local authorities including EPA, Local Council, Health Department, Comcare (where required).

Medical Emergency

All attempts to respond to an emergency situation should at all times ensure personal safety and only be attempted if within the capabilities of the individual.

- Check for threatening situation and remove persons from danger if required.
- Remain with the casualty and provide support.
- Immediately call the Emergency Response Team (specifically First Aid Personnel) for assistance.
- Where required, call emergency services.
- When contacting emergency services, state the following:

- Your name
- Company name
- Type of incident
- Address of incident and nearest cross street, state and suburb
- Types of injuries
- Any other relevant information
- Stay in communication until told otherwise
- If conscious, try to ascertain what condition the affected person is suffering.

Personal Threat

In the event of a civil disturbance:

- Ensure your Chief Warden is notified immediately
- Notify the Police by dialling “000” (112 for mobiles) and request assistance
- Do not say or do anything that may encourage irrational behaviour
- Remove any objects in accessible locations that could be used as weapons or missiles by aggressive trespassers
- Alert other personnel in your vicinity of the threat
- Evacuation should be considered (if safe to do so)

External Emergency impacting on Premises

All attempts to respond to an emergency situation should at all times ensure personal safety and only be attempted if within the capabilities of the individual.

- Make the area safe and contact Emergency Response Team.
- Contact Emergency Services if necessary;
- When contacting Emergency Services, state the following:
 - Your name
 - Company name
 - Type of incident
 - Address of incident and nearest cross street, state and suburb
 - Types of injuries, property damage or environmental harm sustained
 - Any other relevant information
- Stay in communication until told otherwise.
- Implement any other applicable emergency procedure.

Terminating Emergency:

- After all clear is given from emergency services and Chief Warden
- Chief Warden in conjunction with site management to debrief staff
- Controlled / Orderly return to work
- Damaged and affected areas to be barricaded or locked out until repairs are carried out
- Ensure preservation of evidence and provide cooperation with statutory investigations.

Bomb / Substance Threat

Any person who receives a bomb / substance threat should remain calm and take the following steps:

Ask the following questions

- Where did you put the bomb/substance?
- When is the bomb going to explode?
- When did you put it there?
- What does the bomb/substance look like?
- What kind of bomb/substance is it?
- What will make the bomb explode?
- Did you place the bomb/substance?
- Why did you place the bomb/substance?
- Is the substance a liquid, powder or gas?
- What is your name?
- Where are you now?
- What is your address?

Try to record the exact wording of the threat.

Try to keep the caller talking and complete the **Bomb Threat Checklist** (do not hang up because the call may be traced).

In the event of a Product Spill or Environmental incident

1. Incident Identified

It is the responsibility of each worker to be vigilant in the recognition of potential environmental conditions that may lead to environmental incidents. On identification contact the Emergency Response Team.

2. Can the Incident be contained locally?

In determining whether the incident can be contained locally, employees involved must consider the risks to personal health and safety, protection of plant and property and protection of the environment including blocking drains, covering pits and stopping any product entering the sediment ponds. If there is any doubt as to local containment, the appropriate Emergency Services must be called.

3. Call Emergency Services

In the event of an incident that is beyond local containment capability, notify the emergency services. If required by legislation, TPI (through relevant National HSE Manager and Environmental Manager) will notify the relevant government authorities of the incident, including how the incident occurred, measures that have been undertaken to rectify the

situation and any impacts that the incident has had on the environment. Government Authorities to be notified are:

- EPA
- Local Council
- Health Department
- Fire and Rescue
- Comcare

4. *Employ Containment Procedures*

Once an incident has been identified, all efforts must be undertaken to contain and minimise the effect of the incident on the environment. This can be achieved by isolating the cause and erecting suitable barriers to prevent the spread or flow of the particular incident.

In most cases there are actions to isolate or eliminate the cause:

- In the case of punctured drum it can be rolled over so that the puncture is on the top
- In the case of fallen drum leaking from the top it can be stood back up
- Move the drum/container to a restricted area to prevent spill entering stormwater
- Broken/damaged pipe may be stopped by closing up-stream valve or shutting down a pump.

Protect the stormwater system/ sediment ponds wherever possible. Should a product reach the stormwater system, go to the next drain in the sequence and check if the spilt product has reached it. If it has, go to the next drain in the sequence until there is no evidence of the spilt product. Block the outlet of this drain and clean the contaminated stormwater.

5. *Notify the Regional Manager*

Every environmental incident must be reported to the Branch Manager as soon as is practically feasible; no matter how insignificant the incident may appear. The Branch Manager is required to contact & liaise with the nominated Environmental Specialist.

6. *Instigate Clean-up and Rehabilitation*

The Branch Manager has the responsibility of co-ordinating the clean-up and rehabilitation of the affected site to an acceptable standard. All waste shall be segregated where possible and stored and disposed as per the Waste Management Plan.

For external spills – please complete the ***External Spill Response Checklist***

Gas Leakage

In the event of a Gas Leak:

- Isolate the Gas supply at the source (if safe to do so)
- Notify the Fire Brigade by dialling “000” (112 for mobiles)
- Shutdown the air conditioning to prevent the spread of any flammable or toxic gases

- Remove any ignition sources (if safe to do so)
- Evacuate to safe area and contact the Branch Manager
- Await advise from emergency services
- If Branch Manager not on site, advise the Branch Manager of outcome.

Natural Events

In the event of a flood, severe storm, earthquake, bushfire:

- If safe to do so shut down plant as per shutdown procedure and isolate any other power, gas, water sources.
- Contact Emergency Response Team.
- Contact Emergency Services if necessary;
- When contacting Emergency Services, state the following:
 - Your name
 - Company name
 - Type of incident
 - Address of incident and nearest cross street, state and suburb
 - Types of injuries, property damage or environmental harm sustained
 - Any other relevant information
- Stay in communication until told otherwise.
- Implement any other applicable emergency procedure.
- When the natural event occur outside hours, where safe to do so the Chief Warden or their representative should visit the site to isolate any power, gas and water sources and provide access to emergency services where required

POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN – (PIRMP)

Enviroguard Pty Ltd

Erskine Park Landfill NSW

4 Quarry Road, Erskine Park 2759 (Accessed via: 85-87 Quarry Road, Erskine Park)

EPA LICENCE NO. 4865

Industry is now required to report pollution incidents **immediately** to ALL regulatory bodies.

Call 000 if the incident presents an immediate threat to human health or property

If the incident does not require an initial combat agency, or once the **000** call has been made, notify the Business unit manager to contact the remaining authorities in the following order:

Environment Protection Authority	131 555
The NSW Ministry of Health	(02) 9391 9000 ask Public Health Officer on call
Penrith Public Health Unit	(02) 4734 2022 (02 4734 2000 (after hours))
SafeWork	13 10 50
Comcare	1300 366 979
Penrith City Council	(02) 4732 7777
Fire and Rescue	000
Fire and Rescue without immediate threat	1300 729 579

Also call Cleanaway Spill response 1800 SPILLS (1800 774 557), if appropriate.

Revision Status:

Date	Issue	By	Checked	Approved
01/11/18	0	-	-	-
27/03/20	A	Haydn Rossback	Bart Downe	-
06/04/20	1	-	Chris Watkins	Chris Watkins

1.0 INTRODUCTION

The Pollution Incident Response Management Plan (PIRMP) has been developed to assist with the management of pollution incidents which occur at the Cleanaway Erskine Park Landfill site and may impact the environment, personnel or the community in which we operate.

A risk assessment (refer to Section 4) was undertaken to minimise the risks associated with pollution incidents. Sites shall also maintain an Environmental Aspect and Impacts Register separate to the PIRMP.

When a pollution incident, as defined in Section (2) below, occurs on site the regulatory bodies listed in Section (7) must be immediately notified as specified in the protocol in Appendix A.

2.0 DEFINITION OF POLLUTION INCIDENT

Under NSW Regulations:

The definition of a pollution incident is:

Pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

A pollution incident is required to be notified if there is a risk of 'material harm to the environment', which is defined in section 147 of the POEO Act as:

- (a) Harm to the environment is material if:
 - (i) It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or
 - (ii) It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and
- (b) Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

Industry is now required to report pollution incidents **immediately** to ALL Regulatory Bodies.

3.0 NOTIFICATION OF POLLUTION INCIDENTS

Appendix A contains the Protocol for Industry Notification of Pollution Incidents, to be updated for each site and posted on the sites noticeboards.

In the event of any pollution incident notify the Business Unit Manager immediately to determine if it meets the definition of the attached protocol. The Business Unit Manager will be the primary contact point for the authorities.

If the incident clearly requires notification, (e.g. tank collapse with bund breached and liquid entering creek), the most senior person on site shall commence notification (Emergency Numbers) if the business unit manager is not present. This person shall also then immediately contact the Business Unit Manager of who will notify all remaining authorities immediately including EPA.

4.0 Pollution Incident Response Management Plan

4.1 Description and Likelihood of Hazards [Regulation Clause 98C (1) (a) and (b)] and pre-emptive actions to be taken [Regulations Clause 98C (1) (c)]

Pollution Hazard	Likelihood of Hazard	Circumstances that could or would increase likelihood	Current Pre Emptive Actions	Corrective Actions
Landfill Fire	Possible	Machinery fault, extreme weather (days of total fire ban), hot work, smoking in unauthorised areas, electrical hazards, inappropriate placement waste material.	Planning and design, License/Consent Conditions, SEMP, planned maintenance, housekeeping practices, SDS and firefighting equipment.	Contact the Business Unit Manager who will coordinate incident response
Odour Emissions	Possible	Fire, Poor house-keeping.	No putrescible waste product receivals, house-keeping practices, License/Consent Conditions	Contact the Business Unit Manager who will coordinate incident response
Water Emissions	Unlikely	Period of prolonged rainfall (i.e 1 in 100 yr storm event), lack of water storage capacity/freeboard	Monitoring, Construction and design of landfill and sediment ponds License/Consent Conditions, SOP, SEMP	Contact the Business Unit Manager who will coordinate incident response
Noise Emissions	Possible	Noisy machinery due to lack of maintenance, operating outside licenced hours	Mobile and fixed plant and machinery meet requirements, License/Consent Conditions.	Contact the Business Unit Manager who will coordinate incident response
Spill	Possible	Flooding, fuel tank leak, hydraulic oil leak from mobile or fixed plant, poor house-keeping	Construction, design and maintenance of plant and equipment, License/Consent Conditions, SOP, SEMP, good house-keeping	Contact the Business Unit Manager who will coordinate incident response

4.2 Cleanaway Risk Ranking Model

1. CONSEQUENCE / IMPACT CRITERIA			Consequence / Impact Ratings (Where an event has more than one 'Loss Type', choose the 'Consequence / Impact' with the highest rating. If 'Near Miss' select potential rating).				
Description			Insignificant	Minor	Moderate	Major	Significant
Health and Safety			No treatment required	First aid treatment required	Medical treatment required	Lost time injury to worker, injury to member of the public or permanent injury or disability (public or workers)	One or more fatalities (public or workers)
Environmental			Limited or no environmental damage with no intervention required	Limited or minor damage requiring assessment on need for intervention	Environmental impact requiring treatment inside or outside site	Serious environmental harm requiring restoration and/or remediation inside or outside of site with possible regulatory intervention	Permanent/material damage to environment requiring ongoing remediation and monitoring with regulatory involvement and possible further enforcement action
Business Interruption			A temporary delay in servicing a small number of customers	Delay affecting customers but no damage to relationships	Inconvenience to customers that cause some harm to relationships	Widespread damage to customer relationships (some permanent)	Irreversible damage to a large number of customers (impacts viability of the business)
Reputational			Slight impact- public awareness may exist but no public concern.	Limited impact- local public concern.	Considerable impact- regional public concern. Client unease.	National public concern. Leads to share price volatility. Loss of client.	International public attention. Direct impact on share price. Loss of core client.
Financial (Set locally)			AUD \$0 to < AUD \$ X K EBIT	> AUD \$ X K to < AUD \$ X M EBIT	> AUD \$ XM to < AUD \$ XM EBIT	> AUD \$ XM to < AUD \$ XM EBIT	> AUD \$ X M EBIT
2. LIKELIHOOD / PROBABILITY & RISK RATING			Risk Rating				
Likelihood / Probability	Examples (Near-misses as well as actual events)	% chance of occurring					
Almost Certain	The unwanted event has occurred frequently; occurs in order of one or more times per year & is likely to reoccur within 1 year	>75% - 99%	5	10	15	21	25
Likely	The unwanted event has occurred infrequently; occurs in order of less than once per year & is likely to reoccur within 5 years	>50% - <74%	4	9	14	20	24
Possible	The unwanted event has happened in the business/industry at some time, or could happen within 10 years	>25% - <49%	3	8	13	18	23
Unlikely	The unwanted event has happened in the business/industry at some time, or could happen within 20 years	>11% - <24%	2	7	12	17	22
Rare	The unwanted event has never been known to occur in the business/industry, or it is highly unlikely that it will occur within 20 years	0- <10%	1	6	11	16	19

Risk Level: **Extreme** NO WORK TO BE CONDUCTED **High** Requires Manager/Regional Manager Sign off **Medium** Requires Supervisor Sign off
Low Monitor

5.0 Inventory of pollutants [Regulation clause 98C(1)(d) and (e)]

Location / Pollutant Vessel	Name of Substance	Volume Typical Max. M ³
Landfill Cell	General Solid Waste Non Putrescible	12,300,000
Landfill Cell	Leachate	Est. 1500
Landfill Cell	Dust	Site Generated
Flare	Landfill Gas @ 59% Methane	670 m3/hour
Workshop	Various Oils Hydrocarbons	3000 L
Leachate Treatment Plant	Leachate	4 Megalitres max

6.0 Safety equipment [Regulation clause 98C(1)(f)]

Safety Item	Safety Item Type	Safety Item Location	Safety Item Use	Risk Mitigation Type
Water truck	N/A	See Map 2	Control and/or contain fires	Eliminate risk to human health and surrounding environs

Safety Item	Safety Item Type	Safety Item Location	Safety Item Use	Risk Mitigation Type
Water dams	N/A	See Map 2	Control and/or contain fires	Eliminate risk to human health and surrounding environs
First aid kit	N/A	See Map 2	Used to treat minor injuries to personnel or reduce severity of moderate to major injury until emergency personnel arrive	Eliminate risk to Cleanaway personnel and contractors
Spill kit	N/A	Workshop	Used to control and contain spills which may be potentially hazardous to personnel or the immediate and/or surrounding environment (e.g. stormwater)	Eliminate or reduce risk to personnel by containing and removing potentially hazardous spill. Eliminate or reduce risk of spill leaving the site and into surrounding environs (e.g. stormwater)
SDS register	N/A	Site office	A tool accessible to all personnel which captures the SDS's of all hazardous chemicals used, handled or stored on site	Used to ensure hazardous chemicals are being utilised in a manner that does not pose health risk to personnel or the environment as well as in the event of a spill
SEMP	N/A	Site office	A site specific emergency management plan which details relevant emergency protocols and information	Used to protect health of personnel and surrounding environment

7.0 CLEANAWAY CONTACT DETAILS [Clause 98C (1)(g) and (h)]

7.1 Cleanaway Contact Details [clause 98C(1)(g) and (h)]

Position	Name	Work Number	After Hours
Regional Manager	Greg Mitchell	(02) 8602 8723	0448 687 192
Operations Manager	Chris Watkins	(02) 8602 8714	0413 734 204
Environmental Specialist	Bart Downe	NA	0498 033 628
Health & Safety Business Partner	Fay Malwatte	(02) 9834 0445	0427 557 320
Snr Environmental Specialist	Orhan Cambaz	NA	0407 923 305

Head of Health, Safety and Environment	Richard Pittard	NA	0466 529 153
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7.2 Regulator Contact Details [clause 98C(1)(g) and (h)]

Organisation	Contact Number
Environment Protection Authority	13 15 55
The NSW Ministry of Health	(02) 9391 9000 – After hours 9515 6111 ask Public Health Officer on call
Safe Work Australia	13 10 50
Comcare	1300 366 979
Penrith City Council	(02) 4732 7777
Fire and Rescue	000
Fire and Rescue without immediate Treat	1300 579

8.0 COMMUNICATING WITH NEIGHBOURS AND THE LOCAL COMMUNITY [Clause 98C (1)(i)]

The site is an active landfill. The site applies waste to land. This process generates Leachate- a process within which water interacts with the stored waste.

The site is located in an industrial area with no schools or hospital in the immediate area.

A list identifying immediate neighbours of the site, who must be notified during a pollution incident is provided below.

Contact numbers for the neighbours are:

Business name	Contact Number
CEVA	(02) 9931 9900
Dincol Construction Systems	(02) 9670 1633
Stramit	(02) 9834 0900
Bluescope	02 9670 8600
Dutt Transport	1300 883 477
CSR Limited	(02) 9235 8000

Business name	Contact Number
EHI Australia	(02) 9670 0400
Digital Realty Data Centre	(02) 9834 0100
DB Schenker	(02) 9333 0333
Darley Aluminium Trading Pty Ltd	(02) 8887 2888
SCT Logistics	(02) 9765 8600
Mulgoa Quarries Pty Ltd	(02) 4723 9900
Tutt Bryant Hire	(02) 8777 0300
Dinzel Construction System	(02) 9670 1633
Devondale Murray Goulburn	(02) 8857 4500
Brand Link	1300 724 417
Dexion Seven Hills	(02) 9838 7770
Independent Liquor Group	(02) 9675 8400
Summit Global	(02) 9670 0600
Loscam	(02) 8047 9510
Other Potentially Affected Neighbours in Erskine Park	Notify Potentially affected neighbours in conjunction with Fire Brigade notification system

Impacts on the broader community are variable and depend on location, or other factors such as wind direction and velocity. In the event of a pollution incident occurring (such as a Fire) which has the potential to impact residential areas, communication methods will be used on a case by case basis and in all situations Cleanaway will liaise with Penrith Council and Fire and Rescue to provide early warnings to directly affected residents by the mechanisms described below. Early warnings are to include details of what the imminent incident is and how those affected can prepare and respond to the incident. The notification shall provide specific information to the neighbouring properties and local community, so it can minimise the risk of harm.

In the event of a pollution incident Cleanaway, in consultation with Penrith Council, will attempt to provide early warning to directly the community by the following mechanisms as appropriate:

- Telephone calls or door knocking (where appropriate);
- Mail box drops;
- Warning signs;

- Local media source (radio/newspapers);
- Penrith Council webpage updates and media releases; and
- Penrith Council website address is www.penrithcity.nsw.gov.au

9.0 MIMIMISING HARM TO PERSONS ON THE PREMISES [Clause 98C (1)(i)]

The site has established a site-specific emergency management plan (SEMP) which details relevant emergency protocols including evacuation procedures, medical emergency procedures and environmental incidents. The SEMP also contains a Site Emergency Response list which details the sites emergency controller, fire warden and other relevant emergency contact details.

The site has established Emergency Evacuations Plans, fire protection in the form of fire extinguishers, stand pipe connection at front gate. The site has a 20,000 L water tanker set up with hose reels, water cannon and dust suppression sprays.

There is a 2 Mega litre Dam onsite for access to water for fighting fires. A 6 Inch Hi Flow pump is set up to pump water into water cart. It takes approximately 12 mins to fill the 20000Litre water cart with water.

There is an excavator and dozer used for land filling onsite that is also capable of fighting fires using earth smothering techniques. It is common to fight Landfill Fires using smothering techniques.

Section 7 of this PIRMP details the Health and Safety Business Partner and Environmental Business Partner for the site. These business partners are employed by Cleanaway to provide technical support to the site.

10.0 Actions to be taken during or immediately after a pollution incident [clause 98C(1)(l)] and actions to be taken to combat the pollution caused by an incident [Clause 153C (c)]

Spills

When safe to do so:

Isolation and containment of spill

- Raise alarm
- Stop the source of the spill
- In all situations the priority is to isolate the spill using the appropriate spill containment equipment from appropriate spill kits
- During the isolation and containment, appropriate personal protective equipment is to be worn to handle the substance
- Ensure the scene has been secured especially if the spill is located close to stormwater drain.

Clean up and disposal of spills

- All spills will be cleaned up using the appropriate material such as a spill kit, absorbent rags, or sand. Cleanup material shall be collected and removed to an appropriately licensed disposal facility.



The hosing down of spill areas shall be avoided to prevent run-off to soil, stormwater, or sewerage systems.

Air pollution (Fire or Explosion)

Notify relevant management immediately and emergency services if required.

In the event of an evacuation due to fire or explosion, emergency evacuation procedures are to be followed and immediate neighbours notified by direct contact or phone.

If safe to do so the facility will be shut down.

Emergency Evacuation Plan

Complete details are included in the Site Emergency Management Plan. A summary is presented here.

Evacuation

- The fire Alarm is also the evacuation alarm.
- Regardless of the situation if the fire alarm is activated, evacuation must take place and the emergency controller of the section on the site takes responsibility.
- If a clear danger exists, emergency services will be called by the emergency controller.
- The **Emergency controller** or **technical supervisor** may reassess the situation for immediate actions to take place.
- If the designated evacuation point becomes endangered, or the evacuees need to remain outside the premises for an extended period, Personnel will be relocated to a suitable point at the direction of the **emergency controller**.

Head Count

- After evacuation, all persons on site including visitors and contractors shall assemble at the evacuation point.
- The evacuation or assembly point is located at the front of the property, with a secondary location near the boardroom.
- **Emergency response staff** will communicate with personnel to ensure all staff, visitors and contracts are present.
- Missing persons shall be advised to the **emergency controller**, who will then advise the **emergency services**.
- No personnel shall undertake search and rescue for missing persons in endangered areas.

Adjacent Areas

- The occupants of adjacent premises are to be advised if endangered by the emergency.
- Evacuation of adjacent premises is the responsibility of the individual companies and the **emergency services**.

Re-Entry

- Re-entry to the site will not take place until advised by the **emergency services** to do so. This will be relayed to all personnel by the **emergency controller**.

Once the emergency is contained, clean-up operation will commence, utilising Cleanaway Industrial Service Emergency Response Crew (1800 SPILLS) with all liquid waste, fire water etc. being transported to a Cleanaway Technical Services Liquid Treatment Facility.

11.0 STAFF TRAINING [clause 98C(1)(m)] AND TESTING PLAN [clause 98C(1)(n)] and [clause 98E (2a) and (2b)]

Annual toolbox meetings will discuss the training requirements for staff. Training is also provided for the use of the PIRMP to ensure that all staff are aware of the content, processes and requirements of the plan and competently implement if necessary.

Plans must be tested routinely at least once every 12 months. The testing is to be carried out in such a manner as to ensure that the information included in the plan is accurate and up to date, and that each plan is capable of being implemented in a workable and effective manner. Testing may include:

- Desktop scenarios, or
- Physical Scenarios

Testing records will be maintained in the site training register and/or electronically on the 'MyOSH' database (entered as a completed action).

Plans must also be tested within one month of any pollution incident occurring, where the incident occurred in the course of an activity listed on the licence. An assessment as to whether the information included in the plan is accurate and up to date, and the plan is still capable of being implemented in a workable and effective manner must occur.

Date of last PIRMP test:

26 February 2019, conducted by Chris Watkins.

Date of PIRMP update:

06 April 2020

Appendix A - Notification Protocol

Erskine Park Landfill

50 Quarry Road

Erskine Park NSW 2759

EPA Site Licence Number 4865

PROTOCOL FOR INDUSTRY NOTIFICATION OF POLLUTION INCIDENTS

Effective 6 February 2012 all NSW sites licensed with the EPA are required to **immediately notify each** of the relevant authorities when material harm to the environment is caused or threatened.

All the below authorities must be notified not just the appropriate regulatory authority

1 **Call 000 if the incident presents an immediate threat to human health or property.** Fire and Rescue, the NSW Police and the NSW Ambulance are the first responders responsible for controlling and containing incidents.

2 If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order:

Environment Protection Authority	131 555
The NSW Ministry of Health	(02) 9391 9000 ask Public Health Officer on call
Penrith Public Health Unit	(02) 4734 2022 (02 4734 2000 (after hours))
SafeWork	13 10 50
Comcare	1300 366 979
Penrith City Council	(02) 4732 7777
Fire and Rescue	000
Fire and Rescue without immediate threat	1300 729 579

Also call CWY Spill response 1800 SPILLS (1800 774 557), if appropriate.

In the event of a notifiable incident, the following neighbours will also be contacted by phone or in person, as appropriate under the circumstances.

Business name	Contact Number
CEVA	(02) 9931 9900
Dincel Construction Systems	(02) 9670 1633
Stramit	(02) 9834 0900
Bluescope	02 9670 8600

Business name	Contact Number
Dutt Transport	1300 883 477
CSR Limited	(02) 9235 8000
EHI Australia	(02) 9670 0400
Digital Realty Data Centre	(02) 9834 0100
DB Schenker	(02) 9333 0333
Darley Aluminium Trading Pty Ltd	(02) 8887 2888
SCT Logistics	(02) 9765 8600
Mulgoa Quarries Pty Ltd	(02) 4723 9900
Tutt Bryant Hire	(02) 8777 0300
Dincel Construction System	(02) 9670 1633
Devondale Murray Goulburn	(02) 8857 4500
Brand Link	1300 724 417
Dexion Seven Hills	(02) 9838 7770
Independent Liquor Group	(02) 9675 8400
Summit Global	(02) 9670 0600
Loscam	(02) 8047 9510
Other Potentially Affected Neighbours in Erskine Park	Notify Potentially affected neighbours in conjunction with Fire Brigade notification system

Impacts on the broader community are variable and depend on location, or other factors such as wind direction and velocity. In the event of a pollution incident occurring (such as a Fire) which has the potential to impact residential areas, communication methods will be used on a case by case basis and in all situations Cleanaway will liaise with Penrith Council and Fire and Rescue to provide early warnings to directly affected residents by the mechanisms described below. Early warnings are to include details of what the imminent incident is and how those affected can prepare and respond to the incident. The notification shall provide specific information to the neighbouring properties and local community, so it can minimise the risk of harm.

In the event of a pollution incident Cleanaway, in consultation with Penrith Council, will attempt to provide early warning to directly the community by the following mechanisms as appropriate:

- Telephone calls or door knocking (where appropriate);

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- Mail box drops;
- Warning signs;
- Local media source (radio/newspapers);
- Penrith Council webpage updates and media releases; and
- Penrith Council website address is www.penrithcity.nsw.gov.au

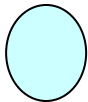
Appendix B - Maps [clause 98C(1)(k)]
Map 1 shows general Location of site and neighbours.



Map 2 shows location of emergency equipment, Water retention dams, Water Tanker, Excavator and Dump Truck Parking Location



Legend:



Water Retention Dam



Water Tanker Parking



Water Pump




Underground Pipeline



Dump Truck Parking



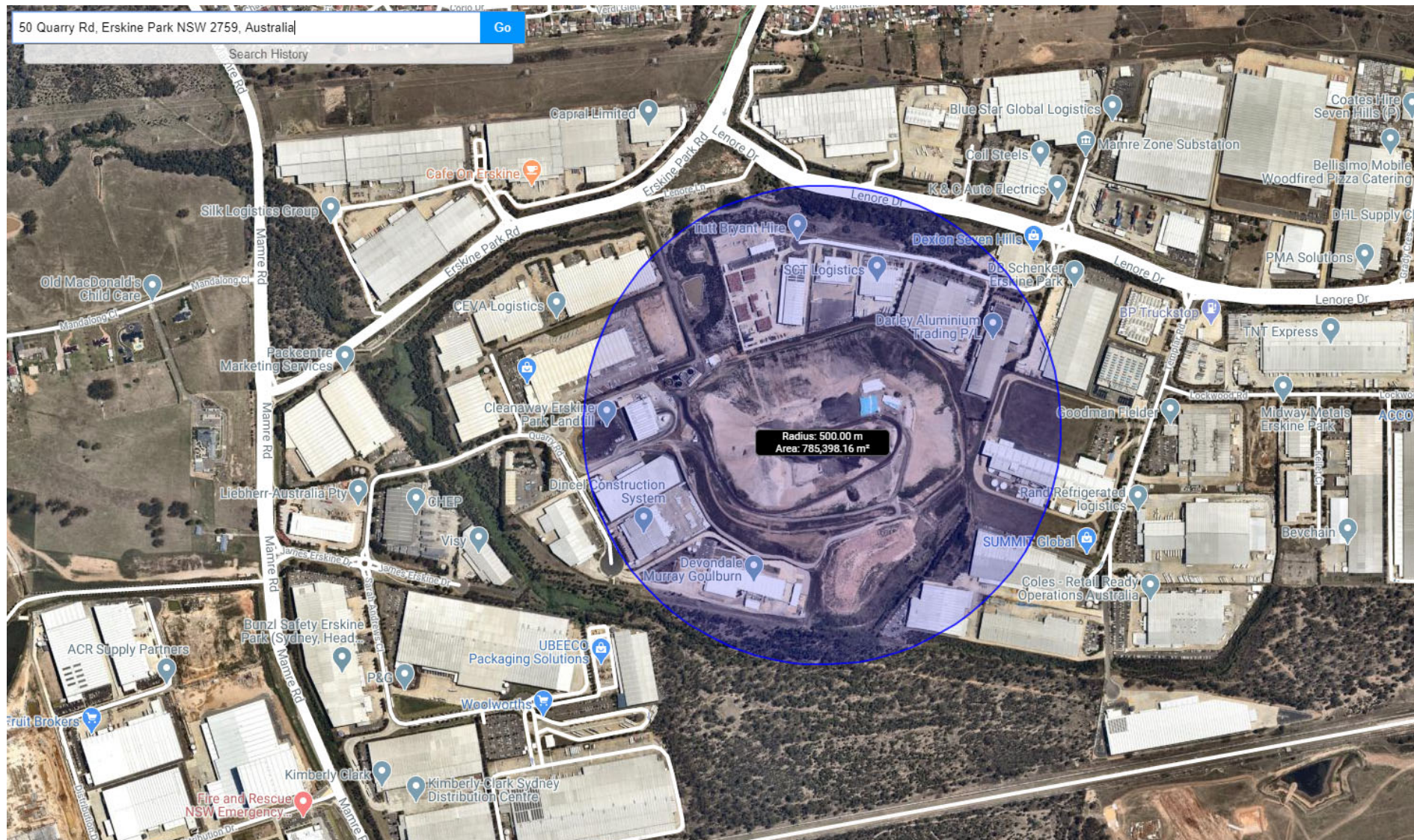
Excavator Parking



Leachate Treatment Plant

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Map 3 shows site location with a 500 metre radius



APPENDIX I

Important Information relating to this Report

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification



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