Gipps Street Reserve

Environmental and Safety Requirements

PENRITH
CITY COUNCIL

Document Version	
Author	Divisional Assurance and Security Operations
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Contents

1. Introduction

Gipps Street Recreation Precinct is located at 34 Gipps Street, Claremont Meadows, and is a former landfill site which was operated by Penrith City Council. The landfill site was operational from the 1950s to the mid-1980s for the disposal of household and some industrial waste. The site is approximately 32 hectares in size.

In 2024, the site was developed into a major recreation precinct.

The site has a Long Term Environmental Management Plan (LTEMP) which outlines specific environmental and safety requirements for the site. This document summarises the *Gipps Street Long Term Environmental Management Plan (LTEMP) Volume 1-5* and is provided as a summary to stakeholders to assist with operational, environmental and work health and safety management. As this is a summary document, stakeholders should refer to the LTEMP documents for further details.

Key Contacts for Gipps Street

A contractor's primary contact when undertaking work on the site is the Penrith City Council employee who engaged them, however, the following should also be noted by contractors:

Issue	Department	Contact
LTEMP Manager, including Gipps Street Site Permits	Divisional Assurance and Security Operations	Asbestos.notification@penrith.city Or via phone • Tamryn Elks – (02) 4732 8066/0429 032 297 • Adrian Estreich – (02) 4732 8014 • Divisional Assurance and Security Operations Team – (02) 4732 8647
Enquiries or issues with landfill gas, capping management and the leachate management system		

2. Work Health and Safety Requirements

Penrith City Council has Work Health and Safety (WHS) responsibilities at Gipps Street Recreation Precinct for workers, contractors and site users. Aside from standard WHS risks and hazards, Gipps Street presents a number of specific WHS challenges due to being an old landfill site. These include:

- Landfill gas
- Asbestos
- Capping Management
- Leachate

The following outlines the Work Health and Safety Requirements for contractors who undertake work at Gipps Street Recreation Precinct:

1. Contractors are to complete the Gipps Street Reserve Environmental and Safety Online Induction
2. Contractors are to also complete Penrith City Council's Construction and Maintenance Online Safety Induction Module
3. Contractors are to complete an appropriate risk assessment and implement appropriate safety procedures and controls (e.g. SWMS) prior to commencing work. The risk assessment and controls are to consider the information within this document and the LTEMP, including (but not limited to) risks associated with landfill gas, leachate, asbestos and capping management.
4. Ensure that all workers engage in work for Penrith City Council have received all required inductions and training required and that they hold any required licenses, qualifications or competencies.
5. When undertaking hot works and works within confined spaces, the contractor is to have their work permit process in place and issue a work permit prior to works commencing.
6. Prior to works, obtain a Gipps Street Site Work Permit as outlined in Section 3 of this document.

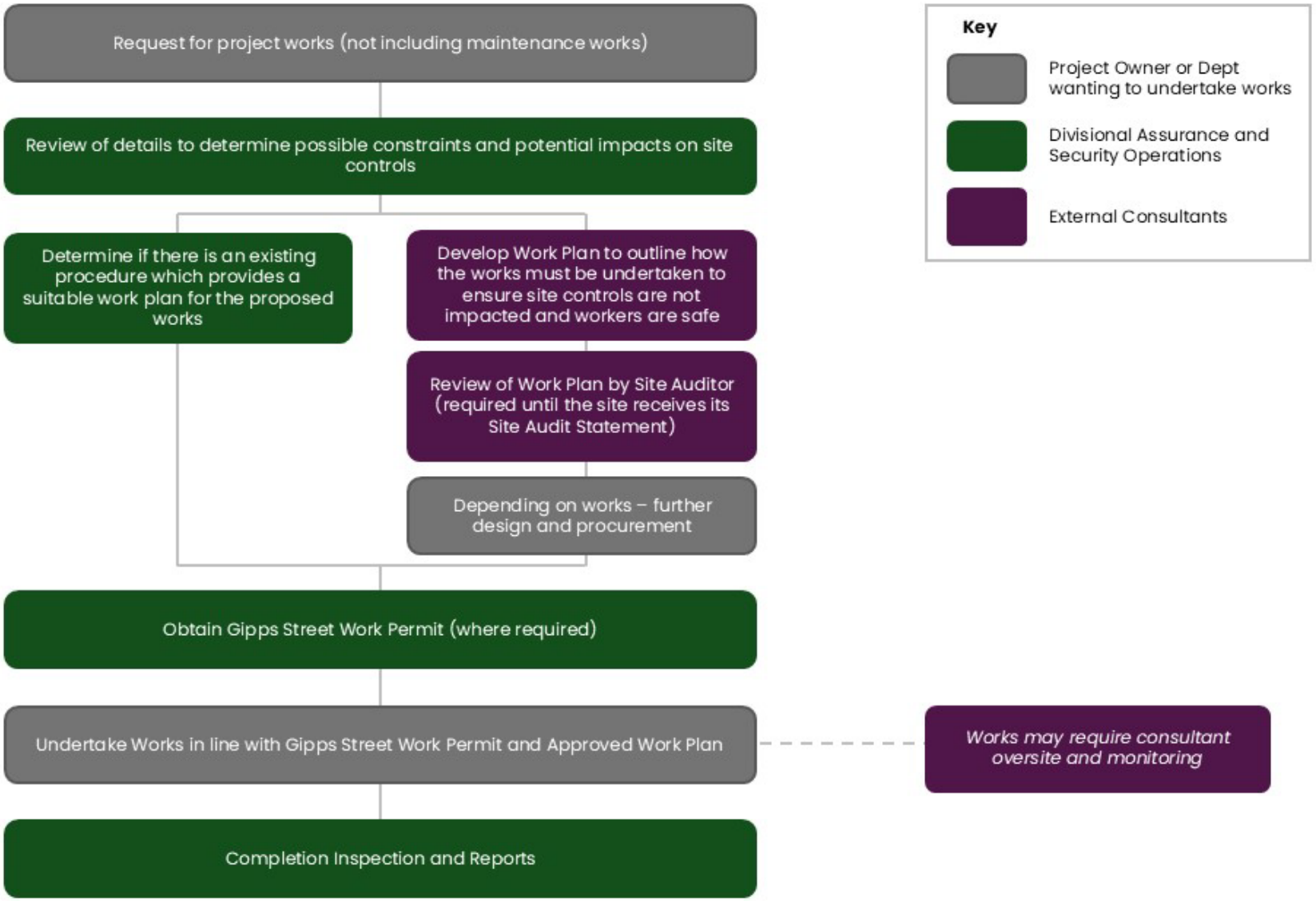
3. Work requirements to ensure safety and environmental matters are considered

Certain works on site will require an identified or specific work plan to be developed to ensure that all appropriate site risks and requirements are considered and managed during the works and that those works do not create any long term issues on the site.

An example of this could be the installation of fencing, which could result in the capping layer being breached, causing safety concerns such as exposure to waste and asbestos and environmental concerns such as landfill gas and capping reinstatement issues.

To assist stakeholders, the following flowchart has been developed to provide a summary of the ways project and non-standard maintenance work will need to be managed on site.

Gipps Street Work Flowchart



4. Gipps Street Site Work Permit Requirements

4.1 Why is there a work permit process in place for Gipps Street?

Specific Gipps Street Work Permits allows the LTEMP Manager to ensure that site specific risks are considered, and suitable controls are implemented for identified high risk activities.

In turn, it also allows the LTEMP Manager to ensure that the environmental controls on the site (e.g. landfill gas mitigation system, leachate management system, capping, etc) are not adversely impacted by the activities being undertaken. This is important as the cost to repair or undertake remedial works on environmental controls can be considerable.

4.2 What works require a specific Gipps Street Work Permit?

The following works require approval from the LTEMP Manager prior to being undertaken:

Work Around Buildings

1. Any subsurface works (of any depth) and hot works within 1 metre of buildings on site.
2. Any proposed penetration of building concrete slabs.

Asbestos Management Areas

3. Any works that involve ground penetration or excavation equal to or greater to 100mm.

Other Capping Areas

4. Any works that involve ground penetration or excavation equal to or greater than 500mm in depth.

Confined Spaces

5. Any works that involved confined spaces on site.

Leachate Management System

6. Any works that will impact the leachate management infrastructure.

Notes:

- Stakeholders are to consider the time required to compile a Site Permit request and the subsequent assessment time of the Site Permit application the LTEMP Manager will require.
- Umbrella Permits maybe granted to contractors who undertake regular and/or on going works on site.
- The Gipps Street Site Work Permit will include additional controls and requirements as outlined below.

5. Landfill Gas Summary

As an old landfill site, there is a risk associated with landfill gas on site when certain works are being undertaken in identified areas. Landfill gas (LFG) can be hazardous at various concentrations for different gases due to a number of factors, including being:

- Explosive.
- Flammable.
- Able to asphyxiate (primarily due to the displacement of oxygen); and
- Toxic (including *inter alia* causing headaches, nausea, dizziness, fainting).

The areas of the site where landfill gas should be considered as part of any risk assessment are:

- The amenities building
- Toilet blocks
- Irrigation Shed
- Pump out Room

Although a landfill gas mitigation system has been installed for the buildings on site, specific WHS risk assessment and safety controls are required to minimise the risk to workers on site. The following information has been provided to assist contractors with that process.

Landfill Gas Levels and Associated Risks

LFG	Explosive range	Toxicity	Screening criteria
Methane (CH_4)	5-15% v/v	-	1.25% (12,500 ppm)

Carbon Dioxide (CO_2)	-	20,000 ppm	0.5% (5,000 ppm)
Carbon Monoxide (CO)	12.5-74.2% v/v	100 ppm	30 ppm
Hydrogen Sulphide (H_2S)	4.5-45.5% v/v	20 ppm	10 ppm
VOC (general)	variable	variable	15 ppm
Benzene	1.2-7.1% v/v	3.2 (mg/m^3)	1 ppm
Toluene	1.1-7.1% v/v	191 (mg/m^3)	8 ppm
Naphthalene	0.9-5.9% v/v	3 (mg/m^3)	0.3 ppm
Oxygen	-	-	19.5%-23.5% (range)

Landfill gas mitigation systems

A LFG mitigation system has been installed for each building on site and comprises a combination of components which are summarised below**.**

Building / structure	Mitigation measures implemented
Amenities Building	• Gas collection layer ('gravel blanket') including associated pipework, risers with rotating cowls, LFG monitoring points and pump out points. • HDPE geomembrane • Compacted bentonite and pipe boot around piles and pump out points (LFG-2 and LFG-4) • Clay rich fill (not a clay cap) • Concrete slab • Louvres
Toilet Blocks (1 and 2)	• Concrete slab • Clay cap

	• Rotating cowl for the plant room • Vented door for the plant room • Louvres
Colorbond Shed	• Concrete slab • Clay cap • Rotating cowls
Pump out Room	• Concrete slab • Clay cap • Louvres

LTEMP requirements to adverse LFG conditions.

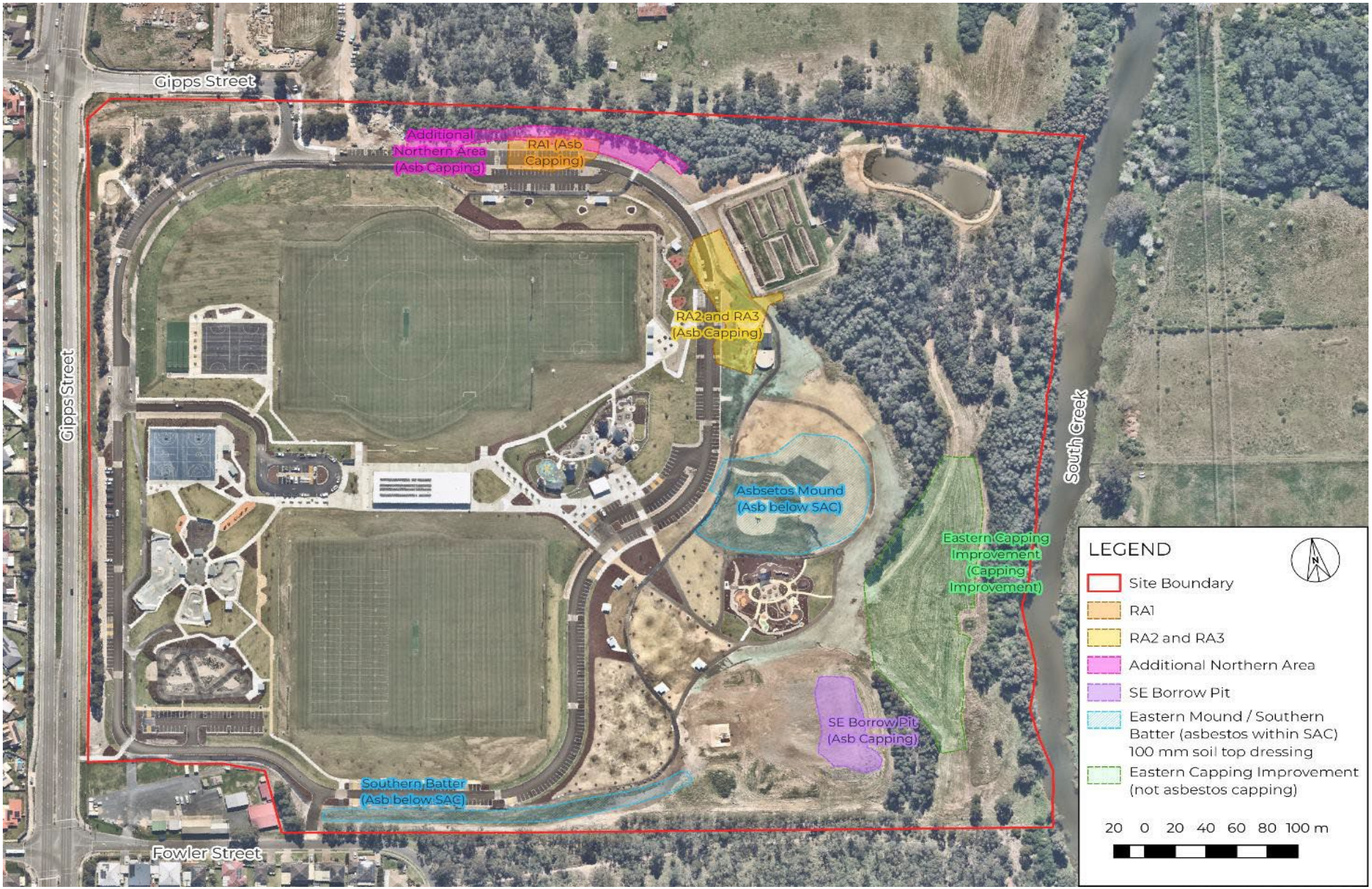
If methane is recorded between 1% v/v (~10 000ppm)

Note: Re-occupation of the building is only to occur following the review of the situation by the LTEMP Manager. Depending on the situation approval may also need to be obtained from NSW EPA, NSW Fire and Rescue and the engaged consultant.

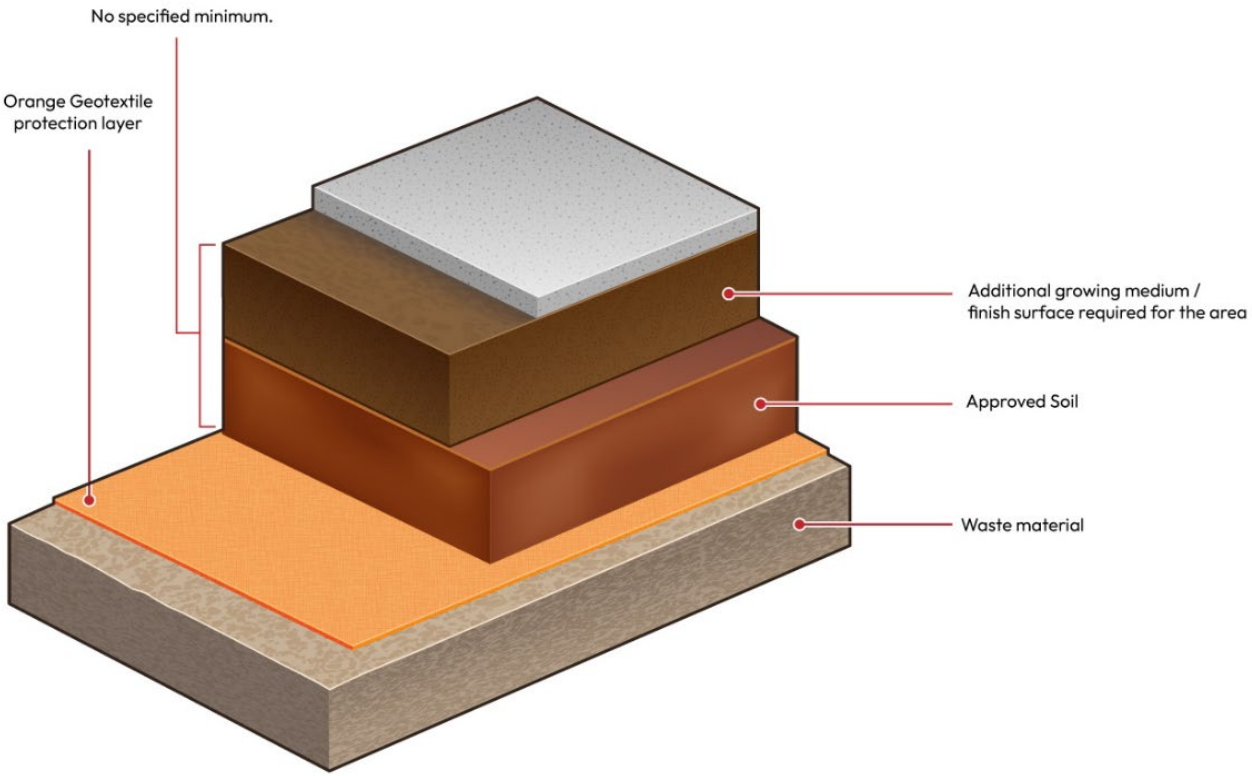
6. Asbestos Management Summary

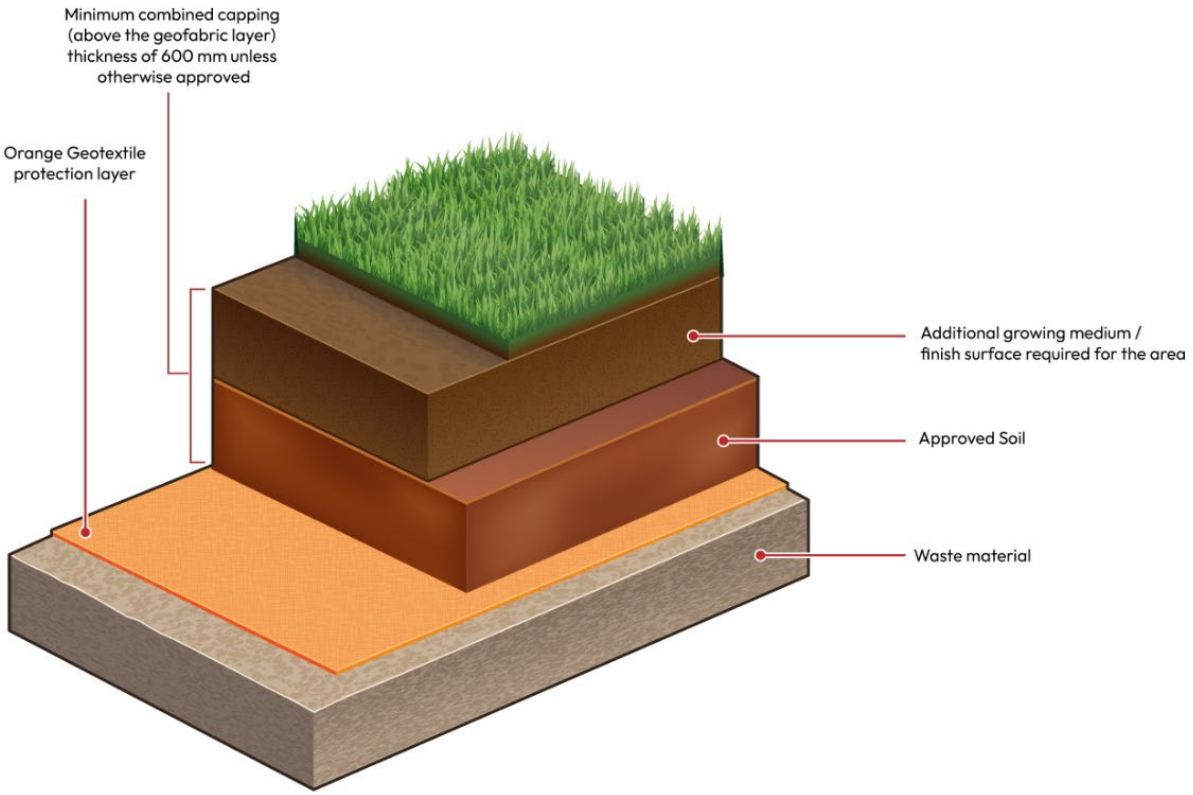
There are areas on the site where asbestos was found above the original capping and required further capping. These are identified in the table on page 18 and the site plan on page 17.

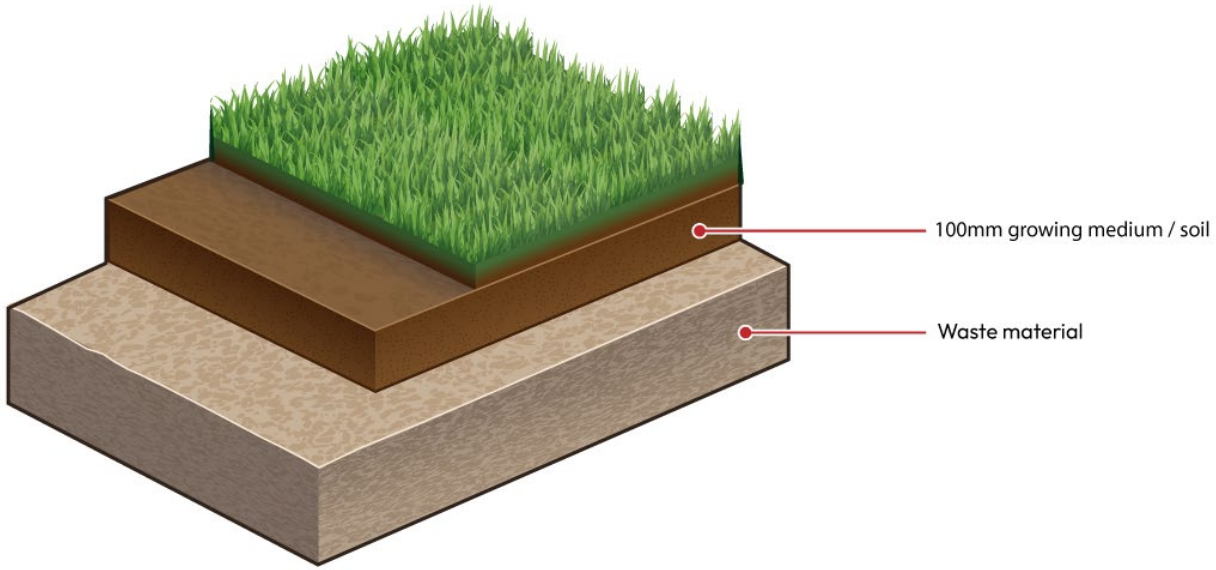
As outlined in Section 3 of this document, any works that involve ground penetration or excavation equal to or greater than 100mm require a Gipps Street Site Work Permit.


Gipps Street
Gipps Street
Fowler Street
South Creek
Additional Northern Area (Asb Capping)
RA1 (Asb Capping)
RA2 and RA3 (Asb Capping)
Asbsetos Mound (Asb below SAC)
Eastern Capping Improvement (Capping Improvement)
SE Borrow Pit (Asb Capping)
Southern Batter (Asb below SAC)
LEGEND
Site Boundary
RA1
RA2 and RA3
Additional Northern Area
SE Borrow Pit
Eastern Mound / Southern Batter (asbestos within SAC) 100 mm soil top dressing
Eastern Capping Improvement (not asbestos capping)
20 0 20 40 60 80 100 m

Capping area	Marker layer present	Finish description	Capping thickness
RA1 (northern area) [Marked as  in the plan on page 17]	Yes	Finished surface (combination of asphalt and vegetation)	≥ 0.6 m
RA3 (adjacent to western side of leachate treatment system) [Marked as  in the plan on page 17]	Yes	Finished surface (combination of asphalt and vegetation)	0.3 m to 0.9 m
Reduced Capping Area north of RA1 [Marked as  in the plan on page 17]	Yes	Natural Vegetation	≥ 0.3 m
SE Borrow Pit [Marked as  in the plan on page 17]	Yes	Natural Vegetation	≥ 1.5 m
UF1 (Eastern Mound) and UF2 (Southern Batter) [Marked as  in the plan on page 17]	No	Turf	≥ 100 mm

Asbestos Capping	Representative Diagram (not to scale)
Asbestos Capping Areas - Hardstand	

Asbestos Capping	Representative Diagram (not to scale)
Asbestos Capping Areas - Soft landscaping	

Asbestos Capping	Representative Diagram (not to scale)
Asbestos Capping Areas (Eastern and South Batter)	

7. Capping Management

The purpose of the landfill cap is to provide a barrier to prevent exposure of the landfill at the site surface, minimise infiltration of surface water into the landfill and to prevent migration of ground gas to the site surface.

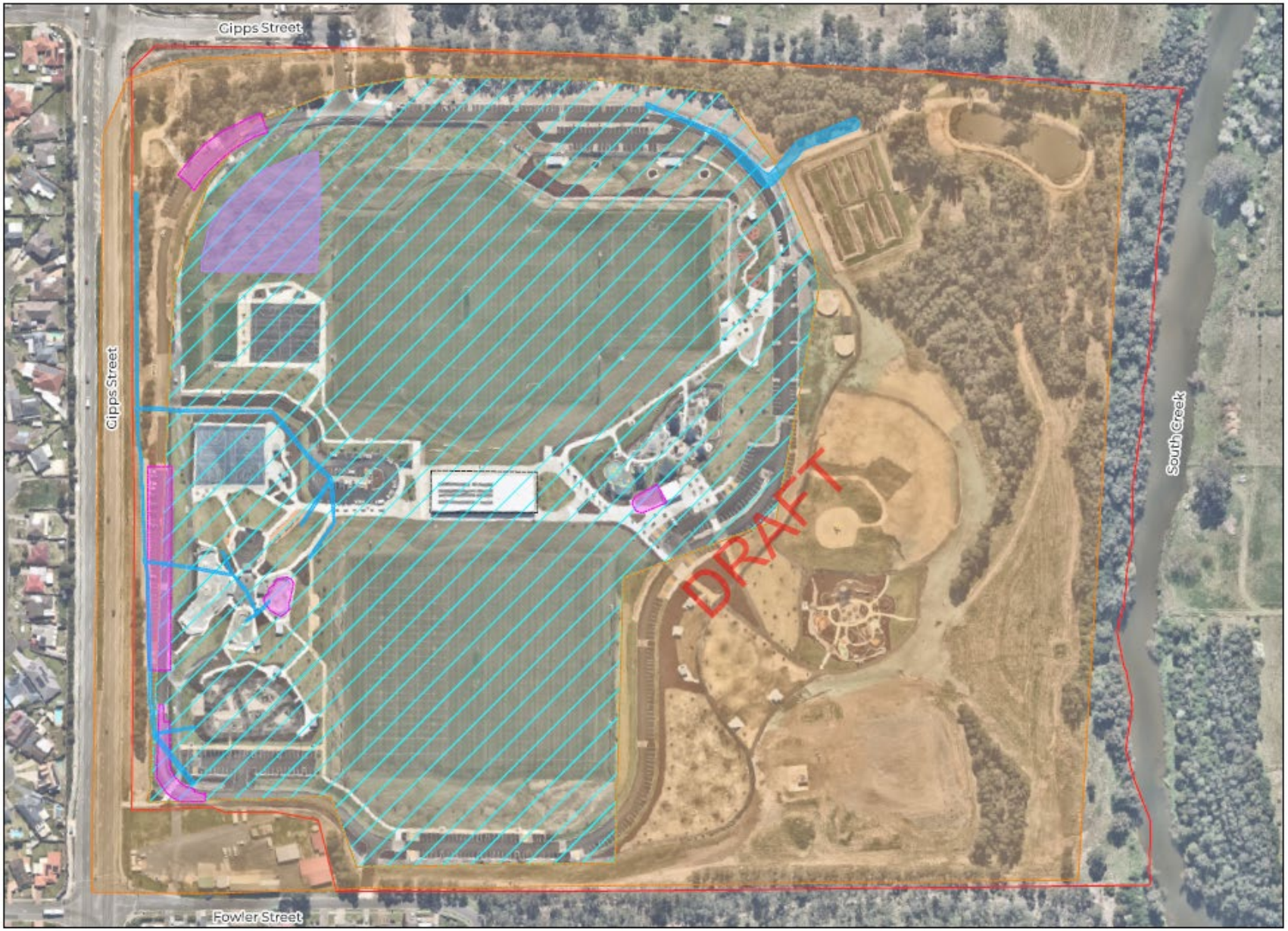
An existing landfill cap had already been constructed across the site, however, due to the redevelopment of the site for the Gipps Street Recreational Precinct, much of the site has been cut and filled changing the thickness of the capping across the site. As such, the LTEMP records the changes in the capping.

Capping Details

The site comprises of a capping layer which is covered by a range of materials, which could include:

- Clay, soil and growing mediums
- Asphalt
- Concrete
- Soft rubber
- Turf
- Mulch

To ensure that workers and contractors minimise the impact to the capping layer and any work health and safety risks are appropriately considered, it is important for workers to understand the capping layers across the site. The details on pages 23 to 28 provides stakeholders with a representation of the capping layer.



Pre-2006 capping area (Coffey, 2012)

Minimum depth to capping 0.4m

Post-2006 capping area (Coffey, 2012)

Minimum depth to capping 0.7m

Cut areas with alternative GCL capping

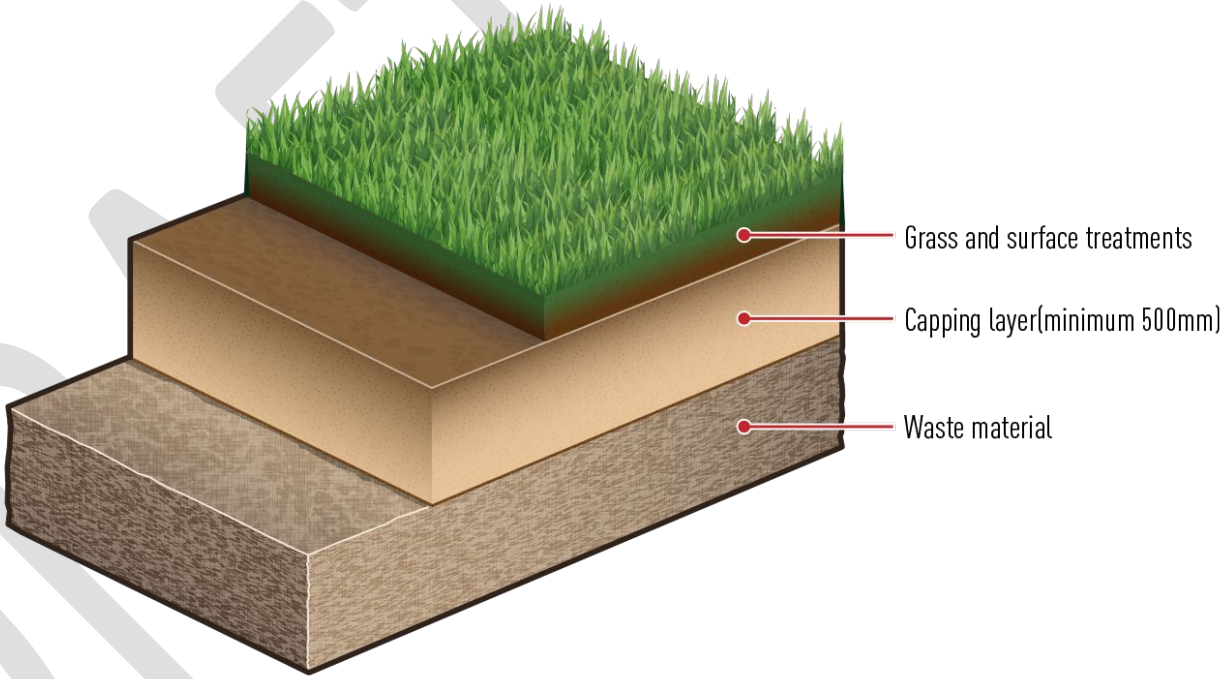
Minimum depth to capping 0.41m

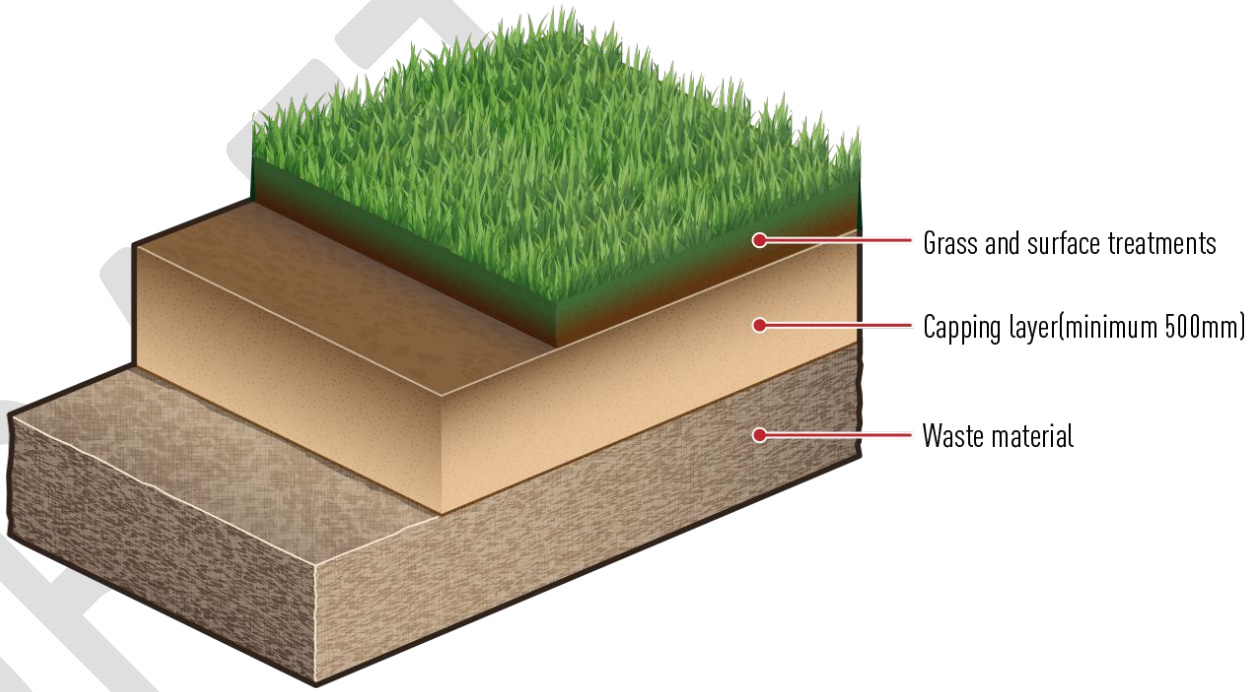
Stormwater trenches with alternative GCL capping

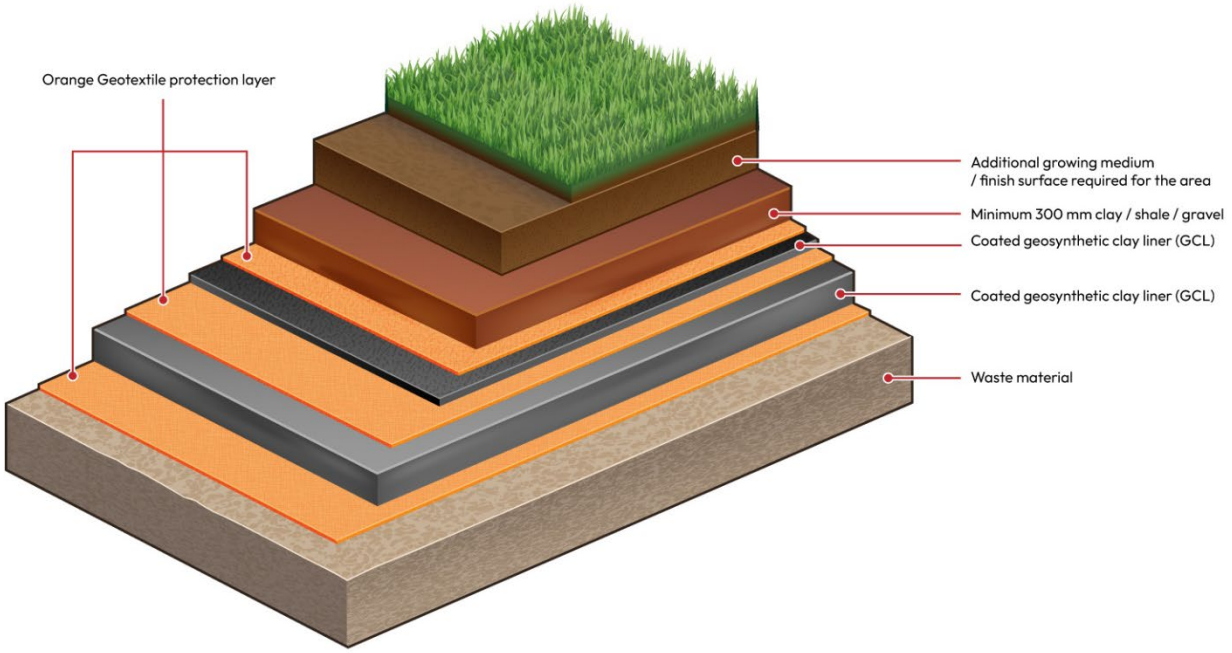
Minimum depth to capping 0.1m

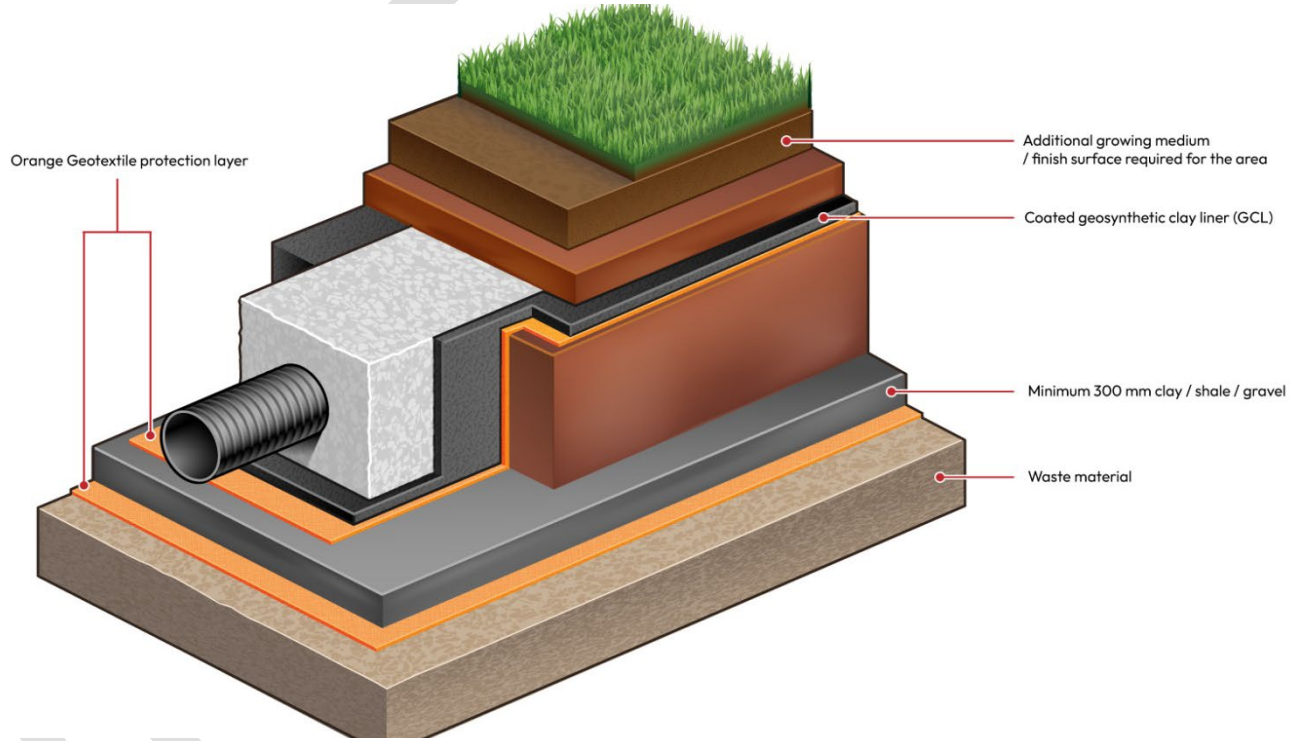
NW Borrow Pit with reinstated clay capping

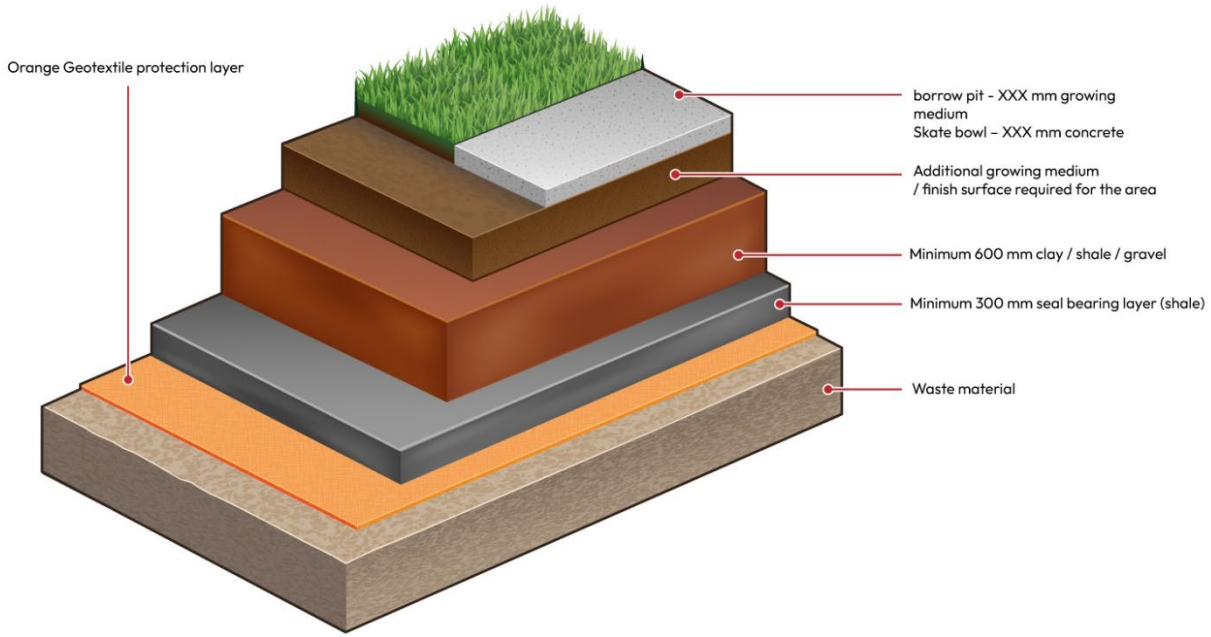
Minimum depth to capping 0.1m

Capping area	Depth to capping layer	Capping thickness minimum (m)	Representative Diagram (not to scale)
General site 'fill' areas (Post 2006) ***That did not require landfill capping reinstatement*** [Marked as ▭ on the plan on page 23]	Approx. 0.7m- 3.4m	Minimum ≥0.5m	
General site 'fill' areas (Pre 2006) ***that did not require landfill capping reinstatement*** [Marked as ▭ on the plan on page 23]	Approx. 0.4m	Minimum ≥0.5m	

Capping area	Depth to capping layer	Capping thickness minimum (m)	Representative Diagram (not to scale)
Capping in 'cut' areas that did not require landfill capping reinstatement [Marked as ▭ in the plan on page 23]	Approx. 0.1m	Minimum ≥0.5m	

Capping area	Depth to capping layer	Capping thickness minimum (m)	Representative Diagram (not to scale)
General site 'cut' areas that required alternate GCL capping reinstatement [Marked as ▭ in the plan on page 23]	Approx. 0.1m	Minimum ≥0.5m	

Capping area	Depth to capping layer	Capping thickness minimum (m)	Representative Diagram (not to scale)
Stormwater trenches with alternative GCL capping reinstatement [Marked as ▭ in the plan on page 23]	Approx. 0.1m	Minimum ≥0.5m	

Capping area	Depth to capping layer	Capping thickness minimum (m)	Representative Diagram (not to scale)
NW borrow pit with reinstated clay capping [Marked as ▭ in the plan on page 23]	Approx. 0.1m	Minimum ≥ 1.6 m	

Work Requirements - General Management (for surface works / near surface works)

Generally, works on the surface or near the surface (such as grass cutting, garden maintenance and less than 100mm) are not impacted by the specific site risks (e.g. asbestos, leachate, gas, etc).

However, all non-intrusive maintenance works on existing stormwater alignment / services and works on building structures are to be treated as having the potential to be impacted by landfill gas and landfill gas monitoring is to be carried out during works.

If landfill capping is encountered during works, all works are to stop, and Penrith City Council is to be contacted as soon as practicably possible.

Work Requirements - Shallow intrusive works less than 500mm in depth (not including work in asbestos management areas)

Management measures for works with shallow excavations not likely to penetrate the capping, such as, but not limited to, shallow service excavations, on grade carpark construction, installation of signage, park benches, include:

- All intrusive maintenance works on or nearby to the stormwater alignment / services are to be treated as having the potential to be impacted by landfill gas. Works in these areas shall not be undertaken until the LTEMP Manager has been contacted for advice.
- There are areas across the site where asbestos impacted soil has been buried above the landfill base capping layers. Stakeholders are to review Section 3 of this document and Volume 5 of the LTEMP for further information.
- If there is uncertainty as to whether planned works will penetrate the cap, stakeholders shall contact the LTEMP Manager. In turn, there may be some circumstances that an experienced environmental consultant will need to be engaged to provide advice. This will be at a cost to the team undertaking the work.
- If landfill capping is encountered unexpectedly during works, all works are to stop and the LTEMP Manager is to be contacted as soon as practicably possible.

Work Requirements - Intrusive works equal to or below 500mm

Any intrusive works that will reach or go beneath the marker layer, will require approval from the LTEMP Manager.

Work Requirements - Asbestos management areas

Refer to Section 5 of this Document.

Work Requirements - Landfill gas and asbestos monitoring requirements for excavation works

Monitoring for landfill gas is required during the course of all excavation works likely to intercept the landfill below the capping layers. If there is uncertainty as to whether the landfill will be intercepted, then LFG monitoring must be carried out as a precaution.

Monitoring for airborne asbestos fibres is to be carried out by a licensed asbestos assessor prior to exposure of and during periods of work within the capped contaminated soils at positions nominated by the licensed asbestos assessor.

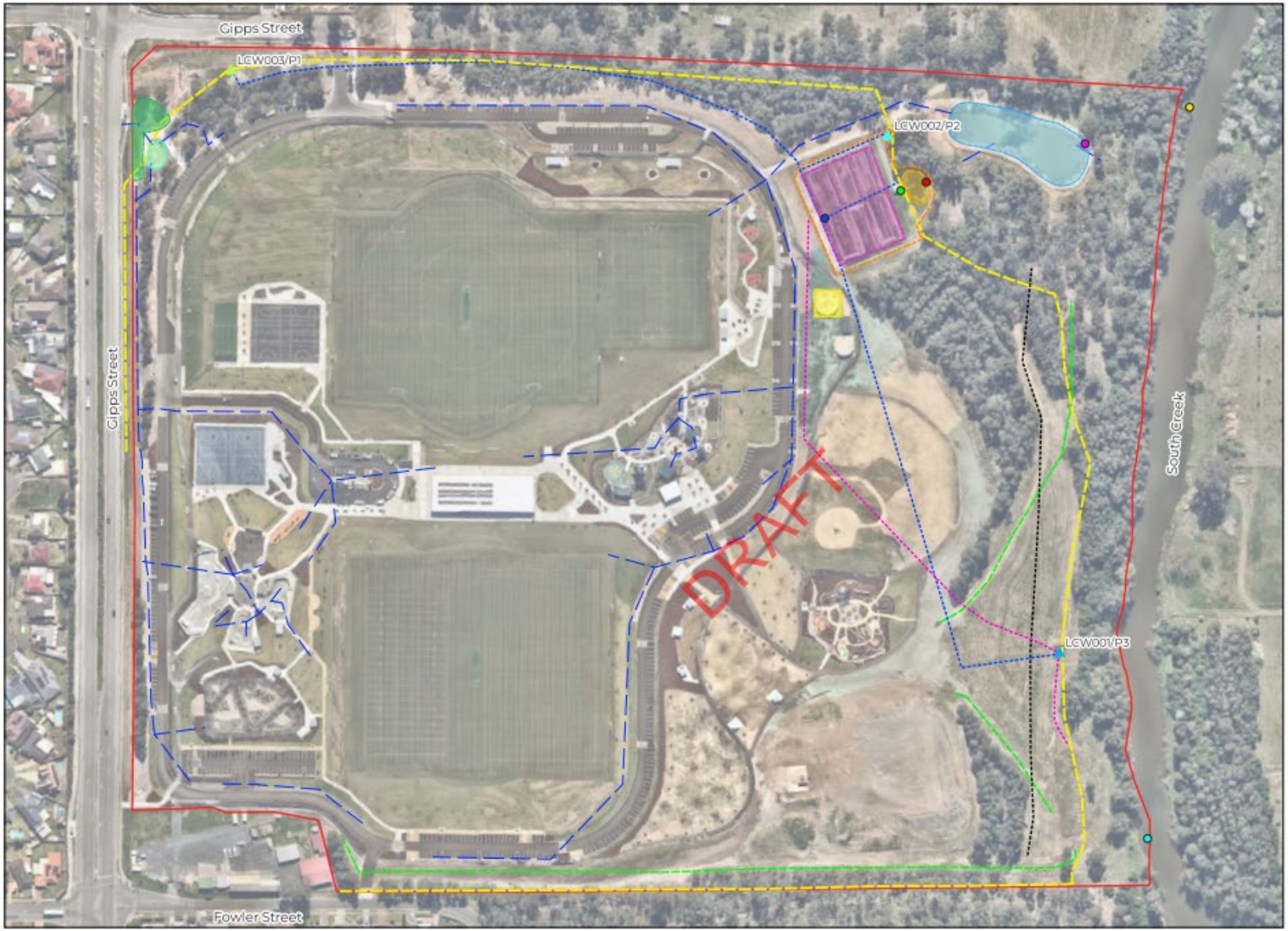
8. Leachate Management System Summary

Location of Leachate Management System (LMS) Infrastructure

Refer to Site Plan on Page 32.

WHS and Operational Hazards related to the Leachate on site

WHS and Operational Hazard	Notes
Contact with treated and untreated leachate.	There is both treated and untreated leachate present on site. The untreated leachate is below the surface and drains into a leachate treatment system which then directs the untreated leachate into a treatment system. The treated leachate is present above ground within the leachate treatment fenced off area. Neither the quality of the untreated or treated leachate presents a health risk to workers, unless ingested in sufficient quantities. However, there are some recommendations and requirements outlined on page 34
Unauthorised discharge of leachate into stormwater detention pond	During extreme wet weather, leachate may overflow from the leachate treatment pond into the stormwater detention pond. It should be noted that the Work Health and Safety risks are extremely low due to the leachate being treated and the dilution of contaminates via stormwater. However, the use of the detention pond water for irrigation purposes will need to be suspended until water quality is proven to be safe for irrigation purposes.
Damage to the LMS	Damage to the LMS has the potential to expose workers and the community to treated and untreated leachate. It could also result in significant costs to repair and reinstate the system.



SITE LOCATION

LEGEND

- Site Boundary
- Treatment Cells
- Treated Leachate Pond
- ~~Bioretention Basin~~
- ~~Onsite Detention Basin~~
- ~~Stormwater Detention Basin~~
- Leachate Holding Tanks
- LTS Fence
- Leachate Collection Trench
- Rising Main
- Electrical
- Grass Swale
- Surface Drainage in Cap
- Stormwater Trench Lines
- LCW001/Pump 3
- LCW002/Pump 2
- LCW003/Pump 1
- Sewer Boundary Trap
- TLP Outlet Pipe (Closed at all times)
- Overflow point to South Creek (Valve closed at all times)
- Treatment discharge point
- Downstream UD001
- Upstream US001

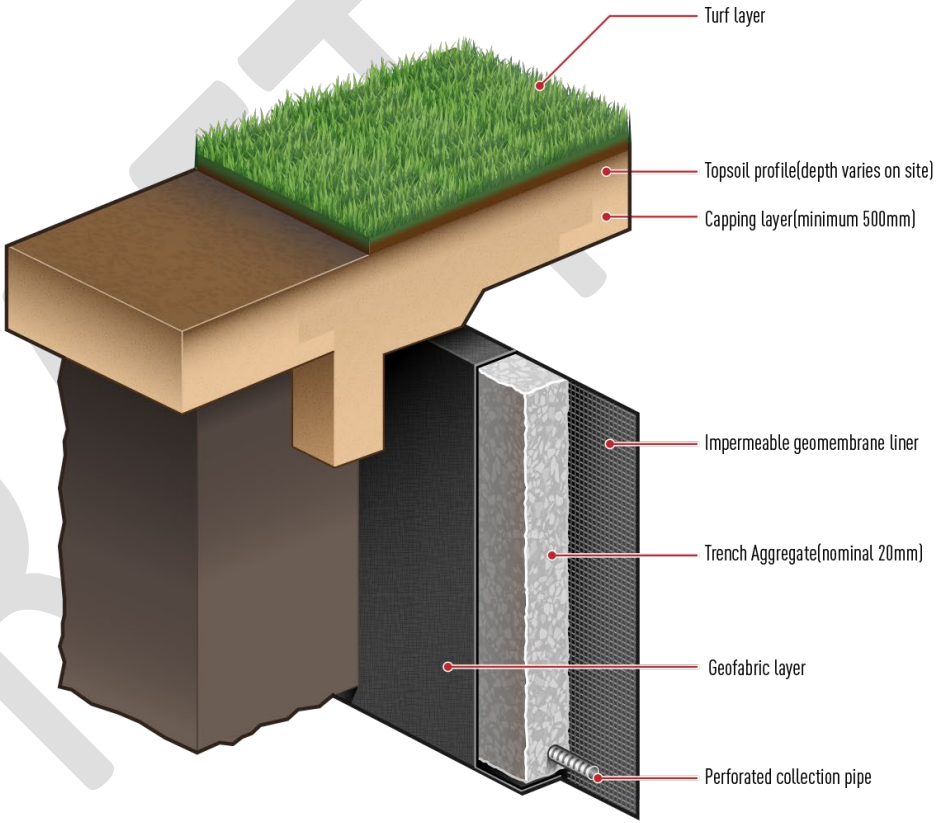
20 0 20 40 60 80 100 m

These are not part of the LMS

NOTE:
1. Drawing projection in GDA94 / MGA zone 56, adapted from aerial imagery from nearmap.com dated 29.08.2024
2. Boundaries and site features shown are approximate only

Douglas PARTNERS

CLIENT: Penrith City Council		TITLE: **Leachate treatment system features**	PROJECT: 92291.12
OFFICE: Sydney	DRAWN BY: LT	**Gipps Street Recreational Precinct**	DRAWING No: V3-1
SCALE: 1:2400 @A3	DATE: 09.September.2024	**Corner of Gipps Street and Great Western Highway, Claremont Meadows**	REVISION: 0

	Depth to base	Representative Diagram (not to scale)
Leachate Trench around the site [Marked as a yellow line in the plan on page 32]	Up to 4 metres	

Work Requirements

1. Any works within the leachate treatment system area or to do with the leachate management infrastructure will require approval from the LTEMP Manager prior to being undertaken.

2. When there is a potential to come in contact with leachate it is recommended that direct skin contact with the leachate is to be avoided. Full length clothing and nitrile gloves shall be worn whenever contact with the leachate (treated or untreated) may occur (i.e. during operations, maintenance and monitoring). If direct skin contact occurs, the skin should be washed with potable water.

3. Where there is a risk of splashback, safety glasses are to be used.

4. The leachate well lids are made of concrete with metal manhole lids. These lids are heavy and so lifting may result in manual handling injuries. It is recommended that appropriate manhole lifting devices be used to remove and replace the lids, or mechanical devices (backhoe or truck mounted crane), when sampling the leachate.

5. If workers identify a possible leachate break out, they are to notify the LTEMP Manager as soon as possible. The area should also be cordoned off with parra-webbing or tape until assessed.

No workers are to enter the LMS confined spaces unless they are appropriately trained, have obtained a permit and have an appropriate Safe Work Method Statement in place. Any confined space work will require a confined space work permit issued through the contractors internal process and approval from the LTEMP Manager.

9. Underground Services

Water, sewerage, electrical and leachate services exist on the site. It has been advised that all services had been buried to a minimum depth of 450mm as part of the civil works on site.

However, when the final landscaping and shaping of the site was undertaken, there is a chance that in some areas that the depth of the services may be reduced to less than 450mm. It is not possible to know if or where this may have occurred.

With the above in mind, contractors shall review and become familiar with the location of services on the site. That information can be found here:

https://assetinformation.penrith.city/properties