



Tharbogang Landfill

Environmental Management Plan

Acknowledgement of Country:

Restore Environmental Consultants acknowledges and respects all Aboriginal and Torres Strait Islander people as the enduring custodians of the Country on which we work and live.

This document should be referenced as:

Restore Environmental Consultants 2024. *Tharbogang Landfill Environmental Management Plan*. Prepared for Griffith City Council.

Project reference: 23020

Document control and acknowledgement:

This version of the report is largely based on documentation prepared by Collaborative Planning and Engineering Associates Pty Ltd and Engenuity Solutions Holding Pty Ltd on behalf of Griffith City Council.

The assistance of Griffith City Council’s Waste Operations Manager, Mr John Roser, in the preparation of this document is gratefully acknowledged.

Revision	Date	Prepared and authorised by
1	16/6/2016	Collaborative Planning and Engineering Associates Pty Ltd
2	10/2/2021	Collaborative Planning and Engineering Associates Pty Ltd, and Engenuity Solutions Holding Pty Ltd
3	5/7/2024	Restore Environmental Consultants

Disclaimer: Mapping in this report is indicative. The location of important features should be confirmed by a registered surveyor.

Contents

Contents	ii
List of Figures	v
List of Tables	v
Abbreviations	vi
1. Strategic Context	1
1.1. Background	1
1.2. Landfill and Quarrying Limits	3
1.3. Statutory Requirements	4
1.4. Licensing Requirements	6
1.5. Related Plans	6
1.6. Landfill Guidelines	8
2. Site overview	10
2.1. Topography	10
2.2. Geology	10
2.3. Soils	11
2.4. Hydrogeology	11
2.5. Groundwater	12
2.6. Surface Water	14
2.7. Climate	14
2.8. Ecology	16
2.8.1. Flora	16
2.8.2. Weeds	16
2.8.3. Fauna	16
3. Environmental Objectives	17
4. Cell Construction	19
4.1. Site Specific Waste Management Approach	19
4.2. New Landfill Design	19
4.2.1. Cell Design	19
4.2.2. Landfill Base Layers and HDPE Membrane	20
4.2.3. Leachate Drainage and Storage	20
4.2.4. Commissioning Sequence for Landfill Cells	20
4.3. Transition from Existing Landfill to New Landfill Cell	21

5. Waste Transfer Station Procedures	22
5.1. Accepted Wastes	22
5.2. Waste Reception Procedures	22
5.3. Waste storage procedures.....	23
5.4. Prohibited Waste Management and Protocols	25
5.5. Hazardous Waste Management and Protocols	26
5.6. Routine Operational and Monitoring Procedures.....	27
5.7. Removal of Recyclables	27
5.7.1. Mixed Recyclables	28
5.7.2. Scrap Metal	28
5.7.3. Used Oils	28
5.7.4. Green Waste.....	28
5.7.5. E-Waste.....	29
5.7.6. Tyres and Mattresses.....	29
5.7.7. Household Hazardous Waste	29
5.8. Traffic Management.....	29
5.9. Scavenger Rights and Responsibilities (nil)	30
6. Landfill Operation Procedures	31
6.1. Operating Hours.....	31
6.2. Maintenance of the Active Tip Face.....	31
6.3. Landfill Cover	32
6.4. Management of Greenhouse Gas Emissions	32
6.5. Leachate Collection System	32
6.6. Stormwater.....	33
6.7. Pest and Weed Management	33
6.8. Litter.....	33
6.9. Security.....	33
6.10. Bushfire	33
6.11. On-site Sewage.....	34
6.12. Storage	34
6.13. Noise and Vibration.....	34
6.14. Green Waste Pad	35
6.15. Environmental Monitoring	35
6.15.1. Surface Water, Groundwater and Leachate Monitoring Programs.....	35

6.15.2. Air Quality Monitoring.....	35
6.15.3. Noise Monitoring	35
6.15.4. Offset Land Monitoring	35
6.15.5. Weed Monitoring	36
6.15.6. Pest Animal Monitoring	36
6.15.7. Meteorological Monitoring	36
7. Landfill Closure and Rehabilitation Plan	38
7.1. Final landform and use.....	38
7.2. Final landfill contouring.....	39
7.3. Contamination Management.....	39
7.4. Environmental Monitoring.....	40
7.4.1. Testing Program	40
7.4.2. Landfill Gas Monitoring Program	41
7.5. Final Landfill Cap and Revegetation.....	42
7.6. Certificate of Completion.....	42
8. Quality Assurance and Quality Control	43
8.1. Reporting	43
8.1.1. Annual Reporting	43
8.1.2. Independent Environmental Audit	43
8.1.3. Incident Reporting	44
8.1.4. Complaints Procedures.....	44
8.1.5. Community Notification	45
8.1.6. Dispute Resolution.....	46
8.2. Roles and Responsibilities of Key Personnel	48
8.2.1. Waste Operation Manager	48
8.2.2. Landfill Overseer.....	48
8.2.3. Landfill Operator	50
8.2.4. Bin Maintenance/Relief Operator	51
8.2.5. Weighbridge Operator	52
8.2.6. Waste Transfer Station Operator.....	53
8.3. Quality Assurance.....	53
8.3.1. Existing Landfill.....	54
8.3.2. New Landfill	54
8.4. Staff Training	55

8.4.1. Frequency of Staff Training	55
8.4.2. Record of Training	55
References	56
Appendix A Consolidated Project Approval	58
Appendix B Waste Transfer Station Plans (2015).....	66

List of Figures

Figure 1-1: Site layout	2
Figure 2-1: Groundwater monitoring bore locations	13
Figure 2-2: Annual wind roses for Griffith Airport.....	15
Figure 5-1: Waste received flowchart from the Waste Screening Procedures Management Plan	23
Figure 6-1: Air quality monitoring sites	37
Figure 8-1: Dispute resolution process (Appendix 3 of the Consolidated Project Approval).....	47

List of Tables

Table 1-1: Maximum volume for each landfill cell	3
Table 1-2: Requirement for this integrated LEMP / EMS	4
Table 1-3: Plans related to this Approval	6
Table 1-4: Compliance with landfill guidelines	8
Table 2-1: Groundwater level readings August 2018	12
Table 2-2: Average temperatures for Griffith.....	14
Table 2-3: Average monthly rainfall and evaporation	15
Table 4-1: Calculation summary of landfill cells 1-5.....	21
Table 5-1: Waste storage requirements at the waste transfer station	24
Table 5-2: Chemical storage requirements at the community recycling centre	24
Table 6-1: Operating hours.....	31
Table 6-2: Operational noise impact assessment criteria dB(A)	34
Table 7-1: Testing program for scheduled monitoring sites	40
Table 8-1: Information to tell the neighbours if there's an incident	46

Abbreviations

AHD	Australian Height Datum
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity development assessment report
CRC	Community recycling centre
DA	Development application
Department of Planning	Currently the NSW Department of Planning, Housing and Infrastructure. This abbreviation also covers former NSW Government agencies responsible for planning approvals.
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
HDPE	High density polyethylene
GCC	Griffith City Council
LEMP	Landfill Environmental Management Plan
LLDPE	Linear low density polyethylene
LTL	Landfill team leader
NSW	New South Wales
POEO Act	NSW <i>Protection of the Environment Operations Act 1997</i>
RRC	Resource Recovery Centre
TWMC	Tharbogang Waste Management Centre
WTS	Waste transfer station

1. Strategic Context

1.1. Background

Griffith City Council (GCC) operates the Tharbogang Waste Management Centre (TWMC) at Lot 201 and Lot 202 DP 756035 Hillside Drive, Tharbogang. Figure 1-1 shows the extent of existing landfill and quarry operations, and the proposed Waste Transfer Station (WTS), landfill and quarry.

GCC acquired the site from the Crown in 1984 and shortly afterwards obtained approval to operate a landfill from the (then) Department of Health. In 1991, following a feasibility study of extractive resources in the district, GCC obtained consent for and began quarrying road aggregate from an area adjacent to the landfill.

Population growth and a need to improve environmental performance of waste management operations at the TWMC led to a proposal for an expanded landfill operation. Project approval to extend the existing quarry operations and backfill the existing quarry with municipal solid waste was granted to GCC on 8 July 2010 by the NSW Department of Planning. Three modifications were made to the original project approval:

- Modification No. 1 (06_0334 MOD 1) was approved on 9 May 2012 to reduce the size of the approved biodiversity offset. An offset of 95 ha for the Project was ultimately approved.
- Modification No. 2 (06_0334 MOD 2) was approved on 22 July 2014 associated with:
 - Design changes to the existing quarry pit which will become the new landfill
 - Change in the sequencing of the new quarry pits
 - Removal of green waste from the waste stream.
- Modification No. 3 (06_0334 MOD 3) was approved on 14 May 2024 to increase the annual extraction limit for a period of 12 months from 315,000 tpa to 400,000 tpa, change the use of Pit 101 from a quarry to a long-term stockpile site and amend condition 49(a) which relates to biodiversity offset funds.

The approval requires GCC to conduct the project in accordance with the:

- Environmental assessment and modifications, including site layout plans (Figure 1-1).
- Consolidated approval, including consent conditions and statement of commitments (Appendix A replicates the consolidated approval and provides a table indicating where each condition has been addressed).
- An updated Environment Protection Licence (EPL) from the Environment Protection Authority (EPA) (refer to Section 1.4 for details).

If there is any inconsistency between the above documents, the conditions of approval shall prevail to the extent of the inconsistency.

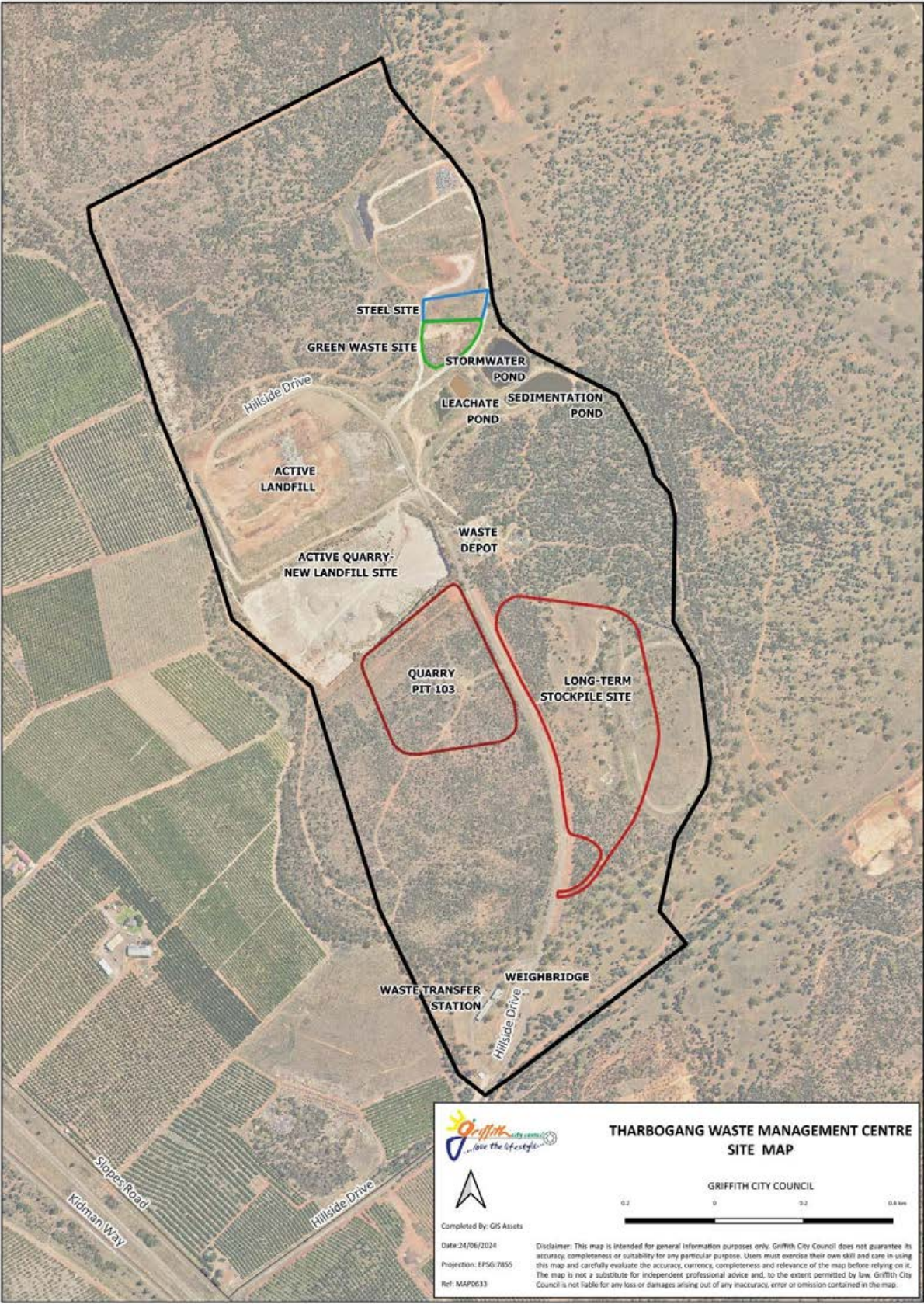


Figure 1-1: Site layout

The project approval requires preparation of this Tharbogang Landfill Environmental Management Plan (LEMP) for the landfill operations within the TWMC, including the existing landfill, which is to be progressively capped and rehabilitated, and new landfill operations. Environmental and operational procedures associated with future operations in Pits 101 and 103 will be addressed separately.

GCC must ensure that contractors and staff management are familiar with this document, in particular the environmental objectives, and management and monitoring requirements. This document is to be the primary reference for all landfill activities and used for site inductions.

This document will need to be updated every five years to confirm legislative obligations, or at any time the EPL (see Section 0) for the TWMC site changes. This continuous review process will enable the document to remain relevant for the duration of the landfill operations.

1.2. Landfill and Quarrying Limits

The limits of approval are set by the Department of Planning for the landfill operations at the site. Schedule 2 Condition 7 of the approval states GCC, or its nominated contractors, must not:

- Extract more than 315,000 tonnes per year of gravel materials from the site; or
- Receive more than 35,000 tonnes per year of general solid waste (putrescible and non-putrescible) to the site.

In accordance with Schedule 2 Condition 8(b) of the approval, for a 12 month period commencing within three years of the date of the approval of Modification 3, the applicant may extract up to 400,000 tonnes of gravel materials per year. The Applicant must provide written notice to the Planning Secretary prior to the commencement of the MOD 3 works, at least one month before the 12 month period begins. At the completion of the 12 month period, the Applicant may extract no more than 315,000 tonnes per year.

Quarrying and landfilling operations can be undertaken on the site until 31 December 2035.

The landfill shall not exceed the maximum volume for each landfill cell specified in Table 1-1, as required by Schedule 2 Condition 8(a) of the approval. Calculation of the cell volume shall include the intermediate non-waste layers but shall not include the final cell cap, leachate barrier or leachate drainage layer.

Table 1-1: Maximum volume for each landfill cell

	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	TOTAL
Capacity (m ³)	131,634	124,781	119,121	142,096	142,497	660,129
Capacity* (tn's)	85,562	81,107	77,428	92,362	92,623	429,083

* A compaction rate of 650 kg was used to convert cubic metres to tonnes.

1.3. Statutory Requirements

This section outlines Council's statutory obligations under the *Environmental Planning and Assessment Act 1979* (EP&A Act) and associated legislation. The consent requires that GCC implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the landfill operation at the TWMF. Annual Environmental Monitoring Reports indicate compliance against project approval requirements and other statutory matters.

The following acts of legislation cover the main legal framework under which the landfill is to be operated, in addition to the EP&A Act.

- *Protection of the Environment Operations Act 1997* (POEO Act) - limits the landfilling activities via a license to protect surface water, groundwater, air quality and the acoustic environment of the landfill and the Tharbogang locality.
- *Biodiversity Conservation Act 2016* (BC Act) - protects threatened species, populations and vegetation communities.
- *Local Government Act 1993* – identifies the duty of care and requirements to manage the landfill.
- *Waste Avoidance and Resource Recovery Act 2001* - provides a framework whereby recycling is prioritised over landfilling.

This LEMP has been prepared to address matters in Schedule 3 Condition 13 and Schedule 5 Condition 1 of the project approval. Schedule 5 Condition 1 lists matters that should be included in an environmental management strategy (EMS) for the project. To streamline project documentation, the Department of Planning has agreed that EMS matters can be integrated with this LEMP. Conditions relevant to the LEMP/EMS and where they have been addressed in this document are identified in Table 1-2.

Table 1-2: Requirement for this integrated LEMP / EMS

Matters to be addressed from Schedule 3 Condition 13 and Schedule 5 Condition 1 of the Consolidated Project Approval			Where the matter is addressed
3.13(a)	Describe in detail the management measures that would be implemented to address:	The relevant matters referred to in the <i>Environmental Guidelines for Solid Waste Landfills</i>	LEMP Section 1.6 Landfill Guidelines
		The conditions of this approval	Appendix A Consolidated Project Approval (including reference to where each condition has been addressed)
3.13(b)	Include a copy of:	The relevant plans and programs required under this approval	LEMP Section 1.5 Related Plans

Matters to be addressed from Schedule 3 Condition 13 and Schedule 5 Condition 1 of the Consolidated Project Approval			Where the matter is addressed
		A quality assurance plan for the design and installation of the leachate management system and any capping of the landfill cells that covers the relevant issues outlined in sections 1 – 2 of Appendix A of the Environmental Guidelines for Solid Waste Landfills	LEMP Section 8.3 Quality Assurance
3.13(c) and 5.1(e)	Describe the procedures that would be implemented to:	Keep the local community and relevant agencies informed about the operation and environmental performance of the project	LEMP Section 8.1.5 Community Notification
		Receive, handle, respond to, and record complaints	LEMP Section 8.1.4 Complaints Procedures
		Resolve any disputes that may arise during the course of the project	LEMP Section 8.1.6 Dispute Resolution
		Respond to any non-compliance	LEMP Section 8.1.2 Independent Environmental Audit
		Respond to emergencies	LEMP Section 8.1.3 Incident Reporting Pollution Incident Response Management Plan
3.13(d) & 5.1(d)	Describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project		LEMP Section 8.2 Roles and Responsibilities of Key Personnel
5.1(b)	Provide the strategic framework for environmental management of the project		LEMP Section 1 Strategic Context
5.1(c)	Identify the statutory approvals that apply to the project		LEMP Section 1.2 Statutory Requirements
5.1(f)	Include a clear plan depicting all the monitoring currently being carried out within the project area		LEMP Figure 2-1 Groundwater monitoring bore locations LEMP Figure 6-1 Air quality monitoring sites
5.1(f)	Include copies of the various strategies, plans and programs that are required under the conditions of this approval once they have been approved		LEMP Section 1.5 Related Plans

Schedule 3 Condition 10 of the approval requires all new buildings and structures, and any alterations or additions to existing buildings and structures, to be constructed in accordance with the relevant requirements of the Building Code of Australia. Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works. Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.

In accordance with Schedule 3 Condition 11 of the approval the Proponent shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.

1.4. Licensing Requirements

The site must operate in accordance with EPL No.5875 under the POEO Act. Licence conditions relate to pollution prevention and monitoring. The EPL will be revised by the EPA to include the expanded landfill operations, and landfill capping and leachate system associated with the closure of the existing landfill and WTS green waste site.

Schedule 3 Condition 14 of the approval states that, 'except as may be expressly provided for by an EPL, the Proponent shall comply with section 120 of the POEO Act during the carrying out of the project'.

Operation of the landfill is required to comply with this LEMP, and the operator is required to report on licensing compliance, any complaints and monitoring results annually to the EPA, who checks the performance of the operation against the requirements of this LEMP.

1.5. Related Plans

Schedule 3 Condition 13(b) of the approval requires plans and programs to be prepared under statutory approvals to be identified. These are listed in Table 1-3 with information about accessibility. TRIM (TFN) references are provided in the table for GCC staff. GCC website documents are publicly available at <https://www.griffith.nsw.gov.au/waste-services>. Environmental monitoring results are available on the GCC website for air quality, biodiversity offsets, and noise and vibration.

Table 1-3: Plans related to this Approval

Plan Name	Date	Document Access
Air Quality Monitoring Program	2019	GCC website
Annual Environmental Management Report	annual	GCC website
Annual Offset Monitoring Report	annual	GCC website
Asbestos Procedure (provides guidance to the public) Asbestos Handling Procedures (provides guidance to GCC staff)	n/a	GCC website and TFN-15/86838
Blast Management Plan	Undated	GCC website
Community Education Program	2023	GCC website
Cultural Heritage Management Plan	2013	GCC website
Engineering plans	2015	Waste transfer station plans are in Appendix B

Plan Name	Date	Document Access
		<p>Landfill cell plans are in Appendix A Consolidated Project Approval. Note that the drawings contained within Landfill Closure and Rehabilitation Plan may supersede some of these drawings.</p> <p>These documents are saved in Councils File Management System:</p> <p>Construction Notes for Earthen Retention Basins Project - 13/4076</p> <p>Landfill Filling Plan/Spiral Road Design - 14/57968</p> <p>New Landfill Cell -17/113283</p> <p>Green Waste Pad Design - 17/113284</p> <p>Redevelopment of Leachate Ponds TWMC - 22/77184</p> <p>Landfill Access Road Redevelopment - 23/12894</p> <p>High Voltage Power Extension - 23/88306</p> <p>Construction of Steel Pad - 24/25065</p>
Landfill Closure and Rehabilitation Plan	n/a	TFR-19/106662
Landfill Environmental Management Plan (including the Environmental Management Strategy) [this document]	2024	GCC website
Landscape and Biodiversity Management Plan (including Biodiversity Offset Strategy, and Rehabilitation and Biodiversity Offset Strategy Management Plan; s.11 is the Long Term Management Strategy)	2013	GCC website
Noise and Vibration Monitoring Program	2013	GCC website
Pest Animal Control Plan	2019	GCC website and TFN-19/72940
Pollution Incident Response Management Plan	2023	GCC website and TFN-14/72175
Pre-Incident Plan (Fire)	2019	GCC website and TFN-19/56103
Soil, Water and Leachate Management Plan (SWLMP), including: <ul style="list-style-type: none"> a site water balance (section 4.3 of the SWLMP) 	2024	GCC website

Plan Name	Date	Document Access
<ul style="list-style-type: none"> ○ an erosion and sediment control plan (section 4.2 of the SWLMP), including stockpile management ○ a stormwater management scheme (section 4.1 of the SWLMP) ○ a surface water monitoring program (section 5.2 of the SWLMP) ○ a groundwater and leachate monitoring program (section 5.3 of the SWLMP; annual groundwater monitoring results are on Council's website) ○ a surface water, groundwater and leachate response plan (section 6 of the SWLMP) 		
Traffic Management Plan	2024	GCC website
Waste Monitoring Program	2011	GCC website
Waste Screening Procedures	2011	GCC website and TFN-DM291698
Weed Control Plan	2019	GCC website and TFN-19/95324

1.6. Landfill Guidelines

Schedule 3 Condition 3.13(a) of the approval requires consideration of the Environmental Guidelines: Solid Waste Landfill (EPA, 1996). Guideline objectives are reiterated in Section 3 of this LEMP and Table 1-4 identifies where key topics in the guidelines are addressed in this LEMP.

Table 1-4: Compliance with landfill guidelines

Environmental Guidelines for Solid Waste Landfills	Where the matter is addressed in the LEMP
Leachate barrier system	Section 4 Cell Construction
Leachate storage and disposal	Section 6.5 Leachate Collection System
Stormwater management	Section 6.6. Stormwater
Water quality monitoring	Section 6.15.1 Surface Water, Groundwater and Leachate Monitoring Section 7.4.1 Surface Water Monitoring Program Section 7.4.2 Groundwater & Leachate Monitoring Program
Landfill gas management and monitoring	Section 6.15.2 Air Quality Monitoring Section 7.4.4 Landfill Gas Monitoring Program

Environmental Guidelines for Solid Waste Landfills	Where the matter is addressed in the LEMP
Amenity issues: odour, dust, noise, litter and fire control	Section 6 Landfill Operation Procedures Section 7.4 Environmental Monitoring
Waste acceptance and site security procedures	Section 5.1 Accepted Waste Section 5.2 Waste Reception Procedures Section 6.1 Operating Hours Section 6.9 Security
Covering of waste	Section 6.3 Landfill Cover
Final capping and revegetation	Section 7.5 Final Landfill Cap and Revegetation
Closure	Section 7 Landfill Closure and Rehabilitation Plan
Quality assurance	Section 8 Quality Assurance and Quality Control

2. Site overview

The TWMC is located 9.5 km north-west of Griffith near the village of Tharbogang. The site covers Lot 201 and Lot 202 in DP 756035, in the Griffith local government area which is part of the Riverina region of New South Wales. The combined area of the two lots totals 357.1 ha but only a relatively small part of it will be developed for quarrying and landfill.

An existing landfill and quarry are situated adjacent to each other in a naturally occurring gully. Council owns additional land on either side of the existing landfill and quarry. The quarry and landfill occupy an area of about 15 ha in a natural depression at the centre of Lot 202.

Vehicular access to the site is off Hillside Drive, Tharbogang. The surrounding area is rural. There are orchards immediately to the south and west, while citrus, stone-fruit, almond and wine grape growing is common in the wider district. A speedway circuit, now decommissioned, occupies the south-western portion of Lot 202 and will be removed prior to the expanded quarry operations commencing.

Tharbogang is a rural locality of about 450 people and it is located about 3 km south of the existing quarry. There are a number of rural dwellings associated with the orchards to the south and west. The nearest dwelling to the quarry is 570 m to the southwest.

2.1. Topography

The McPhersons Range ridgeline, which follows the south westerly boundary of Lot 201 and crosses Lot 202, dominates the site. The southern and eastern sections of the site are located on an easterly orientated slope and the northern and north westerly areas of the site are located on a northerly orientated slope that does not form part of McPhersons Range. Topographical relief ranges from approximately 174 m AHD along the ridgeline to approximately 125 m AHD along the northern and eastern boundaries. A naturally occurring gully traverses the central areas.

2.2. Geology

The geology of the site has been identified as part of the Griffith Syncline comprising a succession of Upper Devonian sandstones, siltstones and conglomerate of the Cocaparra Group. The Cocaparra Group contains the Mailman Gap Conglomerate, a coarse pebble sandstone and conglomerate unit and the Jimberoo Member, a medium to coarse grained sandstone which overlies the Mailman Gap Conglomerate (Coffey Geosciences, 2008). (Sourced from Tharbogang Recycling and Waste Disposal Facility Environmental Management Plan Griffith City Council 1997 (revised 1999).)

2.3. Soils

The MacPherson's Range comprises older rocks with younger deposits of colluvial and windblown (aeolian) sandy deposits near the range. Upon the ranges, the soils are well aggregated, crumbly and sub-plastic in nature, usually with high lime content. Soils are described as "Gradational (Non-Calcareous) soils of the MacPherson Range".

Soils are not calcareous throughout; surface textures commonly range from sandy loam to clayey loam, less commonly loamy sand, clayey sand and sand, and occasionally sandy clay, silty clay or light clay. There is a gradual increase in texture grade (clayeness) with depth, sometimes followed by a decrease below the B Horizon; acid, neutral and alkaline soil reaction trends occur.

The soils would appear to result from mainly physical and chemical weathering of the parent material and from aeolian deposition. The parent material is sedimentary, primarily conglomerate and siliceous sandstone. The soil has tendencies towards moderate-high permeability with implications for plant growth and recharge. Key soils characteristics identified are:

- Slopewash and residual sandy clay, clayey sands; gravelly sandy clays and clayey sandy gravels.
- Low to medium plasticity of the surficial soils.
- A depth of surficial soil over the basement rock ranged from 0.2 m on the upper hill slopes to 3 m in the lower foot slope area.
- Tendencies towards soil with a moderate to high permeability with implications for plant growth and recharge.
- The Mailman Gap Conglomerate and the Jimberoo Member are silicified and were assessed to have negligible primary porosity; however, jointing in both units was evident in the quarry, perhaps due to the quarrying methods. The units were assessed to have low to moderate permeability and low groundwater storage capacity. Permeability in the surface soils was assessed to be in the order of 0.2m/day, with moderate moisture holding capacity.

2.4. Hydrogeology

Previous drilling programs by Douglas Partners (1991) and Coffey (2000) indicated that there were no groundwater inflows to a depth of at least 18 m in the vicinity of the quarry (i.e. along the upper ridgeline) and depth to groundwater ranged from approximately 15 m to 22 m below the ground surface in bores located in the vicinity of the landfill. The lack of groundwater occurrence in surficial soils, including the colluvial deposits of the lower slopes, to a depth of at least 3 m, has been documented.

2.5. Groundwater

Groundwater has been recorded at numerous bores across the site to depths ranging from 14.4 m to 27.5 m below the surface in six of the eight groundwater boreholes across Lots 201 and 202. Geolyse (2015) states that groundwater flow investigation results have recorded flow generally to the north and north-east. The local discharge feature is Tharbogang Swamp located to the north-east of the Site, but this is not considered to be adversely impacted by the groundwater flow.

It is important to note that the EPA assessed that BH 2 was not required in the assessment of ground water impacts and was removed as a BH which requires sampling.

Figure 2-1 shows the location of the groundwater monitoring bore locations.

The interpreted groundwater contours suggest that groundwater flow is generally to the north and northeast.

Recharge in the area is primarily via rainfall infiltration, but the meteorological data (see Section 2.7) indicates that evaporation consistently exceeds rainfall throughout the year.

Results of groundwater sampling indicated low indicators of organic activity such as nutrients (Nitrogen and Phosphorous) and carbon compounds. These results suggest little impact on the groundwater from leachate although ANZECC (1992) Water Quality Guidelines are exceeded for some parameters but are within the range generally found for groundwater in the local region.

Table 2-1: Groundwater level readings August 2018

Peizometer	Approx RL (MAHD)	Total Bore Depth (MBGS)	Water Level (MBGS)	Water Level (MAHD)
BH 1	156.16	30	13.6	142.56
BH 2				
BH 3	131.03	20.5	15	116.03
BH 4	124.64	31.17	7.8	116.84
BH 5	134.33	30.51	18.7	115.63
BH 6	125.47	20	18	107.47
BH 7	125.18	27	20.8	104.38

MAHD = Metres Australian Height Datum MBGS = Metres below Ground Surface

Source: Griffith City Council Engineering Surveyors 15/9/18 and A J BRITON DRILLING PTY LTD 6/8/18

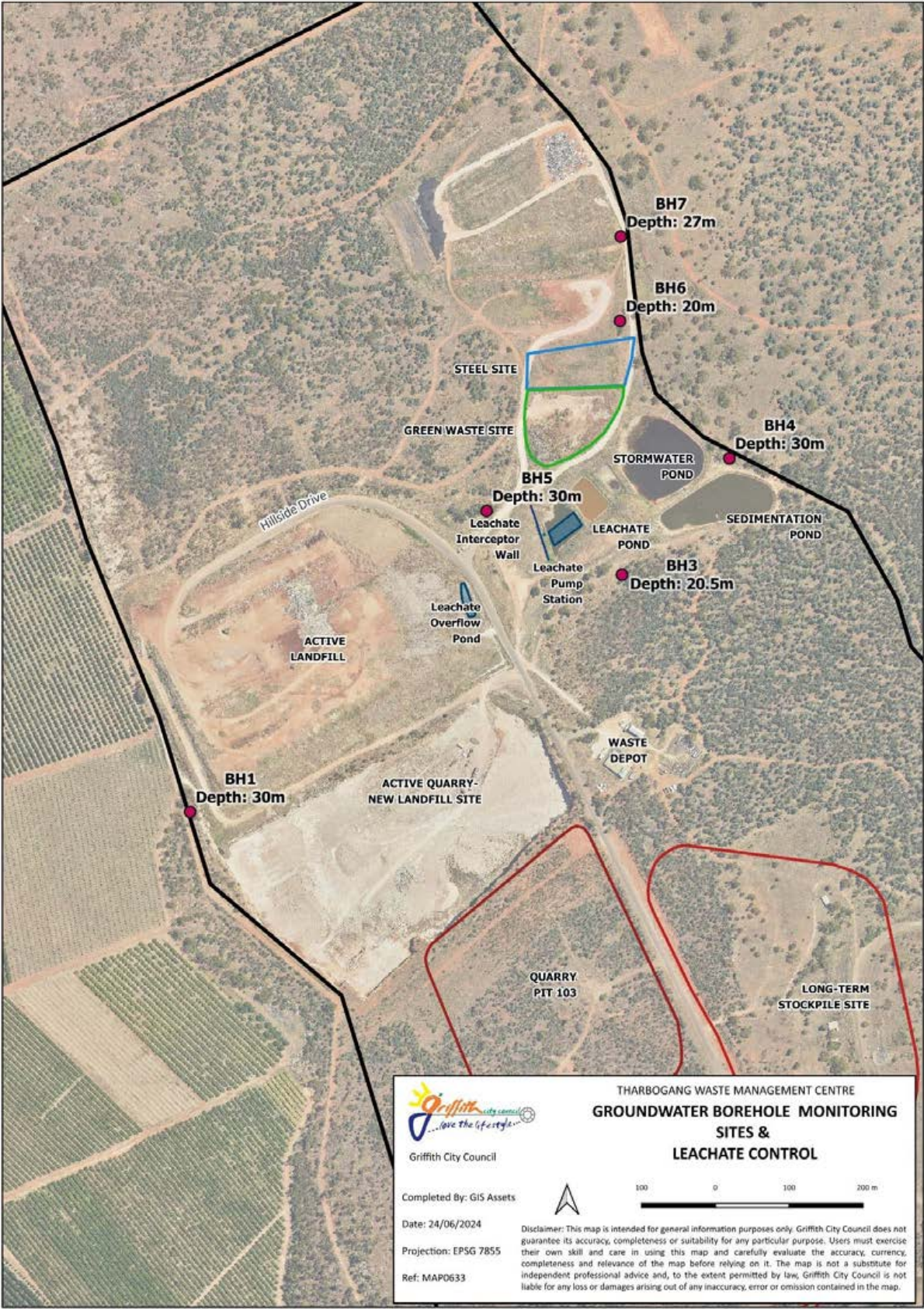


Figure 2-1: Groundwater monitoring bore locations

2.6. Surface Water

Natural surface drainage of the site occurs as sheet flows in the upper slope areas accumulating in a series of ephemeral gullies and drainage depressions that flow east, eventually discharging into the Tharbogang Swamp during peak flows. The natural surface drainage has been modified around the existing landfill to minimise storm water flows from entering the landfill and leachate control system.

2.7. Climate

The climate is described as warm temperate, with hot, dry summers and mild winters. Rainfall is slightly winter dominant with a mean annual precipitation of 406 mm. Mean annual evaporation is 1790 mm. Evaporation exceeds rainfall at all times, including the marginal months from May to August.

Because the region is well inland and not regularly subject to maritime influences, it experiences substantial diurnal weather variations, including frosts and night-time inversions.

The average temperatures for Griffith Airport appear in Table 2-2. It should be noted that this weather station has only been in operation since 1970.

Table 2-2: Average temperatures for Griffith

Category (C°)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Daily Max Temp	32.8	32.1	28.7	24	19.2	15.5	14.5	16.5	19.8	23.8	28	30.8
Highest Max Temperature	46	45.2	42	36.1	28.6	25	23	30	35	38.3	43	44
Mean Daily Min Temp	16.9	17.3	14.2	10.2	7.1	4.5	3.5	3.9	5.8	8.9	12.6	15.1
Lowest Min Temperature	6.8	7.6	4.2	0	-2	-4	-5.9	-3	-2	0.6	1.8	4.2

(Source: Griffith Airport Stn. No 075041)

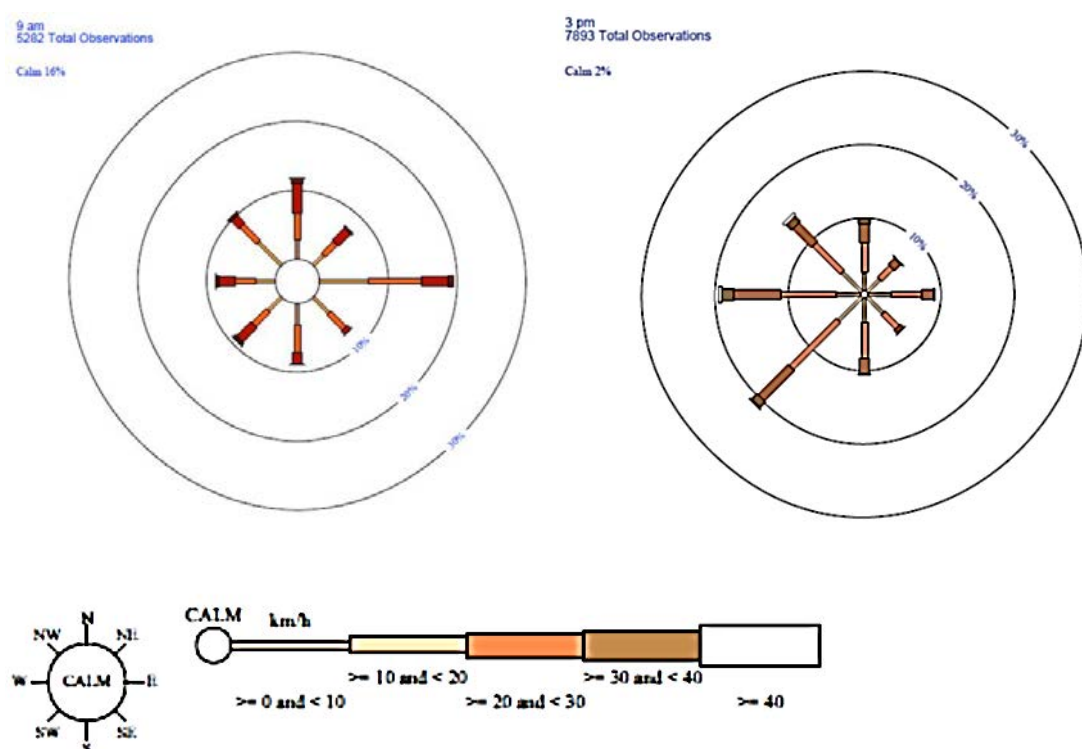
The rainfall and evaporation records are shown in Table 2-3. Rainfall is recorded from BOM Station 075041 (Griffith Airport: 146.07E; 34.25S) from 1958. Evaporation records are only available between 1962 and 1989 from Station 075028 (Griffith CSIRO: 146.07E; 34.32S). This station closed in 1989.

Table 2-3: Average monthly rainfall and evaporation

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Mean Rainfall (mm)	33.4	28.8	33.2	27.7	35.7	33.7	33.5	36.2	33.2	40.5	33.3	33.5	402.7
Highest Rainfall (mm)	257.1	138.2	216.8	170.2	136	74.8	88.4	87.6	116.1	143	128	127.8	703.3 (1974)
Lowest Rainfall (mm)	0	0	0	0.5	1.2	0.3	1.1	2.2	2.2	0	0	0	148.8 (2006)
Evaporation (mm/day)	8.7	8	6	3.5	2	1.4	1.6	2.3	3.4	4.9	7.1	8.1	4.8 (avg)

The dominant winds shift throughout the day, being generally from the northeast to east in the morning and changing to the southwest during the afternoon. The prevailing summer flow generally ranges from northeast to southwest, whereas during the winter the winds are dominated by westerly flows and are more likely to range from northwest to southwest.

The annual roses of wind direction versus wind speed for both 9am and 3pm at Griffith Airport are shown in Figure 2.2.

**Figure 2-2: Annual wind roses for Griffith Airport**

2.8. Ecology

Information in this section is from the Landscape Biodiversity and Management Plan (Eco Logical Australia 2013).

The general vegetation of McPherson Range is Open Woodland of Bimble Box and White Cypress Pine association on the gentle slopes, while the steeper slopes support a Dwyer's Gum and Currawong association. Lots 201 and 202 comprise a mixture of woodland and forest vegetation types, with remnant vegetation and natural regrowth present. The natural vegetation of Lot 202 has been modified by the landfill and quarry operations and the removal of surface gravels.

2.8.1. Flora

No Rare or Threatened Australian Plants (ROTAP) listed plant species have been recorded. The structural diversity varies across the site due to past and current activities. In some areas there is a high level of structural diversity and many hollow bearing trees. In others where the land has been previously cleared, thick Cypress Pine regrowth dominates the upper and lower strata.

2.8.2. Weeds

Two noxious weeds, African Boxthorn *Lycium ferocissimum* and Horehound *Marrubium vulgare* have been recorded in a few scattered localities and are considered rare on the site. Other weed species were more prevalent throughout the site including Capeweed, Paterson's Curse, Prickly Pear and Saffron Thistle.

2.8.3. Fauna

No evidence was found to suggest that any threatened ground dwelling mammal species occurred within the site. However, the more mobile widely ranging microchiropteran bat species such as the threatened Fishing Bat, Little Pied Bat and Eastern long-eared Bat may utilise the site on an occasional or transitory basis. High bat activity was recorded along the south-eastern boundary of the site. Predation of species is common from the European Fox and Feral Cat.

Three reptile species and two amphibian species have been recorded at the site. None of these species is threatened or vulnerable.

A total of 55 native birds and three introduced species were recorded in Lot 202. The woodland vegetation communities yielded the highest diversity of species. The avifauna recorded within the study area comprises relatively disturbance-tolerant species and is characteristic of the assemblages found within the McPherson Ranges and Griffith region. Eight bird of prey species were recorded during the field investigation. The high number of prey species was considered to be due to the vermin and insects associated with landfill site.

3. Environmental Objectives

Effective, ongoing operation of the TWMC is an important activity for GCC, as the landfill is an essential asset for both Council and the community. Landfills are expensive to build and maintain, and it is important that the landfilling operations do not adversely affect the surrounding environment.

With these factors in mind, GCC's over-arching goal is to "affordably dispose of and contain the City's domestic and commercial wastes in an environmentally responsible manner and in accordance with statutory requirements".

The environmental goals for the TWMC are established by the EPA's Environmental Guidelines: Solid Waste Landfills (1996). These goals are intended to guide in satisfying environmental issues of primary concern to the community, being:

- Water pollution
- Air pollution
- Land management and conservation
- Hazards and loss of amenity.

The environmental goals are:

- Water Pollution:
 - Preventing pollution of water by leachate
 - Detecting water pollution
 - Remediating water pollution
- Air pollution
 - Preventing landfill gas emissions
 - Detecting landfill gas emissions
 - Remediating landfill gas emissions
- Land management and conservation
 - Assuring quality of design, construction and operation
 - Assuring quality of incoming waste
 - Recording wastes received
 - Minimising landfill space used
 - Maximisation of recycling
 - Remediating landfill after closure
- Hazards and loss of amenity
 - Preventing unauthorised entry
 - Preventing degradation of local amenity
 - Preventing noise pollution

- Adequate fire-fighting capacity
- Adequate staffing and training

These goals are underlain by 39 benchmark techniques, which also contain a performance standard description to assist in their achievement.

4. Cell Construction

4.1. Site Specific Waste Management Approach

The EPA's (1996) Landfill Guidelines are not prescriptive and utilise a performance-based approach. Local and in-situ conditions have been taken into account and the design parameters have been moulded accordingly. The following specific waste management approaches that are more suitable for the circumstances of this site have been adopted.

A key environmental driver influencing the performance-based approach for the TWMC is the low rainfall level (400 mm/year) and an evaporation rate of 1700 mm/year experienced in the Griffith region.

Given the low annual rainfall and high pan force evaporation rate, it is reasonable to anticipate that both the low permeability natural clay and bentonite products will desiccate, crack and fissure, creating adverse performance issues in delivering the environmental protection goal of sealing the landfill from water infiltration and controlling landfill gas emissions.

The Landfill Guidelines provide information on the design requirements for the capping system. The key driver is to install a system which minimises the generation and escape of leachate.

The proposed final capping system should comprise, from bottom to top:

- Regulation layer consisting of material at least 300 mm thick to support the sealing layer
- Gas collection drainage geocomposite (geonet) layer
- Impermeable layer comprising of a 1.5 mm linear low density polyethylene (LLDPE)
- Sub-surface drainage layer comprising a drainage geocomposite (geonet)
- Revegetation layer at least 1,000 mm thick, comprising an 800 mm thick clean sub-soil layer and a 200 mm thick mulch/growth medium.

4.2. New Landfill Design

The new landfill design comprises five high density polyethylene (HDPE) lined cells, with a subsurface drainage system to be constructed sequentially. Each landfill cell will comprise a purpose-built bund and, in some sections, infill batter stabilisation works to construct a landfill base shape to hold and contain the waste and to facilitate drainage of the leachate.

4.2.1. Cell Design

The new landfill cell will require the following:

- Removal of the remaining quarry resource
- Creation of a minimum 1% floor gradient sloping down from the back (south-western wall) of the quarry to the front (north-east) of the quarry

- Laying back of the existing vertical quarry walls to 1:3 batter slopes by excavating material or infill in selected areas where laying the walls back is not possible.

Drawings of the new cell design are provided in Appendix A.

4.2.2. Landfill Base Layers and HDPE Membrane

The new landfill base layers will require the following:

- Provision of an HDPE liner with a subsurface drainage system extending to the top of the landfill base batters and secured in an engineered anchor trench.
- Construction of an internal bund for each landfill cell. These bunds will either be removed later as the next adjacent cell is constructed to form a continuous landfill liner system, or the internal bund will be maintained with gravity fed leachate collection pipes trenched through the bund wall to connect to existing leachate collection pipes.

4.2.3. Leachate Drainage and Storage

The leachate will drain from the landfill cell under gravity where the leachate trunk line will discharge leachate into an accessible concrete pit that overflows into a double lined HDPE leachate storage dam. The leachate concrete pit will contain a submersible pump capable of pumping the leachate to the top south-western batter where a leachate storage tank will be installed.

This leachate return line is to serve as a leachate management fail-safe system only and not a regular leachate reinjection or recirculation system. Leachate will only be reinjected back into the new landfill cell should the level of leachate stored in the new lined leachate dam reach a level that threatens available dam freeboard such that an uncontrolled discharge of leachate to the environment may potentially occur. This is considered to be unlikely as the leachate storage pond has been designed to contain the leachate generated from a 1:100-year 72 hour duration storm. Hence, the tank will normally be kept empty to prevent the stored leachate going off and generating odours.

A spray irrigation system is to be installed over the leachate dam surface to enhance evaporative disposal of leachate. The pan-evaporation forces will further reduce the leachate as there is high surface area for evaporation to occur.

4.2.4. Commissioning Sequence for Landfill Cells

The expanded landfill operations are to be constructed in the existing quarry in a series of five expansion cells. The capacity and anticipated life of these cells is as follows. The capacities will be less the volume of material required for final capping and the revegetation layer:

Table 4-1: Calculation summary of landfill cells 1-5

	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	TOTAL
Capacity (m ³)	131,634	124,781	119,121	142,096	142,497	660,129
Capacity (tn's)	85,562	81,107	77,428	92,362	92,623	429,083
Life (yrs)	3	3	3	4	4	17

The capacity figure is based on a compaction rate of 650 kg

The cell life figures are based on an average figure of waste into landfill 24,413 tn's

Data taken from Drawing D2 shown on Page 23 of the Consolidated Project Approval

4.3. Transition from Existing Landfill to New Landfill Cell

The Landfill Lifespan and Cost Estimate (Talis Consultants 2023) concluded that the existing landfill will close in May 2029. The existing landfill is to be progressively closed and rehabilitated as detailed in Section 7 and shown in the drawings in the consolidated project approval (Appendix A).

Transition from the existing landfill cell to the new landfill cell will require the following tasks:

- Construction of a bund at the north-eastern side of the existing landfill; this is required before other cell preparation works commence so that they and subsequent landfilling can take place behind the bund, which will provide a visual screen to distant properties.
- Continued use of the existing landfill: the existing landfill will be increased in height in three lifts of approximately 3 m each.
- Progressive rehabilitation of the existing landfill.
- Utilisation of the existing quarry resource material: this involves extracting the top bench, rock spurs and laying back selected vertical walls in the quarry. This will take place in parallel with the filling of the existing landfill.
- Progressive shaping of the quarry to the new landfill base design levels.
- Preparation of new Quarry Pit 101 (if required): Collection of native seed stock. Strip and stockpile the topsoil for the final capping of the existing cell. Source and provide quarry overburden for the progressive rehabilitation of the existing landfill cell.
- Prepare existing quarry wall infill sections; sub-grade layers for sub-surface drainage layers; HDPE liner sub-grade layers; internal bund materials; liner drainage aggregates - utilising materials sourced from quarry Pit 101 or excess materials from the existing quarry pit.

In accordance with Schedule 3 Conditions 2 and 3 of the approval,

- The Proponent shall dispose of all outputs produced on site to suitably licensed facility, including all recyclables extracted and delivered off-site for resource recovery purposes.
- The Proponent shall ensure that all waste generated on the site during construction of the project is classified in accordance with the DECCW's Waste Classification Guidelines, Part 1: Classifying Waste and disposed of at a facility that may lawfully accept the waste.

5. Waste Transfer Station Procedures

This section sets out in broad terms the procedures applying to the operation of the waste transfer station (WTS).

In accordance with Schedule 3 Condition 59 of the approval, GCC will ensure that the storage, handling, and transport of fuels and dangerous goods are conducted in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the Dangerous Goods Code.

5.1. Accepted Wastes

The WTS is designed to accept wastes delivered in small vehicles only, i.e. cars, box trailers, utilities and panel vans. The following waste types will be accepted by the proposed WTS:

- Domestic mixed waste
- Mixed recyclables (paper, cardboard, and cans)
- Concrete and bricks
- Garden organic
- Scrap metals
- E-waste
- Tyres
- Mattresses
- Oils
- Batteries
- Community recycling centre (CRC) (fluorescent lights, domestic and domestic quantities of chemicals, domestic gas cylinders and fire extinguishers, smoke alarms).

5.2. Waste Reception Procedures

In accordance with Schedule 3 Condition 1 of the approval, only waste that is authorised for receipt by an EPL shall be received at the WTS.

Waste shall be received and screened in accordance with the Waste Screening Procedures Management Plan.

In summary, all vehicles are required to enter the facility via the weighbridge and the details of the vehicle and its load recorded. The process for dealing with various material types is as per the flow chart shown in Figure 5-1. Additional details on the steps involved are contained in the Waste Screening Procedures Management Plan.

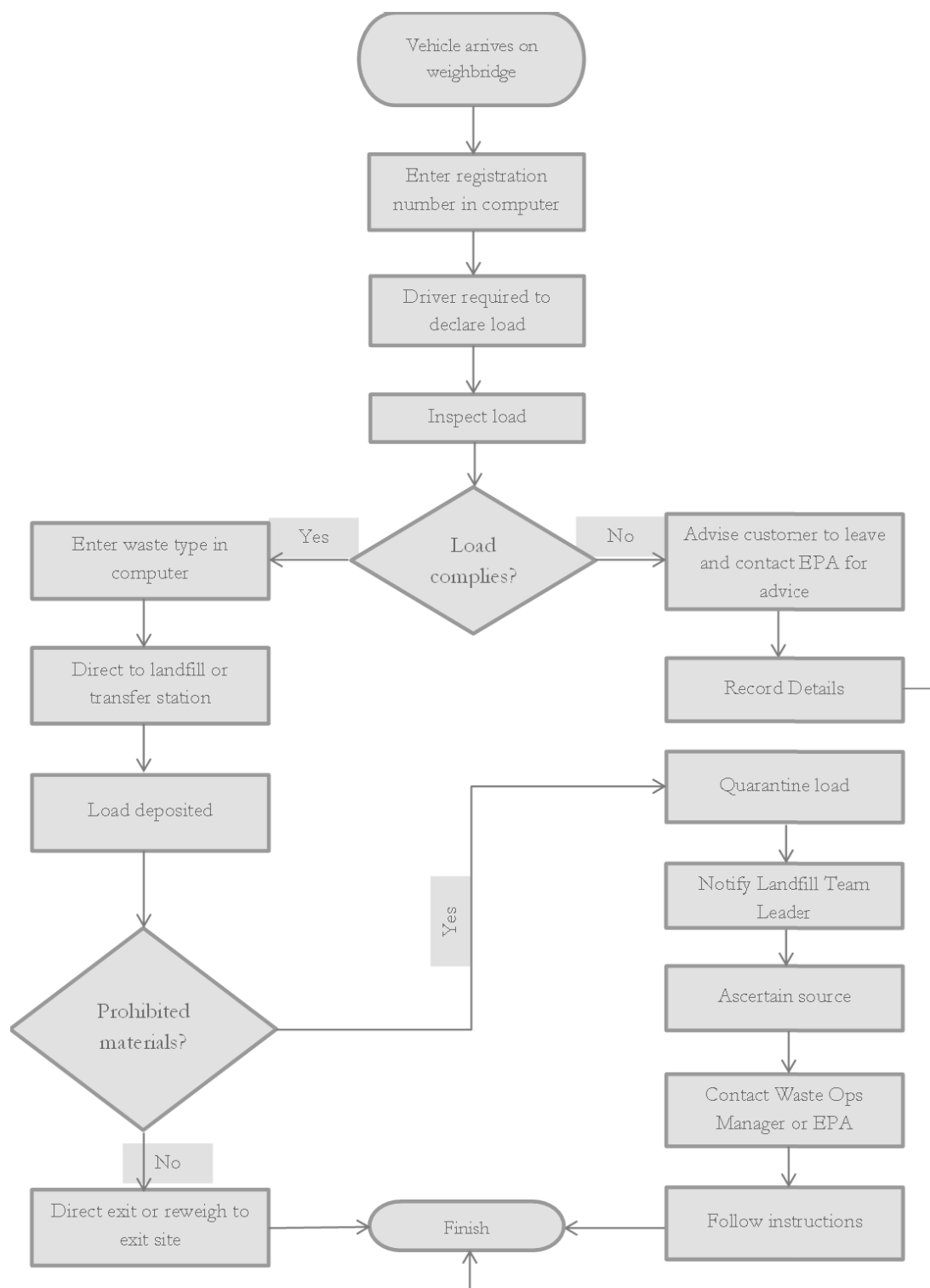


Figure 5-1: Waste received flowchart from the Waste Screening Procedures Management Plan

5.3. Waste storage procedures

The wastes that are stored at the WTS in readiness for recycling are contained in a suitable receptacle, which negates any risk of exposure of harmful substances to staff and the public.

Table 5-1: Waste storage requirements at the waste transfer station

Waste Type	Storage Requirements
Domestic mixed waste	Hook Lift bins
Concrete and bricks	Hook Lift bins
Green Waste	Hook Lift bins
Used Motor oils	Undercover sump (relocated existing facility to WTS)
Tyres and mattresses	Cages
E-waste	Shipping container

In addition, a range of chemicals are collected in the CRC and are stored as shown in Table 5-2.

Table 5-2: Chemical storage requirements at the community recycling centre

Material	Hazard	Receptacle type
Acids	Corrosive	DG Class 8 Acid
Aerosols - CFC based / flammable	Flammable Gas	DG Class 3 Flammable
Aerosols - pesticide	Flammable Gas / Toxic	DG Class 6 Toxic
Alkalis	Corrosive	DG Class 8 Alkali
Arsenic based products	Toxic	DG Class 6 Toxic
Battery Acid	Corrosive	DG Class 8 Acid
Brick cleaners	Corrosive	DG Class 8 Acid
Cyanide	Toxic	DG Class 6 Toxic
Engine coolants and glycols	Automotive	B12 Oils other than Motor
Fire extinguishers – non-halon	Compressed Gas / Low oxygen	FM1 Cage
Flammable liquids – hydrocarbons, fuels and solvents	Flammable	DG Class 3 Flammable
Flammable solids	Flammable	DG Class 3 Flammable
Flares	Explosive	10 ltr Pail
General household chemical	Low level Corrosive	DG Class 8 Alkali
Heavy metal compounds	Toxic	DG Class 6 Toxic
Organic peroxides	Reactive / Flammable	DG Class 5 Oxidiser
Oxidising agents eg pool chlorine	Reactive	DG Class 5 Oxidiser
Paint - other, including isocyanates and amines	Flammable / Toxic	B12 Stillage
Paint - metal based	Toxic	B12 stillage
PCB materials	Toxic	DG Class 6 Toxic
Pesticides - non-Schedule X (non-organochlorine)	Toxic	DG Class 6 Toxic
Pesticides – Schedule X (organochlorine)	Toxic	DG Class 6 Toxic
Solvents – halogenated	Toxic	DG Class 6 Toxic

5.4. Prohibited Waste Management and Protocols

Waste shall be received and screened in accordance with the Waste Screening Procedures Management Plan, which is designed to identify as much as possible the presence of prohibited wastes in incoming loads.

In summary, all vehicles are required to enter the facility via the weighbridge. The process for dealing with various material types is as per the flow chart shown in Figure 5-1 above.

There will be occasions where prohibited wastes are disposed at the WTS. The following are considered to be prohibited wastes:

- Liquid wastes
- Radioactive wastes
- Explosives
- Gases (compressed, liquefied or dissolved under pressure)
- Flammable solids or substances liable to spontaneous combustion
- Substances which emit flammable gases, acids or alkalis when in contact with water
- Oxidising agents and organic peroxides
- Toxic substances
- Corrosive substances
- Pharmaceuticals and poisons
- Untreated clinical waste
- Cytotoxic waste
- Untreated sharps waste
- Sealed drums

Where any of these wastes are observed on a customer vehicle before unloading:

- Immediately advise the driver that the waste is prohibited and that it must be removed from the TWMC.
- Advise the driver to contact the EPA for advice on how to dispose of the waste.
- Record the time, date and registration number of the vehicle involved and inform the Landfill Team Leader (LTL). If possible, photograph the load so that it can be identified it is found to be illegally dumped.

Where any of these wastes have been tipped into the WTS:

- Immediately isolate the area through the use of witches' hats or barriers.
- Record the time and date and if the driver is still on site ascertain and record the details of the driver and the vehicle.
- Inform the LTL who will contact the Waste Operations Manager or if unavailable the EPA and follow the directions given.
- If the driver is still on site seek to find out the source of the material and its components

5.5. Hazardous Waste Management and Protocols

Schedule 1 of the POEO Act defines hazardous waste as:

“hazardous waste” means waste (other than special waste or liquid waste) that includes any of the following:

(a) anything that is classified as:

(i) a substance of Class 1, 2, 5 or 8 within the meaning of the Transport of Dangerous Goods Code, or

(ii) a substance to which Division 4.1, 4.2, 4.3 or 6.1 of the Transport of Dangerous Goods Code applies,

(b) containers, having previously contained:

(i) a substance of Class 1, 3, 4, 5 or 8 within the meaning of the Transport of Dangerous Goods Code, or

(ii) a substance to which Division 6.1 of the Transport of Dangerous Goods Code applies, from which residues have not been removed by washing or vacuuming,

(c) coal tar or coal tar pitch waste (being the tarry residue from the heating, processing or burning of coal or coke) comprising more than 1% (by weight) of coal tar or coal tar pitch waste,

(d) lead-acid or nickel-cadmium batteries (being waste generated or separately collected by activities carried out for business, commercial or community services purposes),

(e) lead paint waste arising otherwise than from residential premises or educational or child care institutions,

(f) anything that is classified as hazardous waste pursuant to an EPA Gazettal notice,

(g) anything that is hazardous waste within the meaning of the Waste Classification Guidelines,

(h) a mixture of anything referred to in paragraphs (a)-(g).”

Hazardous wastes will be stored under cover in vented “cages” or mobile garbage bins into which customers can place the various materials as described in Table 5-2. They must also be stored and handled in accordance with the Community Recycling Centres Operations and Maintenance Handbook NSW EPA (2014).

LPG gas cylinders must be stored in an upright position to ensure that the pressure relief valve is in the vapour space of the cylinder (i.e. at the top). Stockpiles shall be kept as low as practicably possible and must be well vented to allow any escaped gas to dissipate at ground level. There are to be no ignition sources near the cylinders, including smoking. The storage area should be placarded with the Class 2.1 dangerous goods diamond.

Lead acid batteries shall be stored under cover on timber or plastic trays situated at around waist height to facilitate manual handling of the batteries. The area is to be well vented to facilitate the dissipation of hydrogen gas, which is undetectable without specialist equipment and highly explosive, and should be located at the opposite end of the CRC to the gas cylinder storage area. There are to be no ignition sources near the battery stockpile area, including smoking. The area under the trays shall be bunded with a storage volume sufficient to ensure that any acid leakage can be contained. A safety shower shall be located within easy reach of the battery storage area in case of acid spill onto personnel. A specific safe Work Methods Statement shall be developed and followed in handling and storing lead acid batteries. The batteries will be collected by a contractor once sufficient quantities have been stockpiled.

A separate purpose-built collection container will be provided by the collection contractor for the receipt and storage of single use household batteries.

Council has two procedures that relate to asbestos handling:

- “Asbestos Handling Procedure” that describes asbestos booking and delivery procedures to be followed since 1 March 2012.
- “Asbestos Procedure” that describes actions to be taken by staff in receiving mixed waste and dealing with any asbestos, declared or non-declared, received at Tharbogang.

5.6. Routine Operational and Monitoring Procedures

The patronage to the WTS will be kept under review and staffing requirements for the WTS adjusted as necessary. Initially, the site will be staffed for the purposes of general cleaning, moving materials and maintaining stockpiles. Monitoring of the WTS will be undertaken by the weighbridge operator via a CCTV camera. The weighbridge operator will be monitoring for illegal waste disposal, disposal of wastes into the wrong area of the WTS and for the safety of patrons. The transfer station personnel will ensure that items are placed into the correct locations and will have communication with other site personnel.

Following the closure of the site each day, TWMC staff shall ensure that the WTS is tidy with any loose material swept up; stockpiles are tidy and (by visual observation only) none of the material bins are contaminated with the wrong type of material.

Any bins that are contaminated, depending on the nature of the contamination and risks involved, will either be sorted to remove the contamination, or tagged for disposal into the landfill.

5.7. Removal of Recyclables

The following recyclable material streams will be recovered from the transfer station:

- Mixed recyclables (paper and cardboard (including liquid paperboard), plastic bottles, steel and aluminium cans)
- Scrap metal

- Used oils
- Green waste
- E-waste
- Tyres
- Household chemicals (also commonly known as CRC)

The various materials streams will be managed as follows:

5.7.1. Mixed Recyclables

Volumes of mixed recyclables are expected to be small due to the kerbside collection services operating within Griffith. Some rural properties can be expected to make use of the facility.

Subject to final design, the mixed recyclables are expected to be placed into bulk containers located within the transfer station. There will be separate containers for each of paper, cardboard and plastics. These will be the first facility passed by the public to enable them to separate and easily dispose of these materials. The containers will be emptied by contractors and sent for recycling. The comingled materials, under current arrangements, are transported to Kurrajong (Wagga Wagga) for processing.

5.7.2. Scrap Metal

A skip bin will be provided for scrap metal in one of the transfer bays. When filled, the bin will be emptied into a stockpile area located just below the public access area of the transfer station. GCC maintains a contract for the collection and disposal of scrap metal. The contractor will be required to clear the stockpile twice a year as contract dictates. However, GCC staff are to maintain the stockpile in a safe and tidy condition and allow sufficient space for the collection contractor to sort the scrap into different materials categories on site.

Items such as gas cylinders and fire extinguishers are to be kept in separate wire cages in the hazardous waste receival area awaiting collection from the contractor.

5.7.3. Used Oils

A dedicated waste oil receival facility will be in the CRC. Customers will be directed to dispose their used oils into this facility for collection by a contractor when the storage tank is near being full. Council staff will ensure that the area is kept tidy and any spilt oil quickly covered with adsorbent and the material contained.

5.7.4. Green Waste

A dedicated green waste stockpile area will be established at the landfill. When sufficient quantities are available, the green waste will be shredded by a contractor (or the Riverina Region of Councils Riverina Waste Group) for use in the interim and final capping.

5.7.5. E-Waste

E-Waste (e.g., computers and televisions) will be collected in a dedicated shipping container located adjacent to the transfer bays. E-Waste will be collected by a specialist contractor.

Smoke alarms are collected in a 120L MGB for collection by a contractor. No disassembly of the alarms is to occur.

5.7.6. Tyres and Mattresses

Tyres and mattresses will be stockpiled at the landfill. They will be regularly removed by a contractor. Staff are to remain vigilant in managing the stockpiles to ensure that they are kept tidy, free of contamination and materials removed as needed.

5.7.7. Household Hazardous Waste

CRC Wastes listed in Section 5.5 will be managed in accordance with the procedures laid down in that section.

The NSW EPA administers the collection and disposal of these wastes as part of a grant provided to GCC. It is expected that this will extend to include the collection of domestic quantities of household chemicals, including pesticides, and paints.

5.8. Traffic Management

In accordance with Schedule 3 Condition 57 of the approval, GCC shall ensure that:

- All loaded vehicles entering or leaving the site are covered.
- All loaded vehicles leaving the site are cleaned of materials that may fall on the road before they leave the site.

All incoming traffic is required to cross the weighbridge, where the attendant will direct to the vehicle to the correct location. All vehicles (i.e. vehicles delivering domestic loads of waste materials ≤ a box trailer load) will be all directed to the transfer station. The only exceptions are pre-booked loads of asbestos destined for the asbestos disposal area, skip bin trucks, GCC trucks and large commercial loads.

Small vehicles will be able to negotiate the transfer station in an anti-clockwise direction and then exit the waste management centre. Larger commercial vehicles with mixed loads of recyclables and material destined for the landfill can complete an anti-clockwise circuit of the transfer station and then cross the weighbridge again before being directed to the landfill. This also applies to vehicles emptying the mixed waste skip. Council may wish to weigh these loads for its internal accounting purposes. However, it must be careful that these materials aren't double counted. This will take on greater importance if the Section 88 levy extends to include the Griffith local government area.

Vehicles retrieving recyclable materials can exit the transfer station in a clockwise direction so that they can be weighed out of the waste management centre. Current traffic volumes are quite low, and this should rarely cause any conflict with other traffic. However, the situation is to be kept under ongoing review and the procedure revised in the event that increased traffic volumes warrant. Skip-bin trucks, GCC trucks and large commercial loads of waste will proceed direct to the landfill after weighing.

The quarry operator is to record and maintain a logbook of the extraction quantities and traffic movements in and out of the site. This log is to be kept on site and be available for inspection at the request of the Department or Transport for NSW.

5.9. Scavenger Rights and Responsibilities (nil)

Scavenging at both the landfill and the transfer station is strictly prohibited. Council staff and its contractors, when in attendance at the transfer station, may identify and assist customers to separate recoverable materials rather than put them in the mixed waste skip.

The transfer station concept design provides for a future Resource Recovery Centre (RRC). Should a RRC be established then small vehicles will be encouraged to use this facility. RRC staff will have the ability to recognise and retrieve materials that could be potentially reused or sold back into the community.

6. Landfill Operation Procedures

This section outlines high-level landfill operation procedures and identifies any associated consent condition that must be met by the landfill operator. These responsibilities are to be reinforced and confirmed by council and contractor staff during site induction.

6.1. Operating Hours

GCC shall comply with the operating hours in Table 6-1.

Table 6-1: Operating hours

Activity	Day	Time
Quarrying Operations	Monday – Friday	7.00am to 5.00pm
	Saturday	8.00am to 1.00pm
	Sunday and Public Holidays	None
Landfilling Operations	Daily	8.00am to 5.00pm

Notes:

Maintenance activities may be conducted outside weekday hours in Table 6-1 provided that the activities are not audible at any privately-owned residence, or until 6pm on Saturdays.

This condition does not apply to delivery of material if that delivery is required by police or other authorities for safety reasons, and/or the operation or personnel or equipment are endangered. In such circumstances, notification is to be provided to EPA and the affected residents as soon as possible, or within a reasonable period in the case of emergency.

6.2. Maintenance of the Active Tip Face

Schedule 2, Condition 12 of the approval states that all plant and equipment used on site shall be:

- Maintained in a proper and efficient condition.
- Operated in a proper and efficient manner.

Schedule 3, Condition 7 of the approval states that the landfill operator (or its contractor) will continue to:

- Minimise the exposed and active tip face at the landfill.
- Progressively revegetate all completed areas of the landfill and stabilise any exposed areas that are not required for operational purposes for a period greater than 90 days.
- Minimise the tracking of mud and waste from the site on public roads.
- Fill the landfill cells in a systematic manner.
- Maximise landfill compaction rates.
- Stockpile green waste on an impermeable pad with bunding to contain leachate.

6.3. Landfill Cover

Schedule 3, Condition 7(f) and 7(h) of the approval state that the landfill operator (or its contractor) will:

- Cover the active landfill area with at least 0.15 m of soil (or a suitable alternative material, as approved by EPA) at the end of daily waste disposal and compaction activities.
- Progressively cap the landfill cells using an EPA endorsed method.

6.4. Management of Greenhouse Gas Emissions

Schedule 3, Condition 11 of the approval stat that the landfill operator (or its contractor) must:

- Ensure that all composting is undertaken in accordance with Australian Standard AS 4454-2003: Composts, Soil Conditioners and Mulches, Appendix N, best practice guidelines for Composting Systems, or other practices approved by the EPA.

6.5. Leachate Collection System

Schedule 3, Condition 18 of the approval state that GCC will:

- Install a leachate barrier system on any surface to be used for the direct impoundment of leachate.
- Ensure that this leachate barrier system complies with specifications in the most current version of the EPL.
- Collect all leachate in the leachate dams to prevent it from escaping from the site to surface water, groundwater or subsoil.
- Treat all water from waste storage or handling areas, including any organic waste storage area, or that has been contaminated by leachate, as leachate.
- Ensure that the leachate storage dams:
 - are capable of accepting leachate generated in a 1 in 100 year, 72 hour duration storm event without overflowing
 - have a re-compacted clay or modified soil layer that is at least 900 mm thick and an in situ coefficient of permeability of less than 1×10^{-9} m/s, or some other suitable liner approved by the EPA.

In accordance with Schedule 3 Condition 17 of the approval, no leachate will be discharged from the site. In the event that the leachate pond is in danger of overflowing, leachate shall be recirculated back through the landfill (see Section 4.2.3). Specific leachate handling procedures are outlined in the Soil, Water and Leachate Management Plan, including response procedures high level alarm should the level of leachate in the leachate pond become such that a discharge to the environment is likely.

6.6. Stormwater

Schedule 3, Condition 15 of the approval states that stormwater from all areas of the premises which has the potential to mobilise sediments and other material must be controlled and diverted through appropriate erosion and sediment control/pollution control measures or structures.

6.7. Pest and Weed Management

Pests and weeds must be management in accordance with the *Biosecurity Act 2015*.

Schedule 3, Condition 10 of the approval states that GCC shall:

- Implement suitable measures to manage pests, vermin and declared noxious weeds on site.
- Inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in surrounding area.

Refer to the Weed Control Plan and the Pest Animal Control Plan for further detail.

6.8. Litter

Schedule 3, Condition 9 of the approval states that GCC shall continue to:

- Maintain suitable measures to prevent the unnecessary proliferation of litter both on and off site, including the installation and maintenance of a mesh fence of not less than 1.8 m high around the proposed landfill area.
- Inspect daily and clear the site (and if necessary, surrounding area) of litter on at least a weekly basis.

6.9. Security

Schedule 3, Condition 8 of the approval states that GCC shall:

- Install and maintain a perimeter stock fence and security gates on the site surrounding the landfill.
- Ensure that the security gates on site are locked whenever the site is unattended.

6.10. Bushfire

Schedule 3, Condition 60 of the approval states that, in order to minimise the potential to generate a bush or grass fire, GCC shall:

- Implement suitable measures to minimise the risk of fire on site, including in the landfill area e.g. Restrict any construction welding during high wind days, provide signage discouraging littering of cigarette butts.
- Extinguish any fires on site promptly maintain adequate fire-fighting capacity on site, in consultation with the rural fire service, including two purpose-built water tankers with a combined storage capability of 25,000 litres.
- Assist the rural fire service and emergency services, if safe to do so, if there is a fire on-site.
- Council has a detailed Pre-Incident Plan (fire) which has been distributed to NSW Fire & Rescue and the Rural Fire Service.

6.11. On-site Sewage

Schedule 3, Condition 16 of the approval states that GCC shall manage on-site sewage. The facility must comply with the requirements of the Environment and Health Protection Guidelines – On-site Sewage Management for Single Households (1998).

6.12. Storage

Schedule 3, Condition 19 of the approval states that GCC shall ensure that all above ground tanks and vats, including those used for treating or processing wastewater, leachate and diesel storage, and that all dangerous goods, as defined by the Australian Dangerous Goods Code, are stored and handled strictly in accordance with:

- All relevant Australian Standards.
- A minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund.
- DECCW's Storing and Handling of Liquids: Environmental Protection – Participant Manual.

6.13. Noise and Vibration

Schedule 3, Condition 28 of the approval states that GCC shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 6-2

Table 6-2: Operational noise impact assessment criteria dB(A)

Location and Locality	Day LAeq(15 min)	Evening LAeq(15 min)	Night LAeq(15 min)
All Surrounding Sensitive Receivers	40	35	35

Notes:

Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.

The noise limits do not apply if the Proponent has an agreement with the landowner to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

6.14. Green Waste Pad

Schedule 3, Condition 28 of the approval states that the EPL requires that GCC shall store biosolids and green waste on an impervious, bunded pad.

6.15. Environmental Monitoring

Environmental monitoring will be undertaken by qualified personnel in accordance with appropriate EPA procedures and any specific requirements outlined in the EPL or Management Plan.

6.15.1. Surface Water, Groundwater and Leachate Monitoring Programs

The surface water monitoring program will be conducted in accordance with the requirements of the EPL. This currently involves biannual testing and annual reporting to the EPA of the stormwater sedimentation basin. In addition, GCC has been voluntarily undertaking biannual testing and annual reporting of Tharbogang Swamp. A longitudinal record of data now exists after many years of testing. The testing laboratory advises GCC when monitoring results trend outside normal limits.

GCC will continue to maintain its groundwater and leachate monitoring program in accordance with the requirements of the EPL and the Soil, Water and Leachate Management Plan included as part of the consent. This involves biannual testing and annual reporting to the EPA of the boreholes 1 to 7 (including depth to water) (see Figure 2-1) and the leachate holding pond and has built up a record of data over many years. The testing laboratory advises GCC when monitoring results trend outside normal limits. It should be noted that several of the boreholes and the leachate ponds are normally dry.

6.15.2. Air Quality Monitoring

This is carried out monthly, at four stations within TWMC (Figure 6-1). Samples are sent to a laboratory for analysis. Results are tabulated and included in the reported Annual Environmental Performance Report, which is submitted with the EPL Annual Return.

6.15.3. Noise Monitoring

Noise is monitored at each of the neighbouring premises to TWMC annually. These works are contracted to suitably qualified contractor. Results are included in the Annual Environmental Performance Report, which is submitted with the EPL Annual Return and emailed to the Department of Planning and EPA.

6.15.4. Offset Land Monitoring

As part of the project approval GCC entered into a Conservation Agreement over 97.53 ha of Council owned land that borders TWMC. Under the Agreement, conservation and restoration works must be carried out on the scheduled land.

There are quarterly visual inspections and an annual monitoring report for the scheduled land. These reports assess the works carried out against ecological benchmarks.

The annual monitoring report is emailed to the Department of Planning for assessment.

6.15.5. Weed Monitoring

Under the Weed Management Plan, certain works have been scheduled to eradicate Priority Weeds and Weeds of National Significance. There will be quarterly walk through assessments with results presented in the Annual Environmental Performance Report.

6.15.6. Pest Animal Monitoring

The Pest Animal Control Plan identifies the pest animals on site at TWMC and provides various eradication processes for each pest species.

Completed records of eradication activities will be included in the Annual Environmental Performance Report.

6.15.7. Meteorological Monitoring

It is a requirement of the approval (Schedule 3 Condition 27) that GCC establish and maintain a meteorological station in the vicinity of the development, which performs 'ambient air monitoring' of rainfall, wind speed and wind direction, in accordance the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline.

GCC has built an automatic weather station at the Griffith Sewage Treatment Plant and the EPA has advised GCC that this weather station can be utilised in lieu of the construction of an additional station at the TWMC.

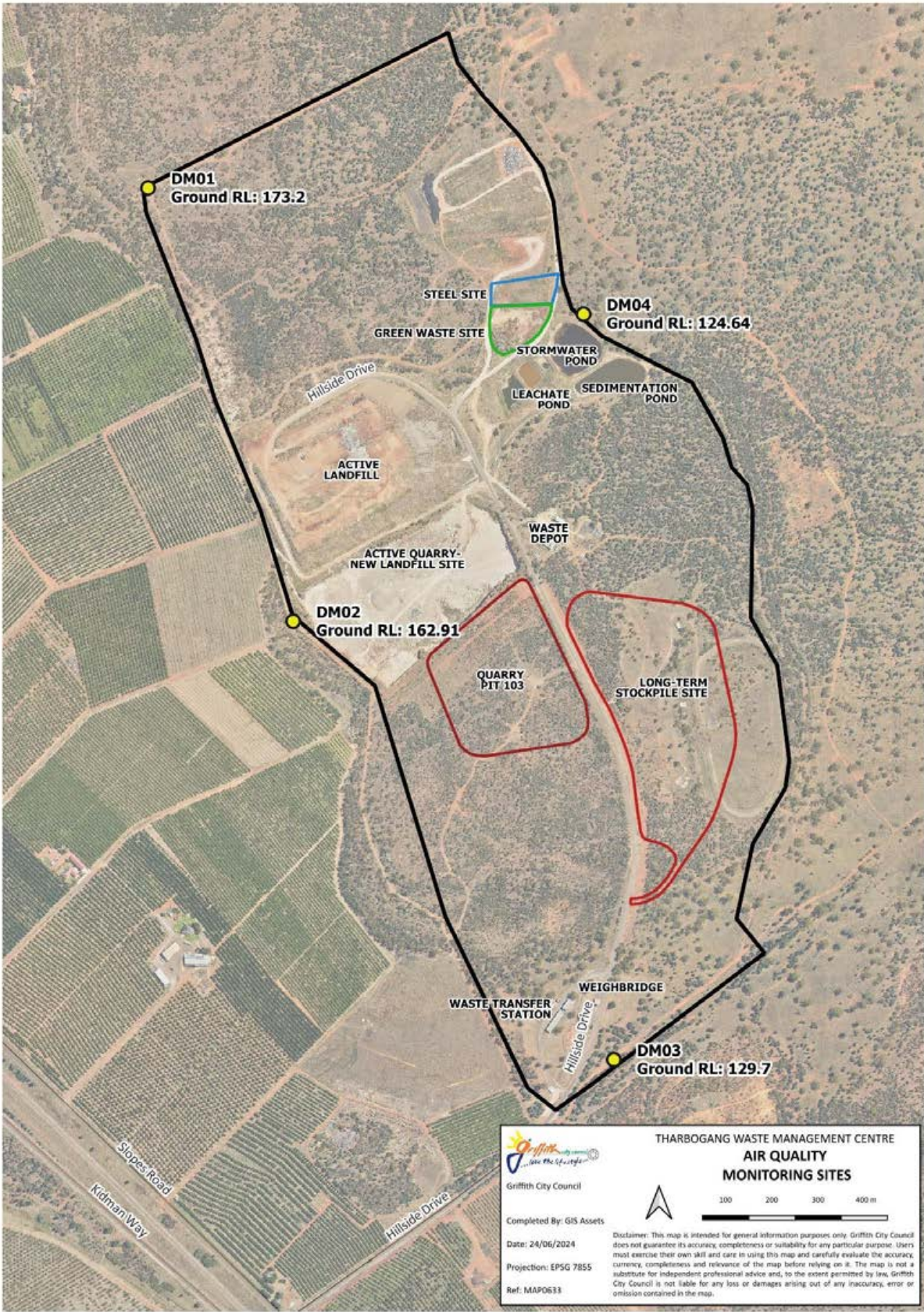


Figure 6-1: Air quality monitoring sites

7. Landfill Closure and Rehabilitation Plan

GCC must submit the Landfill Closure and Rehabilitation Plan to the NSW EPA within three months (preferably at least six months prior) of the last load of waste being landfilled at the site as required by the EPL. Current projections are that the existing active cell will be filled by May 2029 (Talis Consultants 2023).

The Closure Plan details the closure and rehabilitation of the site in accordance with the Environmental Guidelines: Solid Waste Landfills (EPA 2016). Specifically, these guidelines require that the Closure Plan should:

- Specify the steps taken or to be taken in closing and stabilising the landfill, and the time frame for doing so.
- Specify the detailed design, the materials to be used and the construction quality assurance plan for the final capping, in accordance with the requirements of sections 9 and 11 of these guidelines.
- Specify post-closure management and monitoring measures (sometimes called aftercare) for leachate, stormwater, landfill gas, odour, dust, litter and final cap integrity.
- Identify any proposed future use of the site.
- Be consistent with all applicable conditions of the development consent or other planning approvals that apply to the premises.
- Make sure that neighbouring residents are advised of the contact persons for discussing any problems (e.g. Odour emissions); records of these complaints should be kept in the same way as during operation.
- Make sure that waste is not received for disposal at the site after landfill operations cease. Wastes intended for use during remediation of the premises should be documented and reported in the same way as for an operating facility.

7.1. Final landform and use

At the completion of filling to the currently approved capacity and excluding any subsequent approval to fill the remaining cells, the final landform will be as shown in drawing D102 “Proposed Landfill Waste Profile” of the Landfill Closure and Rehabilitation Plan. The site will be progressively capped and revegetated as sections of the landfill are filled to their final level. Ultimately, the site will modify the pre-existing landform to incorporate a low hill over the current cell and a lower, evenly graded surface within the existing quarry that complements the existing MacPherson Range, on which the landfill is situated. The site will become passive open space and be returned to native forest to reflect the endemic Brimble Box- Pine Woodland vegetation communities. Details of the reforestation are contained within the Tharbogang Landscape and Biodiversity Management Plan (Eco Logical Australia, 2013). The capping system will be revegetated as soon as possible after its construction, subject to seasonality, no later than 6-months.

7.2. Final landfill contouring

The existing cell will be completed to the contours as shown in drawings C102 and C103 of the Landfill Closure and Rehabilitation Plan. The stages will be progressively capped, subject to favourable weather, commencing within 30 days of the last waste being placed therein. Capped areas will be adequately delineated with temporary fencing to restrict access from the public.

The highest finished level of the existing landfill will be RL 170.6. The capping design will generally be slope-specific. The upper slopes of the landfill will be filled to form a domed profile with a gradient of 1V:7H to allow for settlement in the deepest part of the waste mass. The upper slopes will transition to the lower slopes. Sections of both the north-eastern and south-western slopes will require varying degrees of re-profiling to flatten the slope to the maximum slope of 1V:5H recommended by the Environmental Guidelines: Solid Waste Landfills (2016).

The site will generally grade to the south and north from the highest point with the surface runoff captured and passed through the stormwater sedimentation pond to the stormwater detention pond from where it will be released through evaporation.

The new cells in the quarry will be, subject to any further extensions to the site, progressively capped as each cell is completed with the final level being at RL 143 in the northern corner and rising at 1% to a level of RL 147 in the southern corner. A perimeter drain around the capped cells will be required on the northern corner with a suitable path including energy dissipators constructed to convey the surface water to the stormwater sedimentation pond.

7.3. Contamination Management

Contamination management requires the installation and maintenance of additional surface water drainage structures, modifications to the leachate and stormwater ponds and the maintenance of the existing network of bore holes to ensure that neither contaminated surface nor ground water leaves the site. Additionally, it means that once the site has closed, no more waste will be received into the landfill. GCC may continue use of the WTS with the residual waste to be transferred to another landfill.

The maintenance regime will continue post-closure until such time as it can be demonstrated to the satisfaction of the EPA that the landfill is stable and non-polluting, which could typically be 30 or more years following closure. This maintenance regime will be as follows:

- Surface Runoff Diversion Drains
 - Weekly inspections of drains.
 - If blocked with sediment or vegetation, drains shall be cleaned out and any deposited spoil removed.
 - Areas of erosion will be repaired.
 - Energy dissipators repaired if erosion evident.
 - Weed removal if required.

- Leachate Pond
 - Weekly inspections.
 - Any sludge build-up which exceeds 300 mm in depth will be removed by dredging or sludge pump for disposal in an approved landfill.
 - Edge slashing to manage weed growth, as required.
 - Disposal of leachate above top water level by pumping to the reinjection storage tank.
- Sedimentation & Storage Pond
 - Inspection after significant rainfall events (i.e. any event that substantially raises the level of either pond).
 - any clearly excess sediment build up to be removed to an approved landfill.
 - edge slashing to manage excess weed growth, as required.
 - Disposal of water above top water level following clearance by laboratory testing.

7.4. Environmental Monitoring

The existing monitoring regime as established under the EPL No.5875 will continue as set out in this chapter, unless the EPL is subsequently modified in which case the revised regime will apply:

- Surface Water Monitoring Program
 - Stormwater basin twice annually
 - Sedimentation basin – twice annually
 - Downstream of site (Tharbogang Swamp) – twice annually.
- Groundwater & Leachate Monitoring Program
 - Groundwater – existing 7 bore holes – twice annually
 - Leachate pond – twice annually.

7.4.1. Testing Program

The following tests will be carried out in accordance with the above monitoring, the Soil, Water and Leachate Management Plan and the EPL:

Table 7-1: Testing program for scheduled monitoring sites

Parameter	LOR	Unit	Points 1 - 7	Sedimentation Pond	Leachate Pond	Tharbogang Swamp*
VHCs	1	µg/L	✓	✓	✓	✓
Total Phenolics	0.05	mg/L	✓	✓	✓	✓
pH	0.1		✓	✓	✓	✓

Parameter	LOR	Unit	Points 1 - 7	Sedimentation Pond	Leachate Pond	Tharbogang Swamp*
Elec. Con.	1	µS/cm	✓	✓	✓	✓
Alkalinity (as CaCO ₃)	20	mg/L	✓	✓	✓	✓
Sodium	0.1	mg/L	✓	✓	✓	✓
Chloride	5	mg/L	✓	✓	✓	✓
Total Organic Carbon	1	mg/L	✓	✓	✓	✓
Sulphate	5	mg/L	✓	✓	✓	✓
Suspended Solids	1	mg/L	✓	✓	✓	✓
Iron (Total)	0.005	mg/L	✓	✓	✓	✓
Fluoride- IC	0.01	mg/L	✓	✓	✓	✓
Manganese (Total)	0.005	mg/L	✓	✓	✓	✓
Ammonia-N	0.01	mg/L	✓	✓	✓	✓
Calcium	0.1	mg/L	✓	✓	✓	✓
Magnesium	0.1	mg/L	✓	✓	✓	✓
Potassium	0.1	mg/L	✓	✓	✓	✓
Nitrogen-Nitrate-N	0.01	mg/L	✓	✓	✓	✓
Suspended Solids (SS)	1000	mg/L	-	✓	✓	✓
COD	600	mg/L	-	✓	✓	✓

LOR = Limit of reporting * Not an EPL requirement

Table is reproduced from Table 7 in the Soil, Water and Leachate Management Plan

7.4.2. Landfill Gas Monitoring Program

A network of 27 vertical gas wells will be installed to passively vent landfill gas to the atmosphere as shown in Drawing C-106 of the Landfill Closure and Rehabilitation Plan. The gas wells/vents will be fitted with aspiromatic cowls, to encourage evacuation of the landfill gas from underneath the capping layer to the atmosphere. Each well will also be fitted with a sampling point to enable regular testing for gas volume and concentration. When total gas production exceeds 100 m³/hr the wells will be linked by a suction main and the collected gas flared.

A series of nine wells will also be sunk around the perimeter of the current landfill as shown on Drawing C-106 to monitor for any gas that may migrate from the landfill mass.

The landfill gas monitoring program will be designed in consultation with the EPA.

7.5. Final Landfill Cap and Revegetation

The final landfill cap is designed to minimise the generation and escape of leachate, and will comprise, from bottom to top:

- Regulation layer consisting of material at least 300mm thick to support the sealing layer.
- Gas collection drainage geocomposite (geonet) layer.
- Impermeable layer comprising of a 1.5mm Linear Low-Density Polyethylene (LLDPE).
- Sub-surface drainage layer comprising a drainage geocomposite (geonet).
- Revegetation layer at least 1m thick, comprising an 800mm thick clean sub-soil layer and a 200mm thick mulch/growth layer. The revegetation layer will incorporate direct seeding of a seed mix comprising native species of the Riverina region, followed by the application of a hydro-mulch.

Drawing C-301 of the Landfill Closure and Rehabilitation Plan includes a cross section of the proposed landfill capping system.

7.6. Certificate of Completion

When sufficient evidence is available to demonstrate that the landfill is stable and non-polluting, a statement certified by GCC's General Manager shall be submitted to the EPA to the effect that all site remediation work has been completed and further environmental management of the premises is not required.

8. Quality Assurance and Quality Control

8.1. Reporting

GCC is required to submit reports to the Department of Planning, as well as other agencies, as set out below.

8.1.1. Annual Reporting

Within a year of the commencement of operation of the new landfill cell, and annually thereafter, GCC shall submit an Annual Environmental Management Report to the EPA and the Secretary of the Department of Planning. This report must:

- Identify the standards and performance measures that apply to the project.
- Describe the works carried out in the last 12 months, and the works that will be carried out in the next 12 months.
- Include a summary of the complaints received during the past year, and compare this to the complaints received in previous years.
- Include a summary of the monitoring results for the project during the past year.
- Include an analysis of these monitoring results against the relevant:
 - impact assessment criteria/limits
 - monitoring results from previous years
 - predictions in the Environmental Assessment
- Identify any trends in the monitoring results over the life of the project.
- Identify any non-compliance during the previous year.
- Describe what actions were, or are being, taken to ensure compliance.

Additionally, the report must compile all the environmental undertakings within the EPL reporting period (Sept - Sept), against the conditions set out in the EPL.

8.1.2. Independent Environmental Audit

Within a year of the commencement of operation of the new landfill cell, and every three years thereafter, unless the Secretary of the Department of Planning directs otherwise, GCC shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:

- Be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been approved by the Secretary.
- Assess the environmental performance of the project, and its effects on the surrounding environment.
- Assess whether the project is complying with the relevant standards, performance measures and statutory requirements.
- Review the adequacy of any strategy/plan/program required under this approval.

- If necessary, recommend measures or actions to improve the environmental performance of the project, and/or any strategy/plan/program required under this approval.

Within one month of completion of each Independent Environmental Audit, GCC shall submit a copy of the audit report to the Secretary and relevant agencies, with a response to any of the recommendations in the audit report.

Within three months of submitting a copy of the audit report to the Secretary, GCC shall review and, if necessary, revise the:

- Strategies/plans/programs required under this approval.
- Rehabilitation bond, to consider the:
 - effects of inflation
 - changes to the total area of disturbance
 - performance of the rehabilitation against the completion criteria of the Landscape and Biodiversity Management Plan, to the satisfaction of the Secretary.

8.1.3. Incident Reporting

GCC has a duty to report pollution incidents under section 148 of the POEO Act. A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur. Specific details about how to report an incident, reporting timeframes and identification of which agencies require notification is provided in <http://www.epa.nsw.gov.au/licensing/dutytonotify.htm>.

In addition to the POEO Act requirements, within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) material harm to the environment, GCC shall notify the Department and other relevant agencies of the exceedance/incident.

As required by Schedule 5 Condition 3 of the Approval, within six days of notifying the Department of Planning and other relevant agencies of an exceedance/incident, the Proponent shall provide that Department and these agencies with a written report that must:

- Describe the date, time, and nature of the exceedance/incident.
- Identify the cause (or likely cause) of the exceedance/incident.
- Describe what action has been taken to date.
- Describe the proposed measures to address the exceedance/incident.

8.1.4. Complaints Procedures

GCC Complaints Procedures follow the requirements of the EPL. Complaints can be made in person to GCC personnel, in writing, by email to admin@griffith.nsw.gov.au or by phoning Council's Customer Service Centre on 02 6962 8100 during office hours.

All complaints are recorded in Griffith City Council's electronic Customer Request Management (CRM) register maintained by the Waste Operations Manager. The register records the date and time of the complaint, the method by which it was made, any personal details provided by the complainant, the nature of the complaint and any action taken in response to the complaint including the reasons why.

The complaints register must ensure that records of complaints are maintained for a period of at least four years after the complaint is made.

8.1.5. Community Notification

All appropriate reports, studies, testing results and major undertakings will be posted on Council Web Page in the Waste Section (including documents listed in Table 1-3).

For direct community engagement Council uses the traditional media outlets (television, radio and print) as well as Council social media platforms.

For an incident on site the below steps are followed to notify the community.

Methods of Notification

Incident notification

- An incident/early warning system for surrounding landholders is in place. Neighbouring properties would receive a text message notifying them of an incident at the TWMC. At this stage, letters are being sent out offering neighbours the choice of opting into this system. If not accepted, that neighbour would still be contacted by phone or door knocked if necessary.
- The early warning notification shall provide specific information to minimize the risk of harm such as:
 - details of what the incident/imminent incident is
 - how those affected can prepare and respond to the incident.
- Information could also include any actions that should be taken if deemed necessary, e.g., closing windows, staying indoors. A sample text message could be:
 - "There is currently a small fire at the Tharbogang Landfill which will soon be under control. Neighbours do not need to take any action at this stage. Updates will be provided as available."

Information to tell the neighbours

- Type of pollution incident
- Severity
- What they should do

The notification shall provide specific information to the neighbouring properties (and local community if required) so it can minimise the risk of harm such as:

Table 8-1: Information to tell the neighbours if there's an incident

Incident	Information to be provided to neighbour
Emission of air pollutants	Instructions to close windows and doors and remain inside for incidents.
Pollutant discharge	Instructions to avoid the use of water in creeks or rivers affected or likely to be affected

Subsequent Notifications

Where early warning is not possible Council will provide notification and communication during and after an incident to provide those affected with information, advice and updates.

Regular communication and notification using the communication methods listed above will be provided as the situation changes, e.g., smoke intensifies and is potentially more toxic and/or contains a greater concentration of harmful particulates and poses a major health hazard for residents. Neighbours may be advised to stay indoors in this case.

Regular update will continue until the incident and clean-up of impacted site and affected areas has been completed.

In the event of a major pollution incident, neighbours may be further contacted by an emergency service representative, such as in a case where evacuation or critical safety actions are necessary.

Conclusion of Incident Notification

An 'all-clear' text message or telephone call will also be made to residents when the incident is no longer of concern and safety has been restored.

Community Notification

Depending on the nature, scale and timing of the incident, GCC will also place routine notices and updates on its website, Facebook page and/or provide information via the local media. Communication methods will be used on a case-by-case basis and in all situations GCC will attempt to provide early warnings to directly affected neighbours as described above.

Notification of Main Commercial Customers

The incident may require the halting of commercial customers' entry to the TWMC. This will be determined by the officer that activated and is in charge of the Pollution Incident Response Management Plan.

The staff responsible for notification of main commercial customers, if required, are the Landfill Overseer, or the Waste Operations Manager, or the Director Utilities or staff member as directed.

8.1.6. Dispute Resolution

The process for resolving disputes is indicated in Figure 8-1.

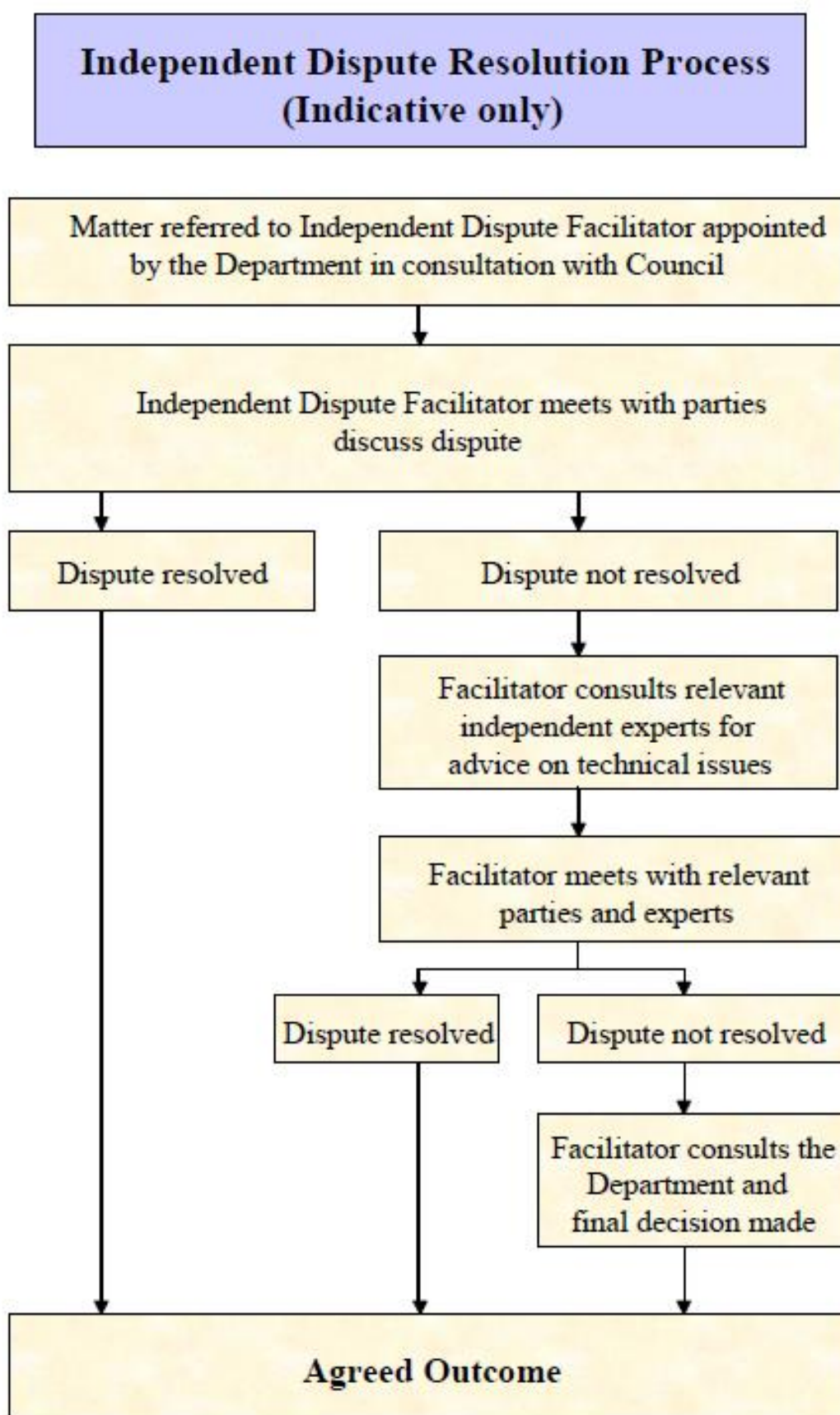


Figure 8-1: Dispute resolution process (Appendix 3 of the Consolidated Project Approval)

8.2. Roles and Responsibilities of Key Personnel

The current Waste Department has the following positions.

- Waste Operation Manager
- Landfill Overseer
- Landfill Operator x 2
- Relief Operator
- Bin Maintenance/Relief Operator
- Weighbridge Operator x 2
- Waste Transfer Station Operator

8.2.1. Waste Operation Manager

Role

Managing activities that are part of the Waste Department services.

Responsibilities

- Provide inspired leadership for the Waste Department.
- Make important policy, planning, and strategy decisions.
- Develop, implement and review operational policies and procedures.
- Assist HR with recruiting when necessary.
- Help promote a company culture that encourages top performance and high morale.
- Oversee budgeting, reporting, planning, and auditing.
- Work with senior stakeholders.
- Ensure all legal and regulatory documents are filed and monitor compliance with laws and regulations.
- Work with GCC's Senior Management Team to determine values and mission, and plan for short and long-term goals.
- Identify and address problems and opportunities for the company.
- Build alliances and partnerships with other organisations.
- Support worker communication with the management team.

8.2.2. Landfill Overseer

Role

- Effective supervision of staff responsible to this position.
- Ensure the optimal operation of all responsible facilities in accordance with EPA guidelines and Council standards.
- Be accountable for the correct methods of operating and servicing plant items.
- Coordinate and be accountable for the successful delivery of Council's WH & S policies in the workplace.
- Keep accurate records that can be used for auditing purposes.
- Provide feedback on operational issues to the Waste Operations Manager.

Responsibilities

- To supervise, allocate and source appropriate plant, material and human resources associated with the operation of the Tharbogang and Yenda Waste Management Centres in an efficient and cost-effective manner.
- Operate heavy plant items such as but not limited to Track Loader, Compactor, Wheel Loader, Tipper Truck/Water Cart and various hired plant items.
- Ensure that the daily deposition, compaction and covering (with soil) of rubbish deposited at the facility is to the standard required by the Council and relevant regulations.
- To operate Waste Transfer equipment and supervise the daily operation of the WTS to the standard required by the Council and relevant regulations.
- Ability to work as a management team member within Waste Department and communicate to Waste Operations Manager all matters of concern regarding safe and efficient site operation.
- Oversee the routine maintenance and regular servicing of plant items used by staff being supervised.
- Maintain the waste disposal sites in a safe and presentable manner so as to project the good image of Council.
- To make and provide records of work output including times of work, assigning of job cost numbers, plant maintenance records and commercial dumping for levying of Council fees and charges.
- Recommend capital improvements and maintenance plans for both Tharbogang and Yenda Waste Management Centres to Waste Operations Manager.
- Provide a bin delivery service in a timely manner and resolve complaints in regards to the bin network.
- Liaise with storekeeper to ensure material stocks are maintained to meet the needs of the operations.
- To monitor daily/weekly works progress and use of materials, plant and fuel and order more where required.
- To organise drumMUSTER monthly collection reports and audit these reports and liaise with collection company and process payment invoices.
- Register and record accurate vehicle impoundment and disposal.
- Provide input into annual budget process.
- To carry out minor job costing and comparisons.
- To induct and supervise contractors utilised in the operation of the Waste Management Centres.
- Collect and collate the Yenda Ticket receipt books quarterly from selling agents in Yenda.
- Carry out the required weekly audits on the dangerous goods stored in the Community Recycling Centre, on the behalf of the EPA.
- Ensure that staff are communicating the correct storage location for the dangerous goods in the Community Recycling Centre facility.
- To help project and promote the image of Council and the Waste Management Facilities as both courteous and efficient.

- To provide directions to the public to ensure the safe segregation and disposal of rubbish and other material into the correct skip bins.
- Be responsible for the general housekeeping and the maintenance of both Waste Transfer Stations and the surrounds.
- Ensure that staff are providing the correct directions to the public which will result in the safe segregation and disposal of rubbish and other material into the correct Skip Bins.
- Oversee the safe operation of the plant items that are required in the daily operation of the Waste Transfer Stations.
- Operate cardboard press – Bailing cardboard.
- Operate Forklift.
- Operate hook lift truck – emptying and replacing skip bins.

8.2.3. Landfill Operator

Role

- Operate and maintain TWMC in accordance with EPA and Council guidelines and expectations.
- Maintain a high standard of plant maintenance and plant operation.
- To operate various types of heavy landfill plant and equipment to ensure the deposition, compaction and covering (with soil) of rubbish deposited at the facility is to the standard required by the Council and relevant regulative authorities.

Responsibilities

- Maintaining the waste disposal sites in a safe and presentable manner to project the good image of Council and in accordance with EPA and Council guidelines and expectations.
- Operate heavy plant items such as but not limited to Track Loader, Compactor, Wheel Loader, Tipper Truck and Water Tanker.
- Operate the Weighbridge facility including the Weighbridge Software.
- Operate and maintain the WTS facility.
- To assist with the meeting of environmental standards and the immediate reporting of any environmental pollution.
- To assist in the operation of landfill in accordance with the EPL.
- To provide directions to the public to ensure the safe segregation and disposal of rubbish and hazardous material, whether at a transfer facility or designated landfill cells.
- To receive and identify clean and rinsed chemical drums for recycling as well as record keeping.
- To ensure public access areas within the landfill facility are maintained in a safe and convenient condition.
- To perform clean down and maintain major plant items.

- To perform routine maintenance and services to major and minor plants items and notify the Workshop Team Leader and Landfill Overseer of any irregularities with regard to machine operational performance.
- Communicate to Landfill Overseer all matters of concern regarding safe and efficient site operation.
- General housekeeping of the internal spaces, maintain the surrounds of various facilities within the TWMC.
- To provide directions to the public to ensure the safe segregation and disposal of rubbish and other material into the correct skip bins.
- Operate forklift.
- Operate hook lift truck – emptying and replacing skip bins.
- Ensure that the correct dangerous goods are placed in their designated silages.
- Work at the Yenda landfill when required and receive waste using the ticket system.
- Assist in the development of more efficient work practices and ensure public safety.
- Ability to work under minimal supervision to an agreed standard.
- Be prepared to attend emergency callouts if available.
- To provide and maintain a safe working environment.

8.2.4. Bin Maintenance/Relief Operator

Role

- Operate and maintain facilities in accordance with EPA and Council guidelines and expectations.
- Maintain a high standard of plant maintenance and plant operation.
- Maintain, repair and deliver waste disposal bins and ensure bin network is maintained to a high standard .

Responsibilities

- To repair, maintain and deliver waste disposal bins.
- To follow up on complaints regarding garbage bin collection including phone calls to customers, viewing of video footage and associated paperwork.
- To make and provide records of work output including times of work and plant maintenance records.
- General labouring work related to waste collection and disposal activities.
- To provide directions to the public to ensure the safe segregation and disposal of rubbish and hazardous material, whether at a transfer facility or designated landfill cells.
- To ensure public access areas within the landfill facility are maintained in a safe and convenient condition.
- To perform clean down and maintain plant items.
- To perform routine maintenance and services to plant items and notify the Workshop Team Leader and Landfill Overseer of any irregularities with regard to plant operational performance.
- To provide relief duties in the following areas:

- Waste Operator (Landfill)
- Commercial Collections, Garbage Assistant
- Tharbogang Weighbridge and Yenda Landfill.
- Operate heavy plant items such as but not limited to Track Loader, Compactor, Wheel Loader, Tipper Truck/Water Cart and various hired plant items.
- To provide and maintain a safe working environment.
- General Housekeeping, Maintain Transfer Station and its surrounds.
- To provide directions to the public to ensure the safe segregation and disposal of rubbish and other material into the correct Skip Bins.
- Operate commercial bailing press.
- Operate forklift.
- Operate hook lift truck – emptying and replacing skip bins.
- Ensure that the correct dangerous goods are placed in their designated silages.
- Be prepared to attend emergency callouts if available
- Accomplish tasks while working under limited / minimum supervision

8.2.5. Weighbridge Operator

Role

- Operate Landfill Weighbridge in accordance with procedures and standards.
- Securely handle weighbridge sale transactions and balance income receipts.
- Operate and maintain facilities in accordance with EPA and Council guidelines and expectations.

Responsibilities

- Inspect loads to ensure only acceptable materials are passed for disposal at the landfill.
- Weigh and charge for loads at the Tharbogang Landfill.
- Weigh and record weights and material types for the Tharbogang Quarry operator.
- Securely handle weighbridge sale transactions and balance income receipts.
- Maintain Weighbridge building and surrounds.
- Maintain security at the landfill.
- Provide customer service for the Waste Department.
- Assist the public and Councils Customer Service Officers with waste collection queries.
- Direct the public to the correct disposal site.
- Ensure the public are wearing appropriate footwear.
- Manage the drumMUSTER bookings.
- Process drumMUSTER loads and complete associated paper work.
- Manage the asbestos bookings.
- Manage the impounded car register
- Assist in delivering new bins and bin repairing.
- General housekeeping, maintain transfer station and its surrounds.

- To provide directions to the public to ensure the safe segregation and disposal of rubbish and other material into the correct Skip Bins.
- Operate commercial bailing press.
- Operate forklift.
- Operate hook lift truck – emptying and replacing skip bins.
- Ensure that the correct dangerous goods are placed in their designated silages.
- Be prepared to attend emergency callouts if available.
- Well presented, trustworthy, confident and self-motivated person with a common sense approach.

8.2.6. Waste Transfer Station Operator

Role

- Operate the Waste Transfer Station in accordance with procedures and standards.
- Direct the Public to the correct location for the waste they are disposing.
- Operate and maintain the WTS facility in accordance with EPA and GCC guidelines and expectations.

Responsibilities

- Assist the public in disposing waste into the correct bins.
- Maintain WTS buildings and surrounds.
- Maintain security at the WTS.
- Provide customer service for the Waste Department.
- Direct the public to the correct disposal site.
- Ensure the public are wearing appropriate footwear.
- General housekeeping, maintain WTS and its surrounds.
- To provide directions to the public to ensure the safe segregation and disposal of rubbish and other material into the correct Skip Bins.
- Ability to operate weighbridge software.
- Operate Forklift.
- Operate Hooklift Truck
- Be prepared to work overtime or attended emergency callouts if available.
- To provide and maintain a safe working environment.

8.3. Quality Assurance

This LEMP must include a copy of a quality assurance plan for the design and installation of the leachate management system and any capping of the landfill cells that covers the relevant issues outlined in sections 1 – 2 of Appendix A of the Environmental Guidelines for Solid Waste Landfills (EPA 2016).

Assurance of Quality is a requirement in the Environmental Guidelines: Solid Waste Landfills (EPA 2016). The purpose is to assure the quality of design, construction and operation of landfills, so that the environmental goals as outlined in Section 3 of this Plan are achieved, i.e.

re water pollution, air pollution, land management and conservation, and hazards and loss of amenity. In particular, this relates to management of leachate, landfill gas emissions, landfill space used, remediation and preserving the local amenity. The various stages of this project, which will require quality assurance procedures, are as follows:

8.3.1. Existing Landfill

Operations and Environmental Monitoring

Sections 6 and 7 in this Plan outline procedures for operations and environmental monitoring of the landfill. A further component is the new WTS (see Section 5), which is currently being delivered under a separate contract to Council for design and construction. Therefore, development and implementation of detailed operating and monitoring procedures for the existing landfill and WTS are being carried out by the responsible operator (currently GCC), using suitably qualified and experienced staff, in accordance with quality principles.

Reporting of incidents and performance will be in accordance with the requirements of Section 8.1 in this LEMP.

Closure, Rehabilitation and Environmental Monitoring

Landfill transitional activities and indicative timeframes are as provided in Section 7 of this Plan. It shows the proposed filling and rehabilitation of the existing landfill and the timeframes and design concepts for developing the new landfill cells.

Section 7 in this Plan provides details for landfill closure and rehabilitation. Rehabilitation works will require detailed plans and specifications (and contract documentation, if Council decides to carry out the work by contract). Construction Quality Control will be the sole responsibility of the organisation carrying out the work (i.e. either Council or a contractor). However, it is accepted sound practice that an independent organisation should develop and implement a Construction Quality Assurance Plan and provide appropriate reports to Council. The Construction Quality Assurance Plan will ensure that the work meets the specified requirements for the quality of materials and workmanship. It will include observations, sampling and testing, and documentation of materials, methods & relevant key milestones.

Environmental monitoring and reporting procedures that satisfy the monitoring requirements set out in Section 7.4 are being developed and implemented by Council, in accordance with quality principles.

8.3.2. New Landfill

Design, Construction, Operation and Environmental Monitoring

Section 4 in this Plan outlines parameters for design of the new landfill cells. As with landfill closure and rehabilitation, the new landfill cells design and documentation will need to be carried out by suitably qualified and experienced professionals, in accordance with quality principles.

As noted above for landfill closure works, quality control for construction of new landfill cells will be the sole responsibility of the constructing organisation (i.e. either Council or a contractor). However, an independent organisation should develop and implement a Construction Quality Assurance Plan and provide appropriate reports to Council.

Development and implementation of detailed operating, environmental monitoring & reporting procedures will need to be carried out by the responsible operator, using suitably qualified and experienced staff, in accordance with quality principles.

8.4. Staff Training

All staff will receive sufficient training to enable them to carry out their assigned duties in a competent and safe manner.

8.4.1. Frequency of Staff Training

All GCC employees at the premises shall be trained on the implementation of the Pollution Incident Response Management Plan as follows:

- Existing Council employees/site personnel (including contractors):
 - during the regular toolbox meetings
 - at least annually during the yearly review of the Pollution Incident Response Management Plan / desktop scenario where staff undertake a simulated pollution incident response exercise
 - specific fire training will be provided to all operational staff.
- New Council employees/site personnel (including contractors):
 - as part of the induction at the premises, the training will cover the purpose, requirements and responsibilities as detailed in the Pollution Incident Response Management Plan.

Regular site briefings and toolbox meetings will be held when considered appropriate to draw attention to potential pollution incidents and identify improvements to on-site safety procedures.

Additional training will also be provided to employees whenever the Pollution Incident Response Management Plan is changed.

All drills and exercises of the Pollution Incident Response Management Plan will be documented, indicating the outcomes of the exercise and any problems that were encountered, along with any recommendations for plan modifications.

8.4.2. Record of Training

Copies of all staff licences and letters of competencies are kept on file and administrated by Council's Workforce Planning Department.

References

Black Mountain Projects 2013. *Cultural Heritage Management Plan Tharbogang Quarry and Landfill Near Griffith, NSW*.

CPE Associates 2013. *Project Review Report: Tharbogang Landfill Expansion Rev.2*.

CPE Associates 2014. *Tharbogang Landfill and Quarry Expansion Project: Preliminary Environmental Assessment - Modification*.

CPE Associates 2011. *Soil, Water and Leachate Management Plan*.

CPE Associates 2011. *Tharbogang Waste Management Centre: Waste Monitoring Program*.

CPE Associates 2011. *Tharbogang Landfill: Waste Screening Procedures*.

Eco Logical Australia 2011. *Landscape and Biodiversity Management Plan and Rehabilitation and Biodiversity Offset Strategy Management Plan*. Prepared for Griffith City Council.

Ecoplaning 2019. *Tharbogang Waste Management Centre – Weed Control Plan*. Prepared for Griffith City Council.

Ecoplaning 2023. *Tharbogang Quarry and Landfill Offset Monitoring – Annual Monitoring Report 2022*. Prepared for Griffith City Council.

EPA. *Environment Protection Licence No.5875*.

GHD 2013. *Tharbogang Quarry Dilapidation Survey of Existing House*.

GHD 2013. *Tharbogang Quarry Noise and Vibration Monitoring Plan*.

Golder Associates 2024. *Revised Soil, Water & Leachate Management Plan Tharbogang Waste Management Plan*.

Griffith City Council undated. *Blast Management Plan*.

Griffith City Council 2024. *Landfill and Quarry Site Operational Traffic Management Plan*

Griffith City Council 2023. *Pollution Incident Response Management Plan (PIRMP) for Tharbogang Waste Management Centre & Tharbogang Quarry (EPA Licence No.5875) and Yenda Waste Management Centre (EPA Licence No.6263)*.

Griffith City Council 2023. *Tharbogang Waste Management Centre Pre-Incident Plan (Fire)*.

Impact Environmental 2023. *Community Education Program – Griffith City Council*.

Northstar Air Quality 2019. *Air Quality Monitoring Program – Tharbogang Waste Management Centre*. Prepared on behalf of Griffith City Council.

NSW Department of Planning 2024. *Consolidated Project Approval Tharbogang Quarry and Landfill (Application 06_0334)*.

Riverina Agriconsultants 2019. *Tharbogang Waste Management Centre – Pest Animal Control Plan*.

Talis Consultants 2023. *Landfill Lifespan and Cost Estimate – Tharbogang Recycling and Waste Disposal Facility*. Prepared for Griffith City Council.

Appendix A Consolidated Project Approval

The consolidated project approval is a comprehensive document that sets out in detail the conditions that must be complied with, including drawings of the approved work and the statement of commitments made by GCC. The TRIM reference for the approval is TFN-20/22975 and the full document is replicated below.

The following table summarises the approval requirements and indicates where each approval condition has been addressed.

Condition	Summary of requirement	Where matter is addressed in LEMP
Schedule 2: Administration Conditions		
1	The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	s.1.3 Statutory Requirements
2-3	<p>The Proponent shall carry out the project generally in accordance with the:</p> <p>(a) EA</p> <p>(b) site layout plan as shown in Appendix 1 as amended by the drawings in Appendix 1A</p> <p>(c) Statement of Commitments</p> <p>(d) MOD 1</p> <p>(e) MOD 2</p> <p>(f) the conditions of this consent.</p> <p>If there is any inconsistency between the above documents, the conditions of approval shall prevail to the extent of the inconsistency.</p>	s.1.2 Landfill and Quarrying Limits
7	Quarrying and landfilling may be undertaken until 31 December 2035.	s.1.4 Licensing Requirements
8	No more than 315,000 tonnes per year of gravel materials shall be extracted, and no more than 35,000 tonnes per year of general solid waste be received.	s.1.2 Landfill and Quarrying Limits
8(a)	Maximum volume of each landfill cell.	s.1.2 Landfill and Quarrying Limits
8(b)	For a 12 month period commencing within three years of the date of the Approval of Modification 3, the applicant may extract up to 400,000 tonnes of gravel materials per year. The Applicant must provide written notice to	s.1.2 Landfill and Quarrying Limits

Condition	Summary of requirement	Where matter is addressed in LEMP
	the Planning Secretary prior to the commencement of the MOD 3 works, at least one month before the 12 month period begins. At the completion of the 12 month period, the Applicant may extract no more than 315,000 tonnes per year.	
10	Structural adequacy of all buildings and structures.	s.1.3 Statutory Requirements
11	The Proponent shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.	s.1.3 Statutory Requirements
12	All plant equipment shall be maintained and operated in a proper and efficient condition / manner.	s.6.2 Maintenance of the Active Tip Face
Schedule 3: Specific Environmental Conditions		
1	Only waste authorised by the EPL shall be received by the site.	s.5.2 Waste Reception Procedures
2	All waste outputs should be disposed of at a suitably licenced facility.	s.4.3 Transition from Existing Landfill to New Landfill
3	All waste generated during construction must be classified and disposed of according to Department of Environment, Climate Change and Water (DECCW) Waste Classification Guidelines, Part 1: Classifying waste.	s.4.3 Transition from Existing Landfill to New Landfill
4	Suitable procedures are in place to ensure that the site does not accept prohibited waste, incoming waste loads are screened, appropriate documentation of all waste sludges and wastes that are controlled under a tracking system and adequate training to recognise and handle hazardous or unapproved waste.	s.5.2 Waste Reception Procedures
5	Prior to the construction of the Waste Transfer Station, the Proponent shall submit detailed plans of the facility for approval by the Secretary. Note: The WTS should be sited to avoid any remnant vegetation onsite.	Appendix B Waste Transfer Station Plans (2015)
6	A waste monitoring program must be prepared to the satisfaction of the Secretary and implemented prior to commencement of operations.	s.5 Waste Transfer Station Procedures Waste Monitoring Program (CPE Associates 2011)

Condition	Summary of requirement	Where matter is addressed in LEMP
7	Prescribes landfill criteria including revegetation and systematic filling and management of landfill cells.	s.6.2 Maintenance of the Active Tip Face s.6.3 Landfill Cover
8	The site surrounding the landfill must be kept secure and locked when unattended.	s.6.9 Security
9	Existing litter shall be removed, mesh fencing 1.8 m high shall be installed around the site and the site will be inspected daily with a minimum of a weekly litter removal.	s.6.8 Litter
10	Pests, vermin and noxious weeds (now priority weeds under the Biosecurity Act 2015) on site are managed and inspected regularly.	s.6.7 Pest and Weed Management s.6.15.5 Weed Monitoring s.6.15.6 Pest Animal Monitoring Pest Animal Control Plan (2019) Weed Control Plan (2019)
11	Composting is undertaken in accordance with Australian Standard AS 4454-2003.	s.6.4 Management of Greenhouse Gas Emissions
12	A feasibility report outlining options to capture and use greenhouse gas in the generation of electricity is to be prepared within 5 years of PA.	GCC engaged a contractor to harness landfill gas for flaring LMS
13	The existing Landfill Environmental Management Plan is updated within 6 months of the PA.	This LEMP
14	When discharging, the Proponent will comply with section 120 of the Protection of the Environment Operations Act 1997 (POEO Act) unless expressly provided for by an EPL.	s.1.6 Landfill Guidelines
15	Stormwater will be controlled and diverted through appropriate erosion and sediment control/pollution measures.	s.6.6 Stormwater
16	On site sewerage shall be managed and comply with the Environment and Health Protection Guidelines - On-site Sewage Management for Single Households (1998).	s.6.11 On-site Sewage
17	Water that has come in contact with waste must not be discharged from the site.	s.6.6 Stormwater
18	Prescribes leachate management criteria.	s.6.5 Leachate Collection System

Condition	Summary of requirement	Where matter is addressed in LEMP
19	All above ground tanks and vats are to be stored and handled in accordance with the relevant criteria.	s.6.12 Storage
20	A Soil, Water and Leachate Management Plan must be prepared and implemented which must include a site water balance, erosion and sediment control plan, stormwater management scheme, surface water monitoring program, ground water and leachate monitoring program and surface water, groundwater and leachate response plan. SWLMP to be provided to DG for approval within 6 months of PA.	Soil, Water and Leachate Management Plan (SWLMP) (Golder 2024).
21	Site water balance	As indicated in Table 1-2, section 4.3 of the SWLMP is the site water balance
22	Erosion and sediment control plan	As indicated in Table 1-2, section 4.2 of the SWLMP is the erosion and sediment control plan
23	Stormwater management scheme	As indicated in Table 1-2, section 4.1 of the SWLMP is the stormwater management scheme
24	Surface water monitoring program	As indicated in Table 1-2, section 5.2 of the SWLMP is the surface water monitoring program
25	Groundwater and leachate monitoring program	As indicated in Table 1-2, section 5.3 of the SWLMP is the groundwater and leachate monitoring program
26	Surface water, groundwater and leachate response plan	As indicated in Table 1-2, section 6 of the SWLMP is the surface water, groundwater and leachate response plan
27	A meteorological station must be established and maintained in the vicinity of the development in accordance with the Approved Methods for Sampling Air Pollutants in NSW guideline	s.6.15.7 Meteorological Monitoring
28	Prescribes maximum noise limits.	s.6.13 Noise and Vibration
29	Prescribes quarrying and landfilling operating hours.	s.6.1 Operating Hours
30 & 31	Prescribes blasting criteria, air blast overpressure limits and ground vibration thresholds.	Table 1-2 refers to GCC's Blast Management Plan (BMP); refer to page 12 of the BMP
32 & 33	Prescribes blasting hours and frequency	Refer to page 9 of the BMP
34	Requires that blasting is not undertaken within 200 m of privately-owned land unless suitable arrangements have been made	Refer to page 6 of the BMP

Condition	Summary of requirement	Where matter is addressed in LEMP
35 & 36	Requires that all landholders within 500 m are advised of proposed blasting activities and prior to 30 November 2010 these owners are entitled to a property inspection. In the event that a written request of a property inspection, the inspection shall be undertaken by a suitably qualified person.	Dilapidation survey of existing house completed (GHD 2013)
37	Prescribes the investigation process following landholder claims of property damage as a result of blasting.	s.8.1.4 Complaints Procedures s.8.1.6 Dispute Resolution
38	A Blast Management Plan must be prepared and implemented prior to 30 November 2010.	BMP
39	Prescribes continuous improvement criteria of blasting and noise impacts.	Table 1-2 refers to the Noise and Vibration Monitoring Program (NVMP); refer to s.4.2 of the NVMP
40	A Noise and Vibration Monitoring Plan must be prepared and implemented. This will include annual attended noise monitoring, traffic noise monitoring, details of how noise performance is monitored and a noise monitoring protocol.	NVMP
41	Tables 5, 6 and 7 prescribe Air Quality criteria not to be exceeded.	Table 1-2 refers to the Air Quality Monitoring Plan (AQMP); refer to s.2.3 of the AQMP
42	Requires that odour complies with section 129 of the POEO Act unless expressly provided in the EPL.	s.2.3 of the AQMP
43	An Air Quality Monitoring Plan must be prepared and implemented. The plan will include details of how air quality performance will be monitored and a protocol for evaluating compliance.	s.2.3 of the AQMP
44	Requires continuous improvement of dust mitigation measures.	s.2.3 of the AQMP
45 - 50	<p>45 - Table 8 prescribes Biodiversity Offset Requirements</p> <p>46 & 47 - Requires a revision of the Biodiversity Offset Strategy and that the strategy be implemented prior to any clearing on site.</p> <p>48 - A Landscape and Biodiversity Management Plan must be prepared and implemented. This must be prepared by a qualified person, be submitted to the Secretary and include a Rehabilitation and Biodiversity Offset Strategy Management Plan and a Long-Term Management Strategy.</p>	<p>Letter from the Department of Planning dated 27 Jan 2022 states: 'We have reviewed the documents supplied against the Conditions established by the Consolidated Project Approval (2010). We consider that conditions 45 to 50 inclusive have been met.'</p> <p>Council allocates sufficient funds in its annual operational budget for implementation of the Biodiversity Offset Agreement.</p>

Condition	Summary of requirement	Where matter is addressed in LEMP
	<p>49 & 50 - Prescribes Landscape and Biodiversity Management Plan criteria and Long-Term Management Strategy criteria.</p> <p>49(a) – Sufficient funds have been committed by Council for implementation of the Biodiversity Offset Agreement.</p>	
51 & 52	Prescribes criteria for the rehabilitation bond.	Council will lodge the rehabilitation bond prior to commencing quarrying, as required.
53	A Cultural Heritage Management Plan must be prepared and implemented and prescribes criteria for the plan. This plan must be prepared in consultation with DECCW and local Aboriginal communities, draw on relevant recommendations for management and include description of measures that would be implemented.	Table 1-2 refers to the Cultural Heritage Management Plan (Black Mountain Projects 2013)
54	A Traffic Management Plan must be prepared and implemented and prescribes criteria for the plan. This plan must be prepared in consultation with RTA, outline measures to manage traffic issues, review standard of access roads, outline dust mitigation measures and outline rubbish management from vehicles.	Table 1-2 refers to the Traffic Management Plan
55	Requires that the Auxiliary Right Turn (AUR) at the intersection of Access Road and the Kidman Way be upgraded within 12 months of operations commencing on site.	Upgrade complete
56	The Proponent shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.	Currently underway by GCC
57	All loaded vehicles must be covered when travelling to and from the site and that loaded vehicles are cleaned of material when leaving the site.	s.5.8 Traffic Management
58	A logbook of the extraction quantities and traffic movements must be kept on site and available for inspection.	s.5.8 Traffic Management
59	Storage, handing and transport of fuels and dangerous goods is to be conducted in accordance with the relevant Australian standards.	s.5 Waste Transfer Station Procedures

Condition	Summary of requirement	Where matter is addressed in LEMP
60(1)	The Proponent shall secure the project to ensure public safety to the satisfaction of the Secretary.	s.6.9 Security
60(2)	Prescribes fire management criteria.	s.6.10 Bushfire
61	Prescribes criteria for recording of annual production data and the inclusion of this data in the AEMR.	As indicated in s.1.5 Related Plans, annual monitoring reports are available on GCC's website
Schedule 4: Additional Procedures		
1	Requires that the Secretary and affected landowners and tenants are notified if the monitoring in Schedule 3 identifies the impacts generated are greater than the relevant criteria. Quarterly monitoring results shall be provided to each of these parties until results indication that the project is complying with the relevant criteria.	s.8.1.5 Community Notification
2-5	Prescribes the criteria for an independent review.	Independent environmental audits have been done in 2018 and 2023
Schedule 5: Environmental Management, Reporting and Auditing		
1	An Environmental Management Strategy must be prepared and implemented.	As indicated in s.1.3 Statutory Requirements, the Environmental Management Strategy has been incorporated in this LEMP, as agreed by the Department of Planning
2	Within 24 hours of an exceedance of the limits/performance criteria in this PA or the occurrence of an incident that causes or may cause material harm to the environment the Department of Planning and other relevant agencies of the exceedance / incident must be notified.	s.8.1.3 incident Reporting
3	A written report must be provided to the Department of Planning and other relevant agencies of an exceedance/incident within 6 days of the incident. The report must describe the date, time and nature of exceedance / incident, identify the cause, describe what action has been taken and proposed measures.	s.8.1.3 incident Reporting
4	Prescribes criteria for the AEMR.	As indicated in Table 1-2, annual monitoring reports are available on GCC's website
5 - 7	Prescribes criteria for the independent environmental audit.	Independent environmental audits have been done in 2018 and 2023

Condition	Summary of requirement	Where matter is addressed in LEMP
8	Within one month of approval of strategies/plans/programs or the completion of audits or AEMR, copies of the relevant documents must be provided to the relevant agencies and that copies are made publicly available on its website and at the site.	Table 1-2 identifies reports available on GCC's website
9	During the project the proponent must make a summary of monitoring results required under this approval publicly available on its website and update these results on a regular basis	As indicated in Table 1-2, annual monitoring reports are available on GCC's website
10	A community education program must be prepared and implemented. This program should focus on promoting resource recovery activities, community benefits of composting food and garden waste and the importance of food waste recovery.	Community Education Program by Impact Environmental (2023)
Appendix 2: Statement of Commitments		
1.1	Prescribed table of contents for the LEMP	The table of contents for the LEMP are consistent with the requirements for the TWMC in the Statement of Commitments

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

(Consolidated version)

I, the Deputy Director-General under the instrument of delegation dated 25 January 2010, approve the project referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:

- prevent and/or minimise adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

(Modification 1) 2012 – 06_0034 MOD1 shown in blue
(Modification 2) 2014 – 06_0034 MOD2 shown in taupe
(Modification 3) 2024 – MP06_0034-Mod-3 shown in green

Marcus Ray
A/Deputy Director-General

Sydney

2010

SCHEDULE 1

Application No:	06_0334
Proponent:	Griffith City Council
Approval Authority:	Minister for Planning
Land:	Lot 202 and Lot 201 DP 756035
Project:	Tharbogang Quarry and Landfill

TABLE OF CONTENTS

DEFINITIONS	3
ADMINISTRATIVE CONDITIONS	4
Obligation to Minimise Harm to the Environment	4
Terms of Approval	4
Limits on Approval	4
Management Plans / Monitoring Programs	4
Structural Adequacy	4
Demolition	5
Operation of Plant and Equipment	5
SPECIFIC ENVIRONMENTAL CONDITIONS	6
Waste	6
Soil, Water and Leachate Management	8
Meteorological Monitoring	9
Noise and Vibration	10
Air Quality	12
Rehabilitation and Landscape Management	13
Heritage	14
Traffic and Transport	14
Emergency and Hazards Management	15
Production Data	15
ADDITIONAL PROCEDURES	16
Notification of Landowners	16
Independent Review	16
ENVIRONMENTAL MANAGEMENT, MONITORING, REPORTING & AUDITING	17
Environmental Management Strategy	17
Indecent Reporting	17
Annual Reporting	17
Independent Environmental Audit	18
Access to Information	18
Community Education Program	18
APPENDIX 1: PROJECT MAP	19
APPENDIX 2: STATEMENT OF COMMITMENTS	20
APPENDIX 4: INDEPENDENT DISPUTE RESOLUTION PROCESS	33

DEFINITIONS

AEMR	Annual Environmental Management Report
BCA	Building Code of Australia
BOA	Biodiversity Offset Area
CCC	Community Consultative Committee
Council	Griffith City Council
Day	The period between 7am and 6pm on Monday to Saturday and between 8am and 6pm on Sunday and Public Holidays
Department	Department of Planning & Environment
DPI	Department of Primary Industries
EA	Environmental Assessment prepared for Griffith City Council entitled <i>Tharbogang Quarry and Landfill Expansion (July 2009)</i> including the response to submissions
EEC	Endangered Ecological Community
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the <i>Protection of the Environment Operations Act 1997</i>
Evening	The period between 6pm and 10pm
General Solid Waste (Putrescible)	As defined in the <i>Waste Classification Guidelines</i> (DECCW)
General Solid Waste (Non-Putrescible)	As defined in the <i>Waste Classification Guidelines</i> (DECCW)
Land	In general, the definition of land is consistent with the definition in the EP&A Act.
Material harm to the environment	Material harm to the environment as defined in <i>Protection of the Environment Operations Act 1997</i>
Minister	Minister for Planning, or delegate
MOD 1	Modification Application (06_0034 MOD 1) and supporting documentation titled <i>Tharbogang Landfill and Quarry, Revised Biodiversity Offset Strategy</i>, prepared by Ecological Australia for Griffith City Council and dated 1 December 2011
MOD 2	Modification Application (06_0034 MOD 2) and supporting documentation titled <i>Tharbogang Landfill and Quarry Expansion Project: Preliminary Environmental Assessment – Modification</i>, prepared by CPE Associates Pty Ltd for Griffith City Council and dated June 2014
MOD 3	Modification Application (MP06_0034-Mod 3) and supporting documentation titled <i>Tharbogang Quarry and Landfill – Increased annual extraction and stockpiling</i>, prepared by NGH Pty Ltd, dated October 2023.
Night	The period between 10pm and 7am, Monday to Saturday and between 10pm and 8am on Sunday and Public Holidays
NOW	NSW Office of Water of the Department of Primary Industries
OEH	Office of Environment and Heritage
Privately-owned land	Land that is not owned by a public agency, or a quarry company (or its subsidiary)
Proponent	Griffith City Council or any other person or persons who rely on this approval to carry out the project
Quarrying operations	Extraction of gravel and associated materials, processing of quarry products and transport of quarry products from the site
Quarry products	Gravel material extracted from the site
Reasonable and feasible	<i>Reasonable</i> relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. <i>Feasible</i> relates to engineering considerations and what is practical to build
Response to submissions	The Proponent's response to issues raised in submissions, dated February 2010
RMS	Roads and Maritime Services
Secretary	Secretary of the Department, or nominee
Site	Land to which the project application applies (see Schedule 1 and Appendix 1)
Statement of Commitments	The Proponent's Final Statement of Commitments for Site Operations and Management, as set out in Appendix 2
WTS	Waste Transfer Station

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

Terms of Approval

2. The Proponent shall carry out the project generally in accordance with the:
 - (a) EA;
 - (b) site layout plan as shown in Appendix 1 as amended by the drawings in Appendix 1A;
 - (c) Statement of Commitments;
 - (d) MOD 1;
 - (e) MOD 2; and
 - (f) the conditions of this consent.
3. If there is any inconsistency between the above documents, the conditions of approval shall prevail to the extent of the inconsistency.
4. The Proponent shall comply with any reasonable requirements of the Secretary arising from the Department's assessment of:
 - (g) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and
 - (h) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.
5. The Proponent shall prepare revisions of any strategies, plans or programs required under this approval if directed to do so by the Secretary. Such revisions shall be prepared to the satisfaction of, and within a timeframe approved by, the Secretary.
- 5(a). Within 3 months of any modification approval, the Proponent must prepare and implement a revised version of any relevant management plan or monitoring program to the satisfaction of the Secretary.
6. Within 12 months after the date of this approval, the Proponent shall surrender all existing development consents for the site, to the satisfaction of the Secretary.

Limits on Approval

7. The Proponent may undertake quarrying and landfilling operations on the site until 31 December 2035.

Note: Under this approval, the Proponent is required to rehabilitate the site to the satisfaction of the Secretary. Consequently, this approval will continue to apply in all other respects other than the right to conduct quarrying operations until the site has been rehabilitated to a satisfactory standard, in accordance with the approved rehabilitation strategy.
8. The Proponent shall not:
 - (a) extract more than 315,000 tonnes per year of gravel materials from the site; or
 - (b) receive more than 35,000 tonnes per year of general solid waste (putrescible and non-putrescible) to the site.
- 8(a). The landfill shall not exceed the maximum volume for each landfill cell specified in Table A. Calculation of the cell volume shall include the intermediate non-waste layers but shall not include the final cell cap, leachate barrier or leachate drainage layer.

Table A – Maximum volume for each landfill cell

Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
131,634m ³	124,781m ³	119,121m ³	142,096m ³	142,497m ³

- 8(b). For a 12 month period commencing within three years of the date of the Approval of Modification 3, the applicant may extract up to 400,000 tonnes of gravel materials per year. The Applicant must provide written notice to the Planning Secretary prior to the commencement of the MOD 3 works, at least one month before the 12 month period begins. At the completion of the 12 month period, the Applicant may extract no more than 315,000 tonnes per year.

Management Plans / Monitoring Programs

9. With the approval of the **Secretary**, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

Structural Adequacy

10. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

Demolition

11. The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

Operation of Plant and Equipment

12. The Proponent shall ensure that all plant and equipment used on site is:
 - (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS

WASTE

Restrictions on Receipt, Storage & Handling of Waste

1. The Proponent shall only receive waste on site that is authorised for receipt by an EPL.

Limits on Outputs

2. The Proponent shall dispose of all outputs produced on site to suitably licensed facility, including all recyclables extracted and delivered off-site for resource recovery purposes.

Construction Waste

3. The Proponent shall ensure that all waste generated on the site during construction of the project is classified in accordance with the DECCW's *Waste Classification Guidelines, Part 1: Classifying Waste* and disposed of at a facility that may lawfully accept the waste.

Screening

4. The Proponent shall:
 - (a) implement suitable procedures to:
 - ensure that the site does not accept wastes that are prohibited; and
 - screen incoming waste loads;
 - (b) ensure that:
 - all waste sludges and wastes that are controlled under a tracking system have the appropriate documentation prior to acceptance at the site; and
 - staff receive adequate training in order to be able to recognise and handle any hazardous or other unapproved waste.

Waste Transfer Station

5. Prior to the construction of the Waste Transfer Station, the Proponent shall submit detailed plans of the facility for approval by the **Secretary**.

Note: The WTS should be sited to avoid any remnant vegetation onsite.

Waste Monitoring

6. The Proponent shall prepare and implement a Waste Monitoring Program for the project to the satisfaction of the **Secretary**, prior to the commencement of operation. This program must:
 - (a) be prepared in consultation with **EPA** by a suitably qualified and experienced expert; and
 - (b) include a suitable program to monitor the:
 - quantity, type and source of waste received on site;
 - quantity, type and quality of the outputs produced on site.

Landfill Operations

7. Unless the **Secretary** agrees otherwise, the Proponent shall:
 - (a) minimise the exposed and active tip face at the landfill;
 - (b) progressively revegetate all completed areas of the landfill and stabilise any exposed areas that are not required for operational purposes for a period greater than 90 days;
 - (c) minimise the tracking of mud and waste from the site on public roads;
 - (d) fill the landfill cells in a systematic manner;
 - (e) maximise landfill compaction rates;
 - (f) cover the active landfill area with at least 0.15 metres of soil (or a suitable alternative material, as approved by **EPA**) at the end of daily waste disposal and compaction activities;
 - (g) stockpile green waste on an impermeable pad with bunding to contain leachate; and
 - (h) progressively cap the landfill cells using an EPA endorsed method.

Security

8. The Proponent shall:
- (a) install and maintain a perimeter stock fence and security gates on the site surrounding the landfill; and
 - (b) ensure that the security gates on site are locked whenever the site is unattended.

Litter Control

9. Within 6 months of the date of this approval, the Proponent shall:
- (a) remove existing litter that has accumulated across the site, to the satisfaction of the [Secretary](#)
 - (b) implement suitable measures to prevent the unnecessary proliferation of litter both on and off site, including the installation and maintenance of a mesh fence of not less than 1.8 metres high around the proposed landfill area; and
 - (c) inspect daily and clear the site (and if necessary, surrounding area) of litter on at least a weekly basis.

Pest, Vermin & Noxious Weed Management

10. The Proponent shall:
- (a) implement suitable measures to manage pests, vermin and declared noxious weeds on site; and
 - (b) inspect the site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in surrounding area.

Note: For the purposes of this condition, noxious weeds are those species subject to an order declared under the Noxious Weed Act 1993.

Greenhouse Gas

11. The Proponent must ensure that all composting is undertaken in accordance with Australian Standard AS 4454-2003: Composts, Soil Conditioners and Mulches, Appendix N, best practice guidelines for Composting Systems, or other practices approved by the [EPA](#).
12. The Proponent is required to prepare a feasibility report for the [Secretary's](#) approval within 5 years of this approval, outlining options to capture and use greenhouse gas in the generation of electricity. The report must identify which options could be reasonably and feasibly implemented.

Landfill Environmental Management Plan

13. Within 6 months of the date of this approval, the Proponent shall update the existing Landfill Environmental Management Plan for the site to the satisfaction of the [Secretary](#). Following approval, the Proponent shall implement this plan to the satisfaction of the [Secretary](#). This plan must:
- (a) describe in detail the management measures that would be implemented to address:
 - the relevant matters referred to in the *Environmental Guidelines for Solid Waste Landfills*; and
 - the conditions of this approval;
 - (b) include a copy of:
 - the relevant plans and programs required under this approval;
 - a quality assurance plan for the design and installation of the leachate management system and any capping of the landfill cells that covers the relevant issues outlined in sections 1 – 2 of Appendix A of the *Environmental Guidelines for Solid Waste Landfills*;
 - (c) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise during the course of the project; and
 - respond to emergencies; and
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project.

SOIL, WATER AND LEACHATE MANAGEMENT

Discharge Limits

14. Except as may be expressly provided for by an EPL, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* during the carrying out of the project.
15. Stormwater from all areas of the premises which has the potential to mobilise sediments and other material must be controlled and diverted through appropriate erosion and sediment control/pollution control measures or structures.
16. The Proponent shall manage on-site sewage. The facility must comply with the requirements of the *Environment and Health Protection Guidelines – On-site Sewage Management for Single Households* (1998).
17. The Proponent shall ensure that water that has come in contact with waste is not discharged from the site.

Leachate

18. The Proponent shall:
 - (a) install a leachate barrier system on any surface to be used for the direct impoundment of leachate;
 - (b) ensure that this leachate barrier system complies with specifications in the most current version of the EPL;
 - (c) collect all leachate in the leachate dams to prevent it from escaping from the site to surface water, groundwater or subsoil;
 - (d) treat all water from waste storage or handling areas, including any organic waste storage area, or that has been contaminated by leachate, as leachate;
 - (e) ensure that the leachate storage dams:
 - are capable of accepting leachate generated in a 1 in 100 year, 72 hour duration storm event without overflowing;
 - have a re-compacted clay or modified soil layer that is at least 900 mm thick and an in situ coefficient of permeability of less than 1×10^{-9} m/s, or some other suitable liner approved by EPA;to the satisfaction of the Secretary.

Bunding

19. The Proponent shall ensure that all above ground tanks and vats, including those used for treating or processing wastewater, leachate and diesel storage, and that all dangerous goods, as defined by the Australian Dangerous Goods Code, are stored and handled strictly in accordance with:
 - (a) all relevant Australian Standards;
 - (b) a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
 - (c) the DECCW's *Storing and Handling of Liquids: Environmental Protection – Participant Manual*.

Soil, Water and Leachate Management Plan

20. The Proponent shall prepare and implement a Soil, Water and Leachate Management Plan for the project to the satisfaction of the Secretary. This plan must:
 - (a) be submitted to the Secretary for approval within 6 months of the date of this approval;
 - (b) be prepared by a suitably qualified and experienced expert;
 - (c) be prepared in consultation with the EPA and NOW; and
 - (d) include:
 - a site water balance;
 - an erosion and sediment control plan;
 - a stormwater management scheme;
 - a surface water monitoring program;
 - a groundwater and leachate monitoring program; and
 - a surface water, groundwater and leachate response plan.
21. The site water balance must:
 - (a) identify the source of all water collected or stored on the site, including rainfall and stormwater; and
 - (b) include details of all water use on site and any discharges.

22. The erosion and sediment control plan must:
 - (a) be consistent with the requirements in the latest version of *Managing Urban Stormwater: Soils and Construction* (Landcom);
 - (b) identify the activities on site that could cause soil erosion and generate sediment; and
 - (c) describe what measures would be implemented to:
 - minimise soil erosion and the transport of sediment to downstream waters, including the location, function and capacity of any erosion and sediment control structures; and
 - maintain these structures over time.
23. The stormwater management scheme must:
 - (a) be consistent with the guidance in the latest version of *Managing Urban Stormwater: Council Handbook* (DECCW);
 - (b) provide detailed plans of stormwater management systems onsite;
 - (c) demonstrate separation of stormwater and leachate collection and management systems; and
 - (d) have sufficient capacity to cater for a 1 in 100 year, 72 hour storm event.
24. The surface water monitoring program must include:
 - (a) detailed baseline data on surface water flows and quality in any waterbodies that could potentially be affected by the project;
 - (b) surface water and stream health impact assessment criteria;
 - (c) a program to monitor the impact of the project on surface water flows, water quality and stream health; and
 - (d) the parameters for testing and respective trigger levels for action under the surface water, groundwater and leachate response plan (see below).
25. Groundwater and leachate monitoring program must include:
 - (a) detailed baseline data on groundwater levels and quality, based on statistical analysis;
 - (b) groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse ground water impacts;
 - (c) a program to monitor groundwater levels and quality;
 - (d) a protocol for further groundwater modelling to confirm the limits to excavation depth across the site would not adversely affect ground water availability for the environment or local users;
 - (e) a protocol for the investigation, notification and mitigation of identified exceedances of the groundwater impact assessment criteria; and
 - (f) the parameters for testing and respective trigger levels for action under the surface water, groundwater and leachate response plan (see below).
26. The surface water, groundwater and leachate response plan must:
 - (a) include a protocol for the investigation, notification and mitigation of any exceedances of the respective trigger levels; and
 - (b) describe the array of measures that could be implemented to respond to any surface or groundwater contamination that may be caused by the development.

METEOROLOGICAL MONITORING

27. Prior to carrying out any development, the Applicant shall establish and subsequently maintain a meteorological station in the vicinity of the development, which performs 'ambient air monitoring' of rainfall, wind speed and wind direction, in accordance the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline.

NOISE AND VIBRATION

Noise Impact Assessment Criteria

28. The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1:

Table 1: Operational noise impact assessment criteria dB(A)

Location and Locality	Day <i>L_{Aeq}(15 min)</i>	Evening <i>L_{Aeq}(15 min)</i>	Night <i>L_{Aeq}(15 min)</i>
All Surrounding Sensitive Receivers	40	35	35

Notes:

- Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.
- The noise limits do not apply if the Proponent has an agreement with the landowner to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

Operating Hours

29. The Proponent shall comply with the operating hours in Table 2.

Table 2: Operating hours

Activity	Day	Time
Quarrying Operations	Monday – Friday	7.00am to 5.00pm
	Saturday	8.00am to 1.00pm
	Sunday and Public Holidays	None
Landfilling Operations	Daily	8.00am to 5.00pm

Notes:

- Maintenance activities may be conducted outside weekday hours in Table 3 provided that the activities are not audible at any privately-owned residence, or until 6pm on Saturdays.
- This condition does not apply to delivery of material if that delivery is required by police or other authorities for safety reasons, and/or the operation or personnel or equipment are endangered. In such circumstances, notification is to be provided to [EPA](#) and the affected residents as soon as possible, or within a reasonable period in the case of emergency.

Airblast Overpressure Limits

30. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 3.

Table 3: Airblast overpressure impact assessment criteria

Receiver	Airblast overpressure level (dB(Lin Peak))	Allowable exceedance
All Surrounding Sensitive Receivers	115	5% of the total number of blasts in any 12 month period
	120	0%

Ground Vibration Impact Assessment Criteria

31. The Proponent shall ensure that the ground vibration level from blasting at the project does not exceed the levels in Table 4.

Table 4: Ground vibration impact assessment criteria

Receiver	Peak particle velocity (mm/s)	Allowable exceedance
All Surrounding Sensitive Receivers	5	5% of the total number of blasts in any 12 month period
	10	0%

Blasting Hours and Frequency

32. The Proponent shall carry out blasting on site only between 9 am and 3 pm Monday to Friday. No blasting is allowed on weekends and Public Holidays.
33. The Proponent shall not carry out more than one blast per week on site.

Note: In the case of a documented misfire, the Proponent may carry out a second blast in the relevant week.

Operating Conditions

34. The Proponent shall not undertake blasting within 200 metres of any privately-owned land, unless suitable arrangements have been made with the landowner and any tenants to minimise the risk of flyrock-related impact to the property and to human safety to the satisfaction of the [Secretary](#).

Property Inspections

35. Prior to 30 November 2010, the Proponent shall advise all landowners within 500 m of proposed blasting activities, and any other landowner nominated by the [Secretary](#), that they are entitled to a property inspection to establish the baseline condition of the property.
36. If the Proponent receives a written request for a property inspection from any such landowner, the Proponent shall:
- (a) commission a suitably qualified person, whose appointment has been approved by the [Secretary](#), to inspect and report on the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and
 - (b) give the landowner a copy of this property inspection report.

Note: It is preferable for the property inspection to be carried out prior to the commencement of blasting activities on the site, and the Proponent should facilitate this occurring wherever possible.

Property Investigations

37. If any landowner within 500 m of proposed blasting activities, or any other landowner nominated by the [Secretary](#), claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:
- (a) commission a suitably qualified person whose appointment has been approved by the [Secretary](#) to investigate the claim and prepare a property investigation report; and
 - (b) give the landowner a copy of the report.

If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damage to the satisfaction of the [Secretary](#).

If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the [Secretary](#) for resolution.

Management of Blasts

38. Prior to 30 November 2010, the Proponent shall prepare and implement a detailed Blast Management Plan for the project to the satisfaction of the [Secretary](#). The Plan must
- (a) be prepared in consultation with [EPA](#);
 - (b) substantiate blast design to ensure compliance with blast criteria;
 - (c) include protocols for communicating with all neighbouring landholders regarding scheduled blasts;
 - (d) include details of how and at what locations blasting performance would be monitored; and
 - (e) include a blast monitoring protocol for evaluating compliance with the blast criteria in this approval.

Continuous Improvement

39. The Proponent shall:
- (a) implement all reasonable and feasible noise mitigation measures;
 - (b) investigate ways to reduce the noise generated by the project; and
 - (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR, to the satisfaction of the [Secretary](#).

Monitoring

40. The Proponent shall prepare and implement a Noise and Vibration Monitoring Program for the project to the satisfaction of the [Secretary](#). The Program must:
- (a) be prepared in consultation with [EPA](#) and be submitted to the [Secretary](#) for approval within 6 months of the date of this approval;
 - (b) include annual attended noise monitoring;

- (c) include traffic noise monitoring at the private resident along Hillside Drive. The Program shall also provide details on how the resident would be provided with the opportunity to have amelioration works done on their property should the monitoring demonstrate that the relevant traffic noise criteria is being exceeded, to the satisfaction of the **Secretary**;
- (d) include details of how the noise performance of the project would be monitored; and
- (e) include a noise monitoring protocol for evaluating compliance with the noise criteria in this approval.

AIR QUALITY

Impact Assessment Criteria

41. The Proponent shall ensure that dust emissions generated by the project do not cause additional exceedances of the criteria listed in Tables 5 to 7 at any residence on privately owned land, or on more than 25 percent of any privately-owned land.

Table 5: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³

Table 6: Short term impact assessment criterion for particulate matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³

Table 7: Long term impact assessment criterion for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

Odour

42. Except as otherwise expressly provided in any Environment Protection Licence condition for the project, the Proponent must comply with section 129 of the POEO Act.

Note:

- Section 129 of the POEO Act, provides that the Proponent must not cause or permit the emission of any offensive odour from the site, 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.

Air Quality Monitoring

43. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the **Secretary**. This program must:
- (a) be prepared in consultation with **EPA**, and be submitted to the **Secretary** for approval within 3 months of the date of this approval; and
 - (b) include details of how the air quality performance of the project will be monitored, and include a protocol for evaluating compliance with the relevant air quality criteria in this approval.

Continuous Improvement

44. The Proponent shall:
- (a) implement all reasonable and feasible dust mitigation measures;

- (b) investigate ways to reduce the dust generated by the project; and
- (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR, to the satisfaction of the **Secretary**.

REHABILITATION AND LANDSCAPE MANAGEMENT

Biodiversity Offset Strategy

- 45. The Proponent shall implement the Biodiversity Offset Area (BOA) on Lots 181 and 182, DP 756035 including 95.31 ha of 'Inland Grey Box – Poplar Box – White Cypress Pine Tall Woodland', as described in MOD 1 to the satisfaction of the **Secretary** and in consultation with the EPA, within 1 year of the approval of MOD 1.
- 46. Within one year of the approval of MOD 1, unless the **Secretary** agrees otherwise, Council must provide appropriate long term security for the BOA defined in Condition 45 through one of the following mechanisms:
 - (a) a Conservation Agreement under the National Parks and Wildlife Act 1974; or
 - (b) a Biobanking Agreement under the Threatened Species Conservation Act 1995.
 The agreement must remain in force in perpetuity.
- 47. The Proponent shall ensure the long term security of the BOA referred to in Conditions 45 and 46, prior to any clearing onsite.

Landscape and Biodiversity Management Plan

- 48. The Proponent shall prepare and implement a Landscape and Biodiversity Management Plan for the project in accordance with Condition 49 to the satisfaction of the **Secretary**. This plan must:
 - (a) be prepared by suitably qualified person(s), approved by the **Secretary**;
 - (b) be submitted to the **Secretary** for approval within 12 months of the date of MOD 1; and
 - (c) include a:
 - i. Rehabilitation and Biodiversity Offset Strategy Management Plan; and
 - ii. Long Term Management Strategy.

Note: The Department accepts that the initial Landscape and Biodiversity Management Plan may not include the detailed Long Term Management Strategy. However, a conceptual strategy must be included in the initial plan, along with a timetable for augmentation of the strategy with each subsequent review of the plan.

- 49. The Rehabilitation and Biodiversity Offset Strategy Management Plan must include:
 - (a) the rehabilitation objectives for the site and offset areas;
 - (b) a description of the measures that would be implemented to:
 - rehabilitate and stabilise the site;
 - minimise the removal of mature trees;
 - implement the Biodiversity Offset Strategy; and
 - manage the remnant vegetation and habitat on the site and in the offset areas;
 - (c) detailed performance and completion criteria for the rehabilitation and stabilisation of the site;
 - (d) a detailed description of how the performance of the rehabilitation of the quarry areas would be monitored over time to achieve the stated objectives;
 - (e) a detailed description of what measures would be implemented to rehabilitate and manage the landscape of the site including the procedures to be implemented for:
 - progressively rehabilitating and stabilising areas disturbed by quarrying;
 - implementing revegetation and regeneration within the disturbance areas;
 - protecting areas outside the disturbance areas, including the Biodiversity Offset Strategy areas;
 - vegetation clearing protocols, including a protocol for clearing any trees containing hollows and the relocation of hollows from felled trees;
 - managing impacts on fauna, in particular threatened species;
 - controlling weeds and pests;
 - controlling access;
 - bushfire management; and
 - reducing the visual impacts of the project;
 - (f) a description of the potential risks to successful rehabilitation and a description of the contingency measures that would be implemented to mitigate these risks; and
 - (g) details of who is responsible for monitoring, reviewing, and implementing the plan.

~~49(a) To ensure that the BOA is implemented in accordance with the performance and completion criteria in the Rehabilitation and Biodiversity Offset Strategy Management Plan, Council must secure implementation funds via one of the following mechanisms to the satisfaction of the **Secretary**:~~

- ~~a) a Biobanking Agreement under the *Threatened Species Conservation Act 1995*;~~
- ~~b) lodgement of a conservation bond with the Department;~~
- ~~c) a Voluntary Planning Agreement under Section 93F of the EP&A Act;~~

~~The sum of the funds shall be determined by:~~

- ~~i. calculating the full cost of implementing the Rehabilitation and Biodiversity Offset Strategy Management Plan, and~~
- ~~ii. employing a suitably qualified quantity surveyor to verify the calculated costs.~~

~~The funding must be secured within six months of the approval of the Rehabilitation and Biodiversity Offset Strategy Management Plan required by condition 48, unless otherwise agreed to by the **Secretary**.~~

49(a) To ensure that the BOA is implemented in accordance with the performance and completion criteria in the Rehabilitation and Biodiversity Offset Strategy Management Plan, Council must demonstrate to the satisfaction of the Planning Secretary that sufficient funds have been committed for the completion of these works.

The sum of the funds shall be determined by:

- i. calculating the full cost of implementing the Rehabilitation and Biodiversity Offset Strategy Management Plan, and
- ii. a suitably qualified quantity surveyor must verify the calculated costs in 49(a)(i).

49(b) The Department notes that if a Biobanking Agreement is implemented for the BOA defined by Condition 45, the requirements of Conditions 45, 46, 48 and 48 (a) are likely to be satisfied. The Department requests that on approval of any Biobanking Agreement, a copy of the agreement is submitted to the Department which includes management and monitoring plans and funding arrangements.

50. The Long Term Management Strategy must:

- (a) define the objectives and criteria for quarry closure and post-extraction management;
- (b) be prepared in consultation with EPA, NOW and DPI;
- (c) investigate and/or describe options for the future use of the site;
- (d) describe the measures that would be implemented to minimise or manage the ongoing environmental effects of the project; and
- (e) describe how the performance of these measures would be monitored over time.

Rehabilitation Bond

51. Prior to commencing the projects quarrying operations, the Proponent shall lodge a rehabilitation bond for the project with the **Secretary**. The sum of the bond shall be calculated at \$1/m² for the area to be disturbed, which has not been previously disturbed by quarrying, to the satisfaction of the **Secretary**.

Notes:

- If the rehabilitation works are completed to the satisfaction of the **Secretary**, the **Secretary** will release the rehabilitation bond.
- If the rehabilitation works are not completed to the satisfaction of the **Secretary**, the **Secretary** will call in all or part of the rehabilitation bond, and arrange for the satisfactory completion of the relevant works.

52. Within 3 months of each Independent Environmental Audit (see condition 5 of schedule 5), the Proponent shall review, and if necessary revise, the sum of the rehabilitation bond to the satisfaction of the **Secretary**. This review must consider:

- (a) the effects of inflation;
- (b) any changes to the total area of disturbance; and
- (c) the performance of the rehabilitation and revegetation to date.

HERITAGE

Cultural Heritage Management Plan

53. The Proponent shall prepare and implement an Cultural Heritage Management Plan to the satisfaction of the **Secretary**. This plan must:

- (a) be prepared in consultation with EPA, **OEH** and local Aboriginal communities;
- (b) draw on any relevant recommendations for the management of items of cultural heritage significance

- as outlined in the Aboriginal and Historical Heritage Assessment report dated February 2010,
- (c) be submitted to the **Secretary** for approval, within 6 months of the date of this approval; and
- (d) include a description of the measures that would be implemented if any new Aboriginal objects or skeletal remains are discovered during the project.

TRAFFIC AND TRANSPORT

54. The Proponent shall prepare and implement an a Transport Management Plan to the satisfaction of the **Secretary**. This plan must:
 - (a) be prepared in consultation with the **RMS**;
 - (b) outline measures to manage traffic related issues arising from the landfill and quarry operations;
 - (c) review the standard of the access roads to the site, including Kidman Way;
 - (d) outline ways of managing dust generated from heavy vehicles accessing the site;
 - (e) outlined ways of managing rubbish from vehicles accessing the landfill site; and
 - (f) be submitted to the **Secretary** for approval, within 6 months of the date of this approval.
55. The Proponent shall upgrade the Auxiliary Right Turn (AUR) treatment at the intersection of Access Road and Kidman Way, within 12 months of operations commencing onsite, in accordance with RTA's Road Design Guide for the prevailing speed limit and the to satisfaction of the **RMS**.
56. The Proponent shall be responsible for all public utility adjustment/relocation works, necessitated by the above work and as required by the various public utility authorities and/or their agents.

*Note: The relocation of any underground service within the road reserve will require **RMS**'s concurrence under Section 138 of the Roads Act 1993 prior to the commencement of any works.*

Road Haulage

57. The Proponent shall ensure that:
 - (a) all loaded vehicles entering or leaving the site are covered; and
 - (b) all loaded vehicles leaving the site are cleaned of materials that may fall on the road, before they leave the site.
 to the satisfaction of the **Secretary**
58. The quarry operator is to record and maintain a log book of the extraction quantities and traffic movements in and out of the site. This log is to be kept on site and be available for inspection at the request of the Department or the **RMS**.

EMERGENCY AND HAZARDS MANAGEMENT

Dangerous Goods

59. The Proponent shall ensure that the storage, handling, and transport of fuels and dangerous goods are conducted in accordance with the relevant *Australian Standards*, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

Safety

60. The Proponent shall secure the project to ensure public safety to the satisfaction of the **Secretary**.

Fire Management

60. The Proponent shall:
 - (a) implement suitable measures to minimise the risk of fire on site, including in the landfill area;
 - (b) extinguish any fires on site promptly;
 - (c) maintain adequate fire-fighting capacity on site, in consultation with the rural fire service, including a tanker or water cart with fire fighting capabilities; and
 - (d) assist the rural fire service and emergency services, if safe to do so, if there is a fire on-site.

PRODUCTION DATA

61. The Proponent shall:
 - (a) provide annual production data to the **DPI** using the standard form for that purpose; and
 - (b) include a copy of this data in the AEMR.

SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. If the results of monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria, then the Proponent shall notify the **Secretary** and affected landowners and tenants, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the relevant criteria.

INDEPENDENT REVIEW

2. If a landowner of privately-owned land considers that the project is exceeding any of the impact assessment criteria in schedule 3, then he/she may ask the **Secretary** in writing for an independent review of the impacts of the project on his/her land.

If the **Secretary** is satisfied that an independent review is warranted, the Proponent shall within 3 months of the **Secretary** advising that an independent review is warranted:

- (a) consult with the landowner to determine his/her concerns;
 - (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the **Secretary**, to conduct monitoring on the land, to determine whether the project is complying with the relevant criteria in schedule 3, and identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and
 - (c) give the **Secretary** and landowner a copy of the independent review.
3. If the independent review determines that the project is complying with the relevant criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the **Secretary**.
 4. If the independent review determines that the project is not complying with the relevant criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:
 - (a) implement all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and
 - (b) conduct further monitoring to determine whether these measures ensure compliance; or
 - (c) secure a written agreement with the landowner to allow exceedances of the relevant criteria in schedule 3,to the satisfaction of the **Secretary**.

If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in schedule 3, or the Proponent and landowner enter into a negotiated agreement to allow these exceedances, then the Proponent may discontinue the independent review with the approval of the **Secretary**.

5. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the **Secretary** for resolution.

If the matter cannot be resolved within 21 days, the **Secretary** shall refer the matter to an Independent Dispute Resolution Process (see Appendix 3).

SCHEDULE 5

ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the **Secretary**. This strategy must:
 - (a) be submitted to the **Secretary** for approval prior to operations commencing;
 - (b) provide the strategic framework for environmental management of the project;
 - (c) identify the statutory approvals that apply to the project;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;
 - (e) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise during the course of the project;
 - respond to any non-compliance; and
 - respond to emergencies; and
 - (f) include:
 - copies of the various strategies, plans and programs that are required under the conditions of this approval once they have been approved; and
 - a clear plan depicting all the monitoring currently being carried out within the project area.

INCIDENT REPORTING

2. Within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) material harm to the environment, the Proponent shall notify the Department and other relevant agencies of the exceedance/incident.
3. Within 6 days of notifying the Department and other relevant agencies of an exceedance/incident, the Proponent shall provide the Department and these agencies with a written report that must:
 - (a) describe the date, time, and nature of the exceedance/incident;
 - (b) identify the cause (or likely cause) of the exceedance/incident;
 - (c) describe what action has been taken to date; and
 - (d) describe the proposed measures to address the exceedance/incident.

ANNUAL REPORTING

4. Within 12 months of the date of this approval, and annually thereafter, the Proponent shall submit an AEMR to the **Secretary** and relevant agencies. This report must:
 - (a) identify the standards and performance measures that apply to the project;
 - (b) describe the works carried out in the last 12 months, and the works that will be carried out in the next 12 months;
 - (c) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
 - (d) include a summary of the monitoring results for the project during the past year;
 - (e) include an analysis of these monitoring results against the relevant:
 - impact assessment criteria/limits;
 - monitoring results from previous years; and
 - predictions in the EA;
 - (f) identify any trends in the monitoring results over the life of the project;
 - (g) identify any non-compliance during the previous year; and
 - (h) describe what actions were, or are being, taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

5. Within 1 year of the date of this approval, and every 3 years thereafter, unless the **Secretary** directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
 - (a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been approved by the **Secretary**;

- (b) assess the environmental performance of the project, and its effects on the surrounding environment;
 - (c) assess whether the project is complying with the relevant standards, performance measures and statutory requirements;
 - (d) review the adequacy of any strategy/plan/program required under this approval; and, if necessary,
 - (e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy/plan/program required under this approval.
6. Within 1 month of completion of each Independent Environmental Audit, the Proponent shall submit a copy of the audit report to the **Secretary** and relevant agencies, with a response to any of the recommendations in the audit report.
7. Within 3 months of submitting a copy of the audit report to the **Secretary**, the Proponent shall review and if necessary revise the:
- (a) strategies/plans/programs required under this approval; and
 - (b) rehabilitation bond, to consider the:
 - effects of inflation;
 - changes to the total area of disturbance; and
 - performance of the rehabilitation against the completion criteria of the Landscape and Biodiversity Management Plan,
 to the satisfaction of the **Secretary**.

ACCESS TO INFORMATION

8. Within 1 month of the approval of any strategies/plans/programs required under this approval (or any subsequent revision of these strategies/plans/programs), or the completion of the audits or AEMR required under this approval, the Proponent shall:
- (a) provide a copy of the relevant document/s to the relevant agencies and to members of the general public upon request; and
 - (b) ensure that a copy of the relevant document/s is made publicly available on its website and at the site.
9. During the project, the Proponent shall:
- (a) make a summary of monitoring results required under this approval publicly available on its website; and
 - (b) update these results on a regular basis (at least every 6 months).

COMMUNITY EDUCATION PROGRAM

10. The Proponent shall prepare and implement a Community Education Program for the project to the satisfaction of the **Secretary**. This program must be submitted to the **Secretary** for approval prior to the commencement of landfill operations in the existing quarry void, and shall at a minimum focus on promoting the:
- resource recovery activities provided at the site;
 - community benefits of composting food and garden waste; and
 - importance of food waste recovery from all waste streams, but particularly the commercial and industrial waste stream; and

APPENDIX 1 PROJECT MAP

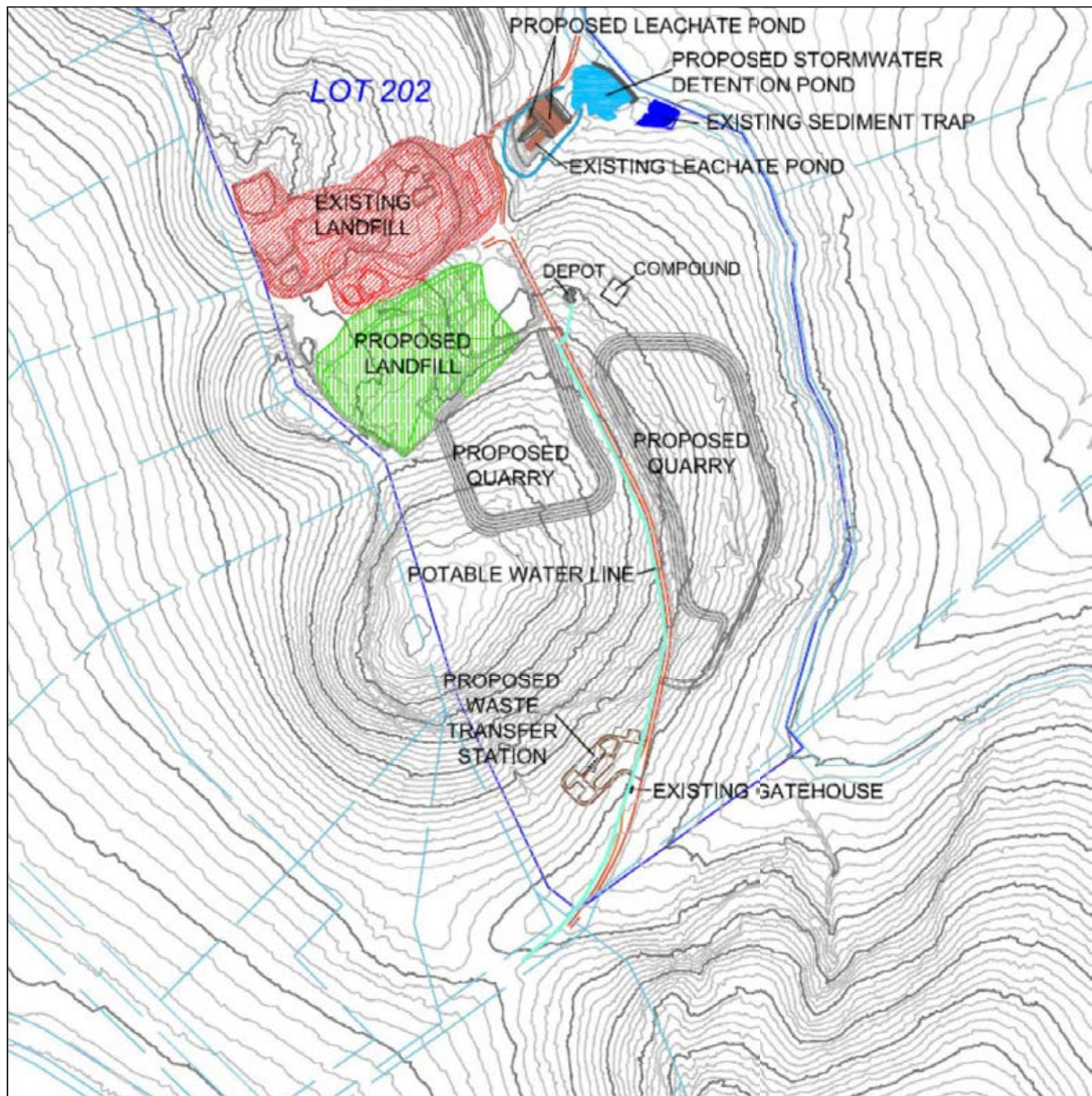


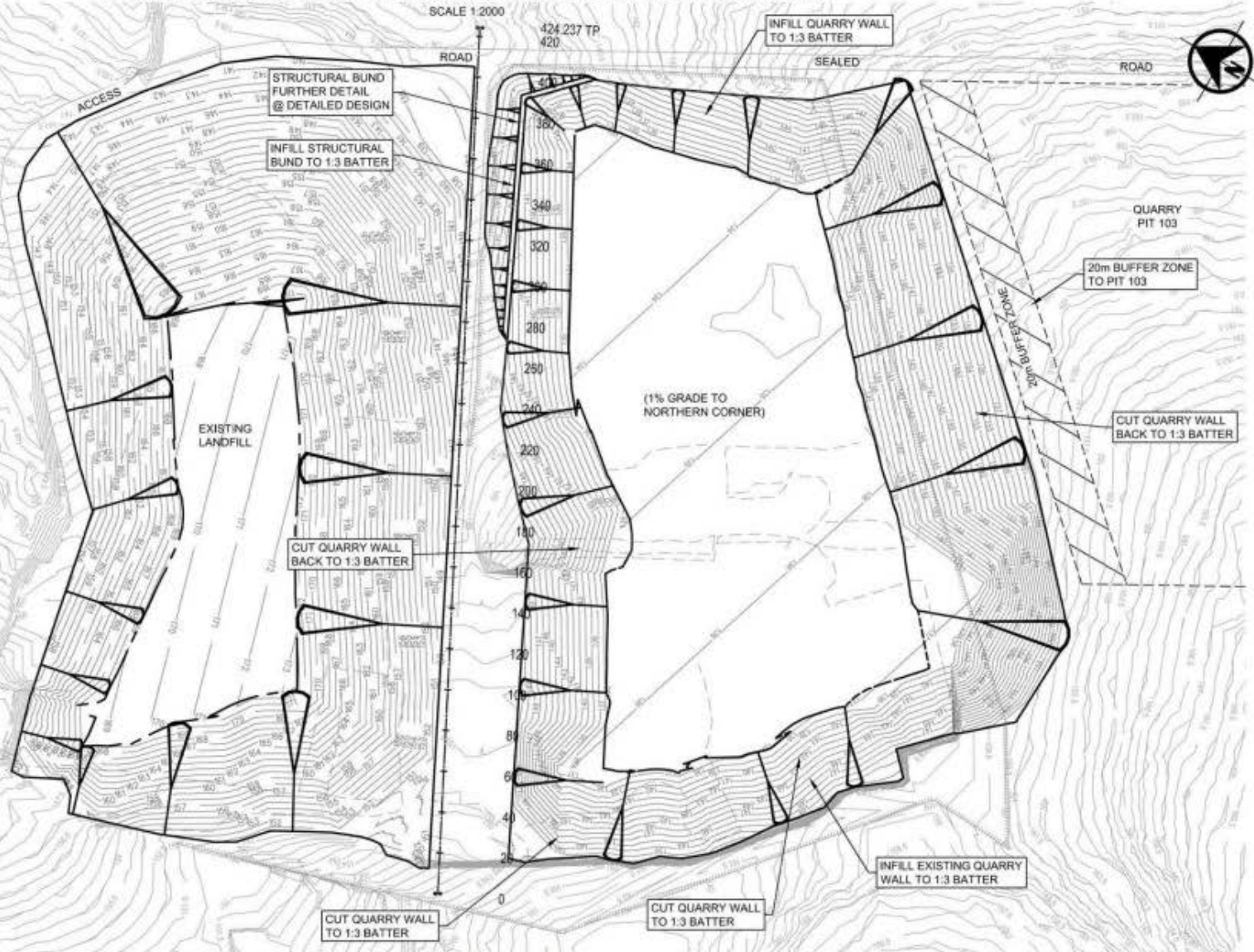
Figure 1: Project Layout

APPENDIX 1A
MODIFICATION 2 – DRAWINGS



CALCULATION SUMMARY	
REMAINING QUARRY RESOURCE (UN-BLASTED)	482,103 m ³
REMAINING QUARRY RESOURCE (2.5 t/m ³)	1,253,467 t
LANDFILL BATTER INFILL MATERIAL	39,833m ³ 103,565 t
REMAINING QUARRY RESOURCE	1,149,902 m ³
CURRENT QUARRY LIFE (@ 150,000 t/pe)	7.6 YEARS
ESTIMATED ASSET UTILISATION DATE	2019

FINAL QUARRY LANDFORM FOR CURRENT QUARRY



D	ISSUE FOR REVIEW	04.03.2013	SGY	CH
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH
RevNo	Revision note	Date	Signature	Checked



DRAWN: S.G.Y
CHECK: C.H
APPR. P.H
REV: D

SHEET C	SCALE AS NOTED
THARBOGANG LANDFILL PROJECT FINAL QUARRY LANDFORM FOR CURRENT QUARRY	

NEW LANDFILL CELL FLOOR AND WALL CONCEPT DESIGN

SCALE 1:2000



SUMMARY CALCULATIONS				
	BUND MATERIAL QUANTITY m³	LINER AREA m²	LEACHATE PIPE m	SUBSURFACE DRAINAGE PIPE m
C1	3,683.6	18,523	834.6	309.2
C2	3,757.5	19,361	789.9	300.8
C3	2,228.6	20,103	873.4	418.6
C4	1,138.6	22,252	417.9	171.7
C5	—	19,491	287.2	139.1
TOTAL	10,808.9	99,730	3,203.2	1,339.4

LEGEND

- SUBSURFACE DRAINAGE PIPE
- LEACHATE DRAINAGE PIPE
- 20m BUFFER ZONE TO PIT 103
- INTERNAL BUNDING
- LINER BOUNDARY



D	ISSUE FOR REVIEW	04.03.2013	SGY	CH
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH
RevNo	Revision note	Date	Signature	Checked



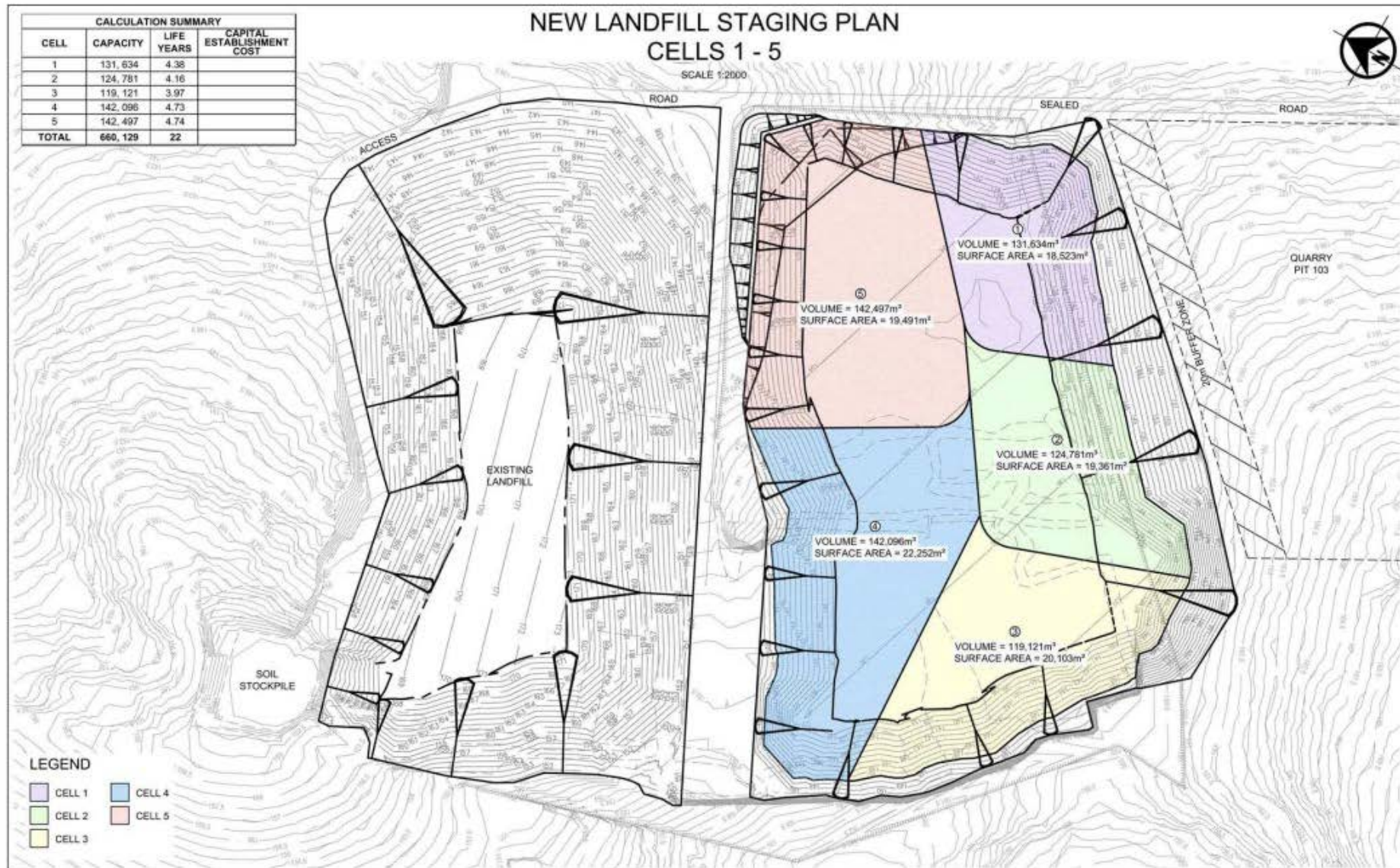
PO Box 3009
Nowra North NSW 2541
Phone 02 4402 9392
Fax 02 4446 0511

DRAWN: S.G.Y.	SHEET D1	SCALE AS NOTED
CHECK: C.H.	THARBOGANG LANDFILL PROJECT NEW LANDFILL CELL FLOOR AND WALL CONCEPT DESIGN	
APPR. P.H.		
REV: D		

CALCULATION SUMMARY			
CELL	CAPACITY	LIFE YEARS	CAPITAL ESTABLISHMENT COST
1	131,634	4.38	
2	124,781	4.16	
3	119,121	3.97	
4	142,096	4.73	
5	142,497	4.74	
TOTAL	660,129	22	

NEW LANDFILL STAGING PLAN CELLS 1 - 5

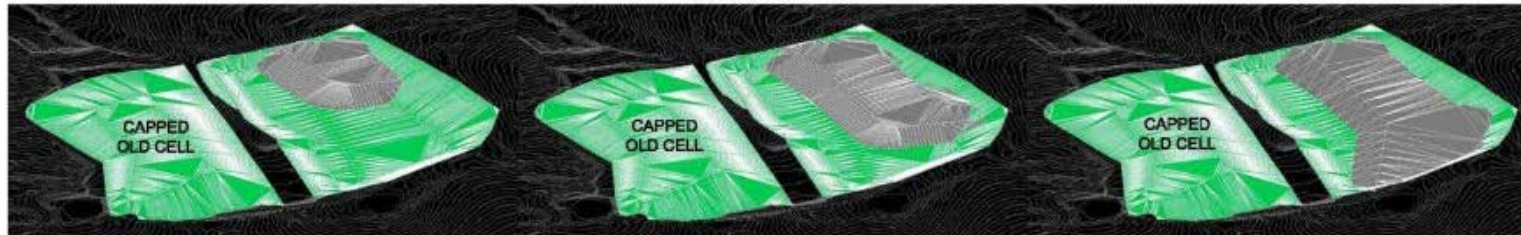
SCALE 1:2000



D	ISSUE FOR REVIEW	04.03.2013	SGY	CH	 PO Box 3009 Nowra North NSW 2541 Fax. 02 4446 0511	DRAWN: S.G.Y	SHEET D2	SCALE AS NOTED
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH		CHECK: C.H	THARBOGANG LANDFILL PROJECT NEW LANDFILL STAGING PLAN CELLS 1 - 5	
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH		APPR. P.H		
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH		REV: D		
RevNo	Revision note	Date	Signature	Checked				

3D NEW LANDFILL STAGING PLAN

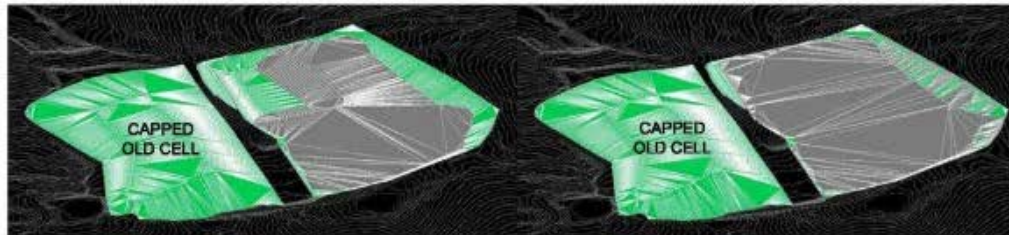
SCALE 1:2000



CELL 1
CAPACITY = 131, 634m³
LIFE = 4.38 YEARS
COST =

CELL 2
CAPACITY = 124, 781m³
LIFE = 4.16 YEARS
COST =

CELL 3
CAPACITY = 119, 121m³
LIFE = 3.97 YEARS
COST =



CELL 4
CAPACITY = 142, 096m³
LIFE = 4.73 YEARS
COST =

CELL 5
CAPACITY = 142, 497m³
LIFE = 4.74 YEARS
COST =

D	ISSUE FOR REVIEW	04.03.2013	SGY	CH	 PO Box 3009 Phone 02 4402 8392 Nowra North NSW 2541 Fax: 02 4446 0611	DRAWN: S.G.Y	SHEET	SCALE
C	ISSUE FOR REVIEW	21.02.2013	SGY	CH		CHECK: C.H	G1	AS NOTED
B	ISSUE FOR REVIEW	18.12.2012	SGY	CH		APPR. P.H	THARBOGANG LANDFILL PROJECT 3D LANDFILL STAGED DEVELOPMENT SEQUENCE PLANS - SHEET 1	
A	ISSUE FOR REVIEW	11.12.2012	SGY	CH		REV: D		
RevNo	Revision note	Date	Signature	Checked				

APPENDIX 2
STATEMENT OF COMMITMENTS
Final Statement of Commitments for the Tharbogang Quarry and Landfill

Page 1 of 13

1 STATEMENT OF COMMITMENTS

The Statement of Commitments contained in Section 9 of the EA has been updated and amended to reflect the revised project description and to take into account the submissions received during exhibition of the EA. This Appendix SUPERCEDES AND REPLACES it.

The following Statement of Commitments has been prepared in accordance with the Director General's Requirements and Part 3A of the *EP&A Act 1979*. These commitments outline the mitigation, management and monitoring measures to be implemented by Council throughout the construction and operation of the proposed extension to the Tharbogang Quarry and Landfill to manage potential environmental impacts arising from the proposal.

1.1 Environmental Management

Thus far, the following design and operational plans have been developed:

- Coffey Mining (2008) Staged Operational and Development Plan for Tharbogang Quarry and Landfill
- Alf Griggs and Associates (2008) Tharbogang Quarry and Waste Management Centre, Site Operations Plan
- Balance Consulting (2007) Tharbogang Quarry and Landfill Expansion Offset Strategy

These documents will provide the framework on which to build two all encompassing site specific plans for the construction, operation and closure of the quarry and the landfill:

- Tharbogang Waste Management and Disposal Centre: Operational and Environmental Management Plan
- Tharbogang Quarry: Operational and Environmental Management Plan

Environmental management objectives and commitments, as outlined in this report, and the requirements outlined in the DG's Requirements, relevant SEPPs and relevant National and State Government technical and policy guidelines, will be embedded into the body of the two site specific plans.

Council will ensure that the successful tender for the construction of the WTS prepares a Construction Environmental Management Plan prior to the commencement of works, detailing:

- Project details and construction methodologies
- Site management and environmental management measures and procedures
- Responsibility and authority of organisations involved in the construction of the WTS

Council will develop the Griffith Biodiversity Management Strategy to provide strategic direction to land planning in the shire and the provision of offsets for the proposed development.

Tharbogang Waste Management and Disposal Centre: Operational and Environmental Management Plan

Council will develop and implement the operational and environmental management plan prior to the commencement of works to meet the operational requirements of the facility and environmental objectives and commitments, including the environmental goals listed in *Environmental Guidelines: Solid Waste Landfills* (EPA, 1996).

The Plan will be divided into the following chapters and sections:

- Site overview
- Environmental objectives
- Cell construction, including:
 - Cell design
 - Batter stabilisation
 - Leachate drainage and storage
 - Bund construction
 - Landfill base layers and HDPE membrane
 - Commissioning sequence for landfill cells
 - Transition between cells
- Waste transfer station procedures
 - Accepted wastes
 - Waste reception procedures
 - Waste storage procedures
 - Prohibited waste management and protocols
 - Hazardous waste management and protocols
 - Routine operational and monitoring procedures
 - Removal of recyclables
 - Traffic management
 - Scavenger rights and responsibilities
 - Complaints procedures
 - Incident reporting management system
- Landfill operation procedures, including:
 - Transition procedures from the existing landfill to the proposed landfill
 - Maintenance of active tip face
 - Cover requirements
 - Flaring of gas emissions
 - Leachate collection system
 - Maintenance
 - Response procedures high level alarm
 - Discharging leachate
 - Traffic management
 - Pest and weed control
 - Cell rehabilitation
 - Ongoing monitoring requirements

- Landfill closure and rehabilitation plan, including:
 - Final landform and use
 - Final landfill contouring
 - Detailed site investigation procedures to determine the extent and degree of contamination from landfill
 - Maintenance and monitoring of leachate collection, gas collection and stormwater controls
 - Revegetation procedures
 - Revegetation maintenance and monitoring procedures
- Quality assurance and quality control, including:
 - Requirements for DECC reporting
 - Procedures for collecting waste stream data
 - Requirements for auditing waste transfer station and landfill facility procedures
 - Requirements for auditing environmental performance

Council will ensure that all site personnel, management and contractors are familiar with the above document, in particular the environmental objectives, and management and monitoring requirements. This document is to be the primary reference for all landfill activities and used for site inductions.

Tharbogang Quarry: Operational and Environmental Plan

Council will develop and implement the operational and environmental management plan for the quarry prior to the commencement of works, outlining the operational procedures and environmental management measures to be adhered to by the successful quarry contractor and Council. The plan will cover the following:

- Site overview
- Environmental objectives
- Pit construction and operation
 - Pit design
 - Commissioning sequence
 - Operating schedule
 - Flora and fauna exclusion zones
 - Onsite flora and fauna measures to be undertaken by the Contractor
 - Hazard controls and personnel safety
 - Stormwater management controls and storage
 - Stripping of overburden and stockpiling procedures
 - Drilling, blasting and crushing procedures
 - Noise and vibration controls to be employed during the blasting and operation of mobile quarry equipment
 - Stockpiling of resource

- Traffic management
- Dust suppression measures
- Ongoing monitoring requirements
- Transition procedures between quarry pits
- Public complaint procedures
- Incident reporting management system
- Quarry rehabilitation plan, including:
 - Final landform and use
 - Quarry wall contouring
 - Revegetation procedures
 - Maintenance and monitoring procedures
- Quality Assurance and Quality Control, including:
 - Requirements for DECC reporting
 - Requirements for auditing quarry facility and operations
 - Requirements for auditing environmental performance

Council will ensure that the contractor and management are familiar with this document, in particular the environmental objectives, and management and monitoring requirements. This document is to be the primary reference for all quarry activities and used for site inductions.

1.2 Mitigation Measures

Table E1 outlines the mitigation and management measures Council has committed to in order to manage potential environmental impacts and issues arising from the proposal. Key responsibilities and a schedule have been identified to ensure effective implementation of commitments at the appropriate project stage. Council is ultimately responsible for ensuring contractual agreements with contractors address agreed environmental commitments and that these commitments are implemented.

Table E1: Mitigation and management commitments

MITIGATION AND MANAGEMENT MEASURE	RESPONSIBILITY	IMPLEMENTATION SCHEDULE	PERFORMANCE INDICATOR, STANDARD OR GUIDELINE	DOCUMENT REFERENCE
FLORA AND FAUNA				
<ul style="list-style-type: none"> Develop and implement Griffith Biodiversity Management Strategy 	Council	Project commencement	Strategy review of biodiversity outcomes	EA Section 7.2.2 'Onsite measures'
<ul style="list-style-type: none"> All retained areas of native vegetation on Lot 201 and Lot 202 (that is areas not subject to the proposed and envisaged future clearing for quarrying operations) will be protected in perpetuity as part of the offset package and rezoned to Environmental Conservation or Environmental Management Revegetate and enhance (where possible) to create a contiguous corridor with Lot 201 on the western boundary Maintain and enhance a 40m riparian zone on either side of the ephemeral drainage line 	Contractors	Prior to commencement of each quarry pit	Species survival counts Structural and floristic diversity Buffer dimensions	EA Section 7.2.2 'Onsite measures'
<ul style="list-style-type: none"> Collect, store and/or propagate seeds for rehabilitation purposes (to be stipulated in the detailed rehabilitation plan) 	Council	Prior to commencement of each quarry pit	Species diversity in seed collection	EA Sections 6.3.6 and 6.4.4 'Rehabilitation and final landform'
<ul style="list-style-type: none"> Relocate hollow trees and woody debris to corridors and areas not designated for clearing 	Council	Prior to commencement of each quarry pit		EA Section 7.2.2 'Onsite Measures'
<ul style="list-style-type: none"> Clearing of hollow-bearing trees will be undertaken outside of the main bird breeding periods and trees will be inspected for resident fauna by a suitably qualified ecologist. Appropriate action will be taken prior to removal should the presence of native fauna be confirmed 	Qualified NSW Parks Officer or equivalent	Prior to commencement of each quarry pit	Property Vegetation Plan (Native Vegetation Act 2003)	EA Section 7.2.2 'Onsite measures'
<ul style="list-style-type: none"> Undertake detailed flora and fauna assessments of proposed offsets 	Council	Prior to the commencement of each quarry pit	Consultant Brief 2007 'Objectives and Assessment Tasks', and in consultation with DECC	EA Section 10.2
<ul style="list-style-type: none"> Refine the offset package described in Appendix C to the satisfaction of the Department of Planning and implement it prior to the commencement of the new quarrying activities in order to compensate 	Council	Prior to the commencement of each quarry pit	Approval from the Department of Planning and verified number of hectares protected and reported as offsets	EA Section 7.2.2 'Offsets' EA Section 10.4

for the native vegetation to be cleared				
<ul style="list-style-type: none"> Enhance onsite vegetation in areas not designated for clearing through direct seeding, thinning, grazing exclusion, weed and fire management Develop and implement a weed and pest management strategy for the control and eradication of weed species and incorporate into the rehabilitation plan, and QOEMP and LOEMP Monitor success of revegetation and enhancement works onsite and in offset areas 	Council	Ongoing		EA Section 7.2.2 EA Section 10.5
<ul style="list-style-type: none"> Prepare a detailed rehabilitation plan for the quarry and landfill components to achieve the rehabilitation outcomes identified in the EA. The rehabilitation plan will describe short, medium and long-term measures what will be implemented to rehabilitate the site, manage the remnant vegetation and habitat on the site and landscaping of the site to mitigate any visual impacts of the project. Performance monitoring and completion criteria will be designed to demonstrate that the rehabilitation outcomes identified in the EA and rehabilitation plan are met. 	Council	Project commencement and ongoing	DECCW approval	EA Section 6.3.6 and 6.4.4
<ul style="list-style-type: none"> Progressively clear vegetation for each quarry pit Progressively rehabilitate each quarry pit 	Council/Contractors	Ongoing	Number of hectares successfully rehabilitated Species survival counts	EA Section 6.3.6
<ul style="list-style-type: none"> Cap and rehabilitate the landfill on completion 	Council/Contractors	Landfill closure	Species survival counts	EA Section 6.4.4

GROUNDWATER

<ul style="list-style-type: none"> Install 2 new licensed groundwater monitoring bores west of the site 	Landfill Operations Manager	Project commencement	<i>Minimum Construction Requirements for Water Bores in Australia 2003</i>	EA Section 7.3.2 & figure 7.3
<ul style="list-style-type: none"> Licence new groundwater monitoring bores 	Landfill Operations Manager	Prior to installation of new bores	<i>Water Act 1912 (NSW)</i>	EA Section 7.3.2
<ul style="list-style-type: none"> Establish and implement groundwater monitoring program in accordance with DECCW requirements 	Quarry and Landfill Operations Managers	Project commencement	<i>EPA Environmental Guidelines: Solid Waste Landfill 1996</i> <i>Guidelines for Water Quality Monitoring and Reporting ANZECC 2000</i> <i>Approved Methods for the Sampling and Analysis of Water Pollutants in NSW 2004</i>	EA Section 7.3.2
<ul style="list-style-type: none"> Construct appropriately engineered landfill cells lined with an impermeable liner (i.e. with a permeability less than 10^{-6}ms^{-1}) and a 	Council, project designers and	Construction	<i>EPA Guidelines for Aqueous Liquid Treatment Ponds</i>	EA Section 6.4.3 Monitoring and

drainage layer <ul style="list-style-type: none"> Construct a leachate collection system with appropriate holding pond and/or tanks to divert leachate back to landfill Construct surface water diversions around landfill Install high level alarm to the leachate pond interlocked with the drainage system to prevent overfilling Install monitoring and alarm system to detect possible failures in the leachate collection system and liner 	contractor		<i>EPA Leachate Barrier System Guidelines</i> <i>EPA Leachate Collection System Guidelines</i> <i>EPA Environmental Guidelines: Solid Waste Landfills 1996</i>	maintenance' & Section 7.3.2
<ul style="list-style-type: none"> Establish assessment procedures to determine extent of leachate system failure Establish and maintain a landfill incident response register and assessment of potential risks 	Landfill Operations Manager	Ongoing		EA Section 7.3.2
<ul style="list-style-type: none"> Visual inspections of engineering works on a daily basis 	Site Manager	Ongoing		EA Section 6.5
<ul style="list-style-type: none"> Install operational backflow device on potable water supply pipeline Identify, map and colour code all pipelines on site 	Landfill Operations Management	Project Commencement	<i>National and State plumbing regulations</i>	EA Section 6.5
<ul style="list-style-type: none"> Contour, cap and revegetate to top profile of the landfill form to maximum 5% gradient 	Landfill Operations Manager	Closure	<i>EPA Environmental Guidelines: Solid Waste Landfills 1996</i>	EA Section 6.4.4
<ul style="list-style-type: none"> Conduct ongoing groundwater monitoring post closure and action non-compliances 	Council	Closure	<i>EPA Environmental Guidelines: Solid Waste Landfills 1996</i>	EA Section 7.3.2
GROUNDWATER DEPENDANT ECOSYSTEMS				
<ul style="list-style-type: none"> Progressively rehabilitate quarry voids to limit area of disturbance potential for loss / gain of water accession to groundwater 	Quarry contractor	Completion of extraction in each pit		EA Section 6.3.6
<ul style="list-style-type: none"> Install leachate collection system for landfill cells. 	Council, project designers and contractor	Construction		EA Section 7.3.2
<ul style="list-style-type: none"> Construct / install stormwater and sedimentation controls 	Council, project designers and contractor	Construction		EA Sections 7.5.2
<ul style="list-style-type: none"> Assess the significance of the various ephemeral swamps and water bodies as part of the Griffith Biodiversity Strategy 	Council	Ongoing		EA Section 6.11

SURFACE WATER

<ul style="list-style-type: none"> Council will prepare a surface water management plan to the satisfaction of the NSW Office of Water. This should include measures to ensure that contaminated runoff will not leave the site. 	Council	Prior to project commencement	<i>Approval of plan by NSW Office of Water</i>	EA Sections 7.4.2 and 7.5.2
<ul style="list-style-type: none"> Construct diversion drains and bunds around perimeter of quarry pits Install pumps to divert surface water to settlement and stormwater detention ponds Install sediment trap at discharge point Incorporate energy dissipation and erosion protection measures in surface water diversions 	Council, project designers and contractor	Construction	<i>Managing Urban Stormwater: Soils and Construction (Landcom, 2004)</i>	EA Section 7.5.2
<ul style="list-style-type: none"> Install table drains, culvert pipes and silt traps on all access new roads, i.e. to pit 101 Undertake all engineering works to minimise erosion and soil contamination 	Council, project designers and contractor	Construction	<i>RTA Roadside Handbook - environmental guidelines for road construction and maintenance workers 1995</i> <i>RTA Road Design Guidelines (draft Chapter 7 – drainage)</i>	EA Section 6.2.2
<ul style="list-style-type: none"> Ensure all water storages are engineered for peak weather events (1 in 100 year 72 hour rainfall event) The stormwater detention pond will be lined with a flexible membrane and the water quality monitored on a quarterly basis 	Council, project designers and contractor	Construction and ongoing	<i>ANCOLD Guidelines on Design Floods for Dams 1994</i> <i>ANCOLD Guidelines Environmental Management for Dams 2001</i>	EA Section 6.5 Appendix J, Section 7.2
<ul style="list-style-type: none"> Install bunding and spill kits in the vicinity of any chemicals or fuels stored or used onsite 	Quarry and Landfill Operations Managers	Ongoing	<i>AS 1940 The storage and handling of flammable and combustible liquids 2004</i> <i>Dangerous Goods Regulations 2005</i>	EA Section 6.3.4
<ul style="list-style-type: none"> Install operational backflow device on potable water supply pipeline Identify, map and colour code all pipelines on site 	Landfill Operations Manager	Project Commencement	<i>National and State plumbing regulations</i>	EA Section 6.5
<ul style="list-style-type: none"> Visual inspection of engineering works 	Site Manager	Ongoing		EA Section 6.5

SOILS

<ul style="list-style-type: none"> Containment spill kit will be kept on site at all times Contaminated soils will be removed and placed in the active putrescible landfill cell Soils testing will be conducted down gradient of the landfill, leachate collection system, leachate pond, quarry pits and settlement pond to ensure soil quality remains intact 	Site Manager	Commencement of works and ongoing	Number of spills and remediation action	EA Sections 6.3.4 and 7.6.2
<ul style="list-style-type: none"> Construct out-off drains and diversions with erosion control measures 	Council, project designers and	Construction	<i>Managing Urban Stormwater: Soils and</i>	EA Section 7.6.2

	contractor		Construction (Landcom, 2004)	
▪ Periodically check and empty sediment trap at settlement dam	Contractor	Ongoing		EA Section 7.6.2
▪ Wet down stockpiles as per the Dust Management Plan	Contractor	Ongoing		EA Section 7.6.2
▪ Enhance vegetation in edge areas (landfill, roads, quarry edges etc) ▪ Cover edges with mulch as a temporary measure	Council	Ongoing	Species survival counts Evidence of erosion	EA Section 7.2.2 'Onsite measures'
▪ Progressively revegetate quarry stages	Contractor	On completion of each quarry stage	Number of hectares successfully rehabilitated Species survival counts	EA Section 6.3.6
<ul style="list-style-type: none"> The revised Soil, Water and Leachate Management Plan (SWLMP) (Golder, 2022) will be amended to include the stockpile area in the Erosion and Sediment Control Plan (ESCP). The revised SWLMP will also detail stockpile management in accordance with the Managing Urban Stormwater: Soils and construction guideline "blue book" that follows the sequence below (Landcom, 2004): <ul style="list-style-type: none"> Remove woody vegetation from stockpile area, process with a chipper and stockpile separately for reuse as soil cover in disturbed areas. Strip topsoil and stockpile separately for reuse Install earthen mounds as a clean water diversion above the stockpiles and revegetate. Install earthen mounds below the stockpile to collect dirty water from the stockpile area and revegetate. Install a sediment basin for dirty water and armour drainage the basin inlet and outlet, and plant with macrophytes. Blast, crush and grade in situ material to create the quarry/landfill void. Place and compact material in grade specific zones in the stockpile area, water stockpiles and roads for dust, keep roads clean. Trim and shape stockpile progressively, bench as required, water for dust suppression, maintain erosion controls. Topsoil, fertilise, seed and mulch gravel stockpile surface progressively. Seeding to be undertaken with sterile exotic species. Control prescribed weeds with spraying and re-seeding as required. Monitor and maintain controls including sediment basin. Reuse sediment basin water for dust suppression and to promote revegetation. 	Council	Post-approval Modification 3	Managing Urban Stormwater: Soils and Construction (Landcom, 2004)	Modification 3 Section 6.1.5

SALINITY				
<ul style="list-style-type: none"> Install closed leachate collection system and surface water controls around landfill Install sedimentation dam and drainage channels to direct water from quarries 	Council, project designers and contractor	Construction	<i>Managing Urban Stormwater: Soils and Construction (Landcom, 2004)</i>	EA Section 7.7.2
AIR QUALITY				
<ul style="list-style-type: none"> Implement procedures for investigating complaints 	Council	Ongoing	Number of complaints registered and finalised	EA Section 7.17
<ul style="list-style-type: none"> Water cart for dust suppression on unsealed roads Water down uncovered stockpiles 	Contractor	Ongoing	Compliance with Dust Management Plan	EA Section 7.8.2
<ul style="list-style-type: none"> Conduct odour modelling in the event of a complaint / incident 	Council	Ongoing	<i>Approved Methods for the Sampling and analysis of Air Pollutants NSW 2007</i>	EA Section 7.8.2
<ul style="list-style-type: none"> Water sprayers will be used on the crusher whenever it is operating 	Council	Ongoing	Compliance with Dust Management Plan	
<ul style="list-style-type: none"> When the 10 minute average wind speed measured at the quarry exceeds 30km/hr from the north-east quadrant (between 0 degrees and 90 degrees) operation of the quarry will cease or as specified in Dust Management Plan 	Council	Ongoing	Compliance with Dust Management Plan	
<ul style="list-style-type: none"> When the average wind speed measured at the quarry in any direction exceeds 35km/hr (10 minute average), then all construction and operation of the quarry will cease or as specified in Dust Management Plan. 	Council	Ongoing	Compliance with Dust Management Plan	
<ul style="list-style-type: none"> A Dust Management Plan incorporating dust monitoring to be developed and submitted to DECCW. 	Council	Prior to Project Commencement	Approval from DECCW	

GREENHOUSE GAS EMISSIONS

Page 10 of 13

<ul style="list-style-type: none"> Capture and flare landfill gases and monitor emissions Once data is available, a greenhouse gas target will be set and incorporated into the landfill operational environmental management plan 	Landfill Operations Manager	Ongoing	POEO (Clean Air) Regulations 2002 - schedule 2 EPA Environmental Guidelines: Solid Waste Landfills 1996	EA Section 7.9.2
<ul style="list-style-type: none"> Construct and operate waste transfer station to reduce waste to landfill 	Council	Within 2 years of project commencement	Handbook for the Design and Operation of Rural and Regional Transfer Stations 2006	EA Figure 6.11
<ul style="list-style-type: none"> Cover active tip face daily with green waste to improve bioreaction process 	Council	Ongoing	Environmental Guidelines: Solid Waste Landfills	EA Section 7.9.2

NOISE AND VIBRATION

<ul style="list-style-type: none"> Implement procedures for investigating complaints 	Council	Ongoing	Number of complaints registered and finalised	EA Section 7.17
<ul style="list-style-type: none"> Where quarry plant noise is found to exceed the intrusive goal of 35dB (L_{Aeq}, 15 min) at affected residences, the plant will be moved or modified to ensure the noise impact from plant is below 35dB (L_{Aeq}, 15 min). 	Contractor	Ongoing	Number of exceedences	EA Section 7.7.2
<ul style="list-style-type: none"> Blasting airblast overpressure (in dB Linear Peak) and ground vibration peak particle velocity (in millimetres per second) will be measured for the first three blasts at the nearest affected residence. If these are well within the limits and there are no complaints, then monitoring will be undertaken once a year. The results will be reported to DECCW. Blasting will only occur between 9.00am - 3pm, Monday to Friday excluding public holidays. 	Contractor	Ongoing	Number of exceedences	
<ul style="list-style-type: none"> Restrict operating hours of the quarry to 8.30am - 5pm 	Contractor	Ongoing		EA Section 6.4.3
<ul style="list-style-type: none"> Notify residents within 2,000m of intention to blast at least 7 days in advance 	Council / Contractor	Ongoing		EA Section 7.8.2

HAZARDS

<ul style="list-style-type: none"> Erect fencing above quarry walls 	Contractor	Prior to commencement of quarry works	DPI Safety Bulletin: working near quarry benches 2008	EA Section 7.10.2
<ul style="list-style-type: none"> Implement procedures for refusing prohibited wastes Construct defined asbestos disposal zone 	Landfill Operational Manager	Construction	Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes 2004	EA Table 7.13
<ul style="list-style-type: none"> Construct bunded area for diesel containers 	Quarry Operational	Construction	AS 1940 The storage and handling of	EA Section 6.3.4

	Manager		<i>flammable and combustible liquids 2004</i> <i>Dangerous Goods Regulations 2005</i>	
<ul style="list-style-type: none"> Develop and implement fire management procedures in consultation with the Griffith Fire Control Centre, and submit to emergency services Develop emergency response and contingency procedures as part of the operational plans 	Landfill Operational Manager	Construction		EA Table 7.13
<ul style="list-style-type: none"> Store chemicals and explosives offsite 	Landfill Operational Manager	Ongoing	<i>Explosives Act 2003 and Regulations 2005</i>	EA Table 7.13
<ul style="list-style-type: none"> Public education and additional inspection for prohibited wastes and burning materials 	Landfill Operational Manager		<i>Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes 2004</i>	EA Table 7.13
<ul style="list-style-type: none"> Reduce tip face and cover daily to reduce risk of ignition from lightening strikes Spread green waste in thin layers to minimise risk of self-combustion Street sweeper waste to be stockpiled with green waste Manage and monitor waste prior to disposal in the landfill cell and implement other measures outlined in Table 7.13 of the EA Create vertical and horizontal layers in inert cell with clay to isolate volume of waste prone to a fire event 	Landfill operational manager	Ongoing		EA Table 7.13
<ul style="list-style-type: none"> Limit access to quarry face and exposed edges Conduct safe work methods statements for potentially hazardous tasks Ensure appropriate supervision for personnel for all tasks Conduct site inductions and periodic refresher training for all employees, contractors and transport contractors 	All personnel	Ongoing	<i>DPI Safety Bulletin: working near quarry benches 2008</i>	EA Section 7.10.2 & Table 7.13

WASTE MINIMISATION

<ul style="list-style-type: none"> Construct waste transfer station 	Project design and contractor	Construction	<i>Handbook for the Design and Operation of Rural and Regional Transfer Stations 2006</i>	EA Figure 6.4.3 'Infrastructure and equipment'
<ul style="list-style-type: none"> Re-direct recyclables for processing 	Landfill Operations Manager	Within 2 years of project commencement	<i>NSW Waste avoidance and Resource Recovery Strategy 2007</i>	EA Section 6.3
<ul style="list-style-type: none"> Record the waste stream and amount received, recovered and recycled, and disposed of in landfill 	Landfill Operations Manager	Ongoing	<i>NSW Waste avoidance and Resource Recovery Strategy 2007</i>	EA Section 6.3

			DECC Online Tracking Service Pack DECC Online Waste Reporting Service Pack and User Guide	
--	--	--	---	--

TRAFFIC

<ul style="list-style-type: none"> Implement procedures for investigating complaints 	Council	Prior to commencement of works	Number of complaints registered and finalised	EA Section 7.12.2
<ul style="list-style-type: none"> Undertake regular traffic and road inspections and any works required will be undertaken in accordance with road and rail design standard applicable at the time 	Council	Every 5 years	In consultation with RTA and the rail authorities, and standards current to the time	EA Section 7.12.2
<ul style="list-style-type: none"> Compile Transport Management Plan 	Council	Prior to commencement of works	Approval of plan by RTA.	
<ul style="list-style-type: none"> Upgrade auxiliary right turn treatment at the intersection with Kidman Way and ensure that there is no cost to the RTS associated with the development 	Council	In accordance with the RTA approved Transport Management Plan	Approval of plan by RTA.	
<ul style="list-style-type: none"> The operator to maintain a log book of extraction quantities, waste deliveries and traffic movements. 	Council	Ongoing		

HERITAGE

<ul style="list-style-type: none"> Implement procedures to investigate and protect culturally significant material if discovered during construction and operation 	Site Manager	Prior to commencement of works	<i>Guidelines for Aboriginal Heritage Impact Assessment in the Exploration & Mining Industries</i>	EA Section 7.12.2 and Appendix D of this Response to Submissions
<ul style="list-style-type: none"> The two surveyor scarred trees will be preserved and protected and a 20 m radius development exclusion zone will be maintained around each tree 	Council	Prior to commencement of works		Appendix D of this Response to Submissions
<ul style="list-style-type: none"> The two Bluedot Speedway signs will be carefully removed and handed over to the car racing club for safe-keeping, reuse or displayed at Griffith Pioneer Park Museum. 	Council	Prior to commencement of works		Appendix D of this Response to Submissions

VISUAL AMENITY

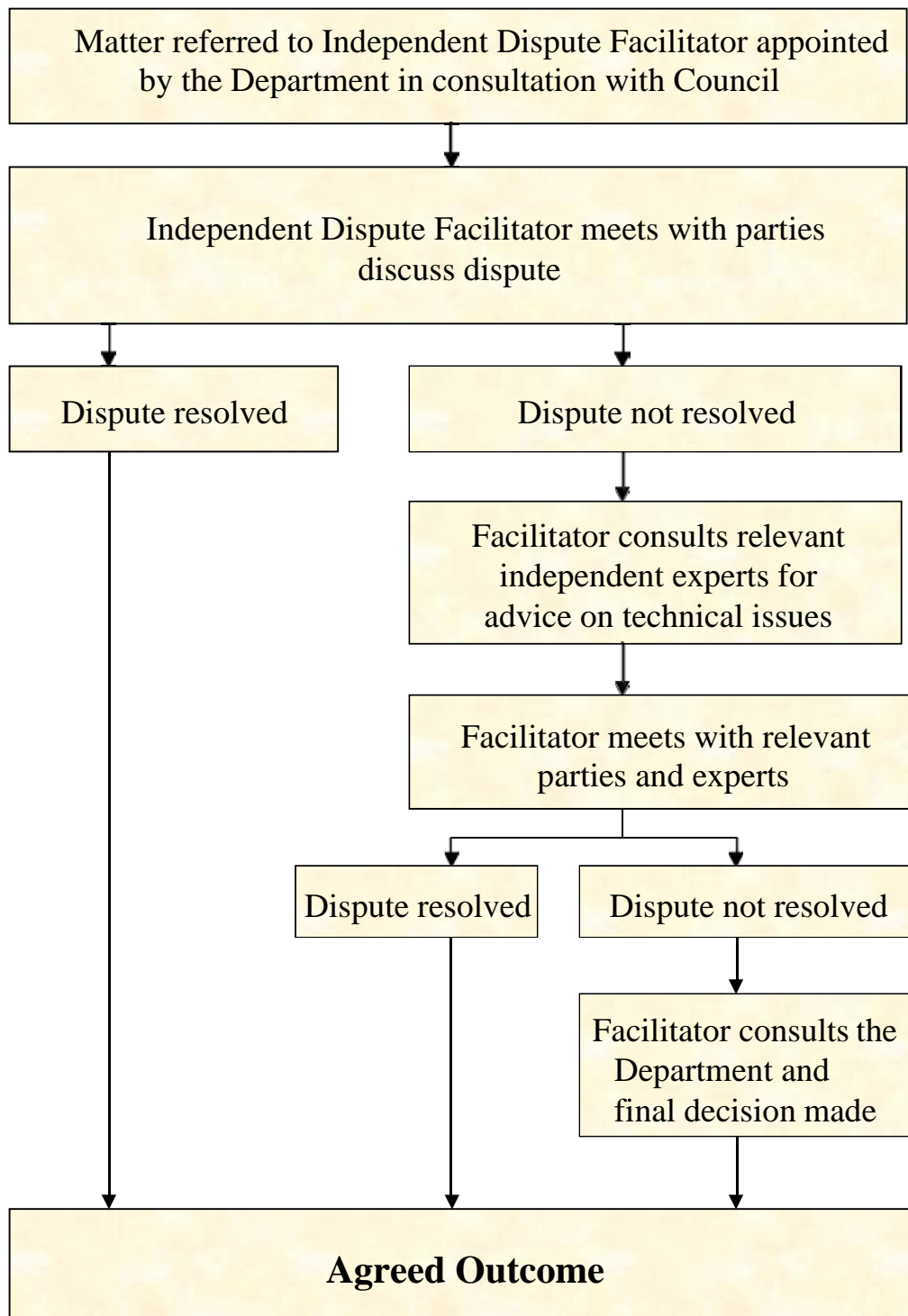
<ul style="list-style-type: none"> Erect 2.5m perimeter fence to prevent windblown rubbish leaving the site Ensure rubbish pickup along the fence line and more generally is undertaken regularly 	Site Manager	Prior to commencement of works and ongoing	Number of complaints regarding rubbish	EA Section 7.13.2
<ul style="list-style-type: none"> The landfill will be rehabilitated and revegetated to replicate areas of open grassy woodland. 	Council	Ongoing		EA Section 6.4.4
<ul style="list-style-type: none"> Construct batters with fissures (offset at each bench) and benches to minimise extend of the cut face. These will mimic the natural scarps and reduce the formation of unnatural straight lines. The benches and floor of the quarries will be revegetated with suitable native species 	Quarry Operations Manager and Contractor	Ongoing	<i>NSW Minerals Council Rehabilitation by Design Practice Notes</i> <i>DITR Mine Rehabilitation Landform Design for Rehabilitation 1998</i>	EA Sections 6.3.4 and 7.13.2
<ul style="list-style-type: none"> Ensure strategic landscaping is incorporated into new residential developments within line of sight and in close proximity to the development 	Planning division Council	Ongoing	<i>Griffith Land and Environment Plan</i>	EA Section 7.13.2

SOCIOECONOMIC

<ul style="list-style-type: none"> Maintain ongoing and inclusive consultation with nearby landholders Respond to all community concerns and the complaints register 	Council	All project stages	Number of complaints registered and finalised	EA Sections 7.14 and 7.17
--	---------	--------------------	---	---------------------------

**APPENDIX 3
INDEPENDENT DISPUTE RESOLUTION PROCESS**

**Independent Dispute Resolution Process
(Indicative only)**



Appendix B Waste Transfer Station Plans (2015)

GRIFFITH CITY COUNCIL

THARBOGANG WASTE TRANSFER STATION

CIVIL WORKS

23-15329



DRAWING LIST

DRAWING NO.	DRAWING TITLE
23-15329-C001	COVER SHEET, LOCALITY PLAN AND DRAWING LIST
23-15329-C002	GENERAL NOTES AND LEGEND
23-15329-C003	GENERAL STRUCTURAL NOTES
23-15329-C010	SITE PLAN
23-15329-C011	GENERAL ARRANGEMENT PLAN, SHEET 1 OF 2
23-15329-C012	GENERAL ARRANGEMENT PLAN, SHEET 2 OF 2
23-15329-C020	SETOUT PLAN
23-15329-C021	SETOUT TABLE - SHEET 1 OF 2
23-15329-C022	SETOUT TABLE - SHEET 2 OF 2
23-15329-C030	PAVEMENT PLAN AND DETAILS
23-15329-C035	TYPICAL SECTIONS
23-15329-C040	ROAD LONGITUDINAL SECTIONS
23-15329-C050	ACCESS ROAD (ROAD 1) - CROSS SECTIONS - SHEET 1 OF 3
23-15329-C051	ACCESS ROAD (ROAD 1) - CROSS SECTIONS - SHEET 2 OF 3
23-15329-C052	ACCESS ROAD (ROAD 1) - CROSS SECTIONS - SHEET 3 OF 3
23-15329-C053	SERVICE ROAD (ROAD 2) - CROSS SECTIONS - SHEET 1 OF 2
23-15329-C054	SERVICE ROAD (ROAD 2) - CROSS SECTIONS - SHEET 2 OF 2
23-15329-C060	STORMWATER PLAN
23-15329-C061	STORMWATER CONTROL POND
23-15329-C062	STORMWATER DETAILS AND PIT SCHEDULE
23-15329-C063	10,000L RAINWATER TANKS
23-15329-C065	SWALES LONG SECTIONS
23-15329-C070	SERVICES PLAN
23-15329-C071	SECURITY LIGHTING LAYOUT
23-15329-C072	CCTV CAMERA LAYOUT
23-15329-C073	WTS CCTV AND SECURITY LIGHTING - GENERAL NOTES AND SPECIFICATIONS - SHEET 1 OF 2
23-15329-C074	WTS CCTV AND SECURITY LIGHTING - GENERAL NOTES AND SPECIFICATIONS - SHEET 2 OF 2
23-15329-C075	SERVICES DETAILS, SEWER LONG SECTION AND PIT SCHEDULE
23-15329-C081	COMMUNITY RECYCLING CENTRE BUILDING
23-15329-C082	SITE STORAGE SHED
23-15329-C083	SITE OFFICE
23-15329-C085	WTS AND ASSOCIATED RETAINING WALLS - LAYOUT PLAN
23-15329-C086	WTS AND ASSOCIATED RETAINING WALLS - CONCRETE DETAILS
23-15329-C087	WTS AND ASSOCIATED RETAINING WALLS - CANOPY STEELWORK DETAILS
23-15329-C090	EROSION AND SEDIMENT CONTROL CONCEPT PLAN
23-15329-C091	EROSION AND SEDIMENT CONTROL DETAILS
23-15329-C100	LANDSCAPE PLAN



LOCALITY PLAN
SCALE 1:2500

No	Revision	Note	Drawn	Job Manager	Project Director	Date
2		FURTHER REVISIONS FOLLOWING GCC COMMENTS	LDS	CJ*	JW*	01.04.15
1		REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0		FOR CONSTRUCTION	ROP	CJ*	JW*	17.03.15



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*		
Date	25.02.15		
Scale	1:2500		

This Drawing must not be
used for Construction unless
signed as Approved

Client	GRIFFITH CITY COUNCIL
Project	THARBOGANG WASTE TRANSFER STATION
Title	COVER SHEET, LOCALITY PLAN AND DRAWING LIST
Original Size	A1
Drawing No.	23-15329-C001
Rev.	2

GENERAL LEGEND:

EXISTING	EXISTING TO BE REMOVED OR ABANDONED	PROPOSED	DESCRIPTION
			MAJOR CONTOURS
			MINOR CONTOURS
			TOP OF BANK
			BOTTOM OF BANK
			SHOULDER
			EDGE OF CONCRETE
			BUILDING
			CENTRELINE
			DRAINAGE LINE WITH GULLY PIT / GRATE
			TELSTRA CABLE WITH PIT AND MARKER
			OVERHEAD ELECTRICITY WITH POLE AND LIGHT
			WATERLINE
			GATE VALVE
			WATER METER
			PUMP
			FENCE LINE
			EDGE OF TREES
			CULVERT WITH HEADWALL
			GATE
			SURVEY STATION/SSIMPERM. MARK / REF. MARK
			TREE / SHRUB
			STORMWATER STRUCTURE "3"
			STORMWATER LINE "1"
			SEWER STRUCTURE "1"
			SEWER LINE "5"
			SWALE FLOW
			ROP STORMWATER PIPE WITH HEADWALLS
			PPE-CAST GRATE INLET PIT
			SEWER PIPE
			STORMWATER PIPE
			SUB-SOIL DRAIN PIPE
			WATER PIPE
			TELECOMMUNICATION CONDUIT
			ELECTRICAL CONDUIT
			COMBINED SERVICES ROUTE
			CAMERA / LIGHTING POLE
			INDUSTRIAL FLUORESCENT
			CCTV CAMERA
			FLOOD LIGHTING
			RE-GRASS ALL DISTURBED AREAS WITH DRY LAND GRASS
			DOWN PIPE ON BUILDING OR STRUCTURE
			INSPECTION OPENING
			SEWER MANHOLE
			HOSE COCK ATTACHED TO BUILDING OR STRUCTURE 900mm ABOVE SURFACE LEVEL
			HOSE REEL ATTACHED TO COLUMN - STAINLESS STEEL HOSE REEL WITH FIRE HOSE MOUNTED 1500mm ABOVE SURFACE LEVEL

NOTES:

- A.1 ALL CONSTRUCTION WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE GRIFFITH CITY COUNCIL SPECIFICATIONS.
- A.2 SURFACES WHICH LIE OUTSIDE THE GENERAL LIMITS OF WORKS AND WHICH ARE DISTURBED ARE TO BE RESTORED TO THE PRECONSTRUCTION CONDITION BY THE CONTRACTOR TO THE SATISFACTION OF THE SUPERINTENDENT.
- A.3 ALL LEVELS SHOWN ARE FINISHED SURFACE LEVELS UNLESS NOTED OTHERWISE. WHERE APPLICABLE THE CONTRACTOR SHALL ALLOW FOR THE THICKNESS OF THE VARIOUS SPECIFIED FINISHES.
- A.4 THE CONTRACTOR SHALL PROVIDE ALL LABOUR, MATERIALS AND EQUIPMENT NECESSARY FOR THE ACCURATE SETTING OUT OF THE ENTIRE WORKS. THE CONTRACTOR SHALL ENSURE THAT ALL SURFACES ARE CONSTRUCTED TO THE CORRECT LEVELS. ALL WORKS AS EXECUTED INFORMATION TO BE VERIFIED BY REGISTERED SURVEYOR.
- A.5 THE CONTRACTOR SHALL NOT DISTURB NOR OBLITERATE ANY SURVEY MARK. SHOULD ANY SURVEY MARK BE DISTURBED OR OBLITERATED, THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT IMMEDIATELY AND THE SURVEY MARK SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.
- A.6 EXISTING SERVICES HAVE BEEN PLOTTED FROM CURRENT DBYD INFORMATION ONLY. THE SUPERINTENDENT DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF DATA USED AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES PRIOR TO COMMENCING WORK.
- A.7 CONTRACTOR IS TO OBTAIN CLEARANCES AND CO-ORDINATE WORK WITH ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT.
- A.8 THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE WORK HEALTH & SAFETY ACT 2011, WHICH REQUIRES EMPLOYERS TO ENSURE THE HEALTH, SAFETY AND WELFARE OF ALL THEIR EMPLOYEES AND PERSONS IN THE VICINITY OF THE WORK SITE.
- A.9 ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- A.10 REFER ALIGNMENT CONTROL PLANS FOR STREET TREE SETOUT.

SURVEY NOTES

- S.1 COORDINATE INFORMATION IS TO: MAP GRID AUSTRALIA (MGA) COORDINATES. DATUM FOR ALL LEVELS IS AUSTRALIAN HEIGHT DATUM (AHD).
- S.2 SURVEY SUPPLIED BY GRIFFITH CITY COUNCIL.
- S.3 TREE HEIGHTS AND SHAPES ARE INDICATIVE ONLY.

EARTHWORKS

- B.1 REMOVE ALL EVIDENT UNCONTROLLED FILL OR ANY SOFT, WET OR HIGHLY COMPRESSIBLE MATERIAL OR SOIL RICH IN ORGANIC MATTER INCLUDING ROOTS. CARE SHALL BE TAKEN IN THE REMOVAL OF TREE ROOTS.
- B.2 ALL IMPORTED FILL MATERIAL SHALL COMPRISE ONLY NATURAL EARTH AND ROCK AND SHALL BE FREE OF CONTAMINANTS (AS DEFINED BY SECTION 11 OF THE ENVIRONMENTAL PROTECTION ACT 1994), NOXIOUS WEEDS AND HAZARDOUS, DELETERIOUS OR ORGANIC MATERIAL.
- B.3 SUITABLE FILL SHALL COMPLY WITH THE REQUIREMENTS OF CLAUSE 4.4 OF AS3798-2007 'GUIDELINES ON EARTHWORKS FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT'.
- B.4 THE CONTRACTOR SHALL CHECK, CONFIRM AND SATISFY THEMSELVES THAT ALL DIMENSIONS, LEVELS AND SERVICE LOCATIONS ARE CORRECT PRIOR TO CONSTRUCTION WORKS COMMENCING ON SITE.
- B.5 THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT IMMEDIATELY OF ANY DISCREPANCIES OR ERRORS THAT MAY BE PRESENT WITHIN THESE PLANS.
- B.6 THE CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF LEVELS AND LOCATIONS OF SERVICES TO FULLY COMPLY WITH GRIFFITH CITY COUNCIL SPECIFICATIONS.
- B.7 CONTRACTOR TO PROVIDE DILAPIDATION REPORT ON EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
- B.8 ALL SPOIL CAN BE DISPOSED OF AT THE LANDFILL SITE AT THE CONTRACTOR'S EXPENSE.

SPECIAL REQUIREMENTS

- C.1 AREAS FOR PARKING OF CONSTRUCTION PLANT, ETC SHALL BE KEPT FREE OF ANY CONTAMINATES (EG ENGINE OIL, HYDRAULIC OIL, FUEL, KEROSENE).
- C.2 DAMAGE CAUSED BY CONSTRUCTION EQUIPMENT, ETC, TO ANY NEW OR EXISTING INFRASTRUCTURE SHALL BE MADE GOOD BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE SUPERINTENDENT.

EXISTING SERVICES

- D.1 THE CONTRACTOR SHALL ARRANGE FOR CURRENT DBYD BEFORE-YOU-DIG (DBYD) SERVICES SEARCH PLANS FOR ANY EXISTING SERVICES WITHIN THE VICINITY OF THE CONSTRUCTION SITE AND SHALL MAINTAIN A MATCH COPY OF THESE PLANS ON SITE AT ALL TIMES DURING THE CONSTRUCTION PHASE OF THIS PROJECT.
- D.2 ANY SERVICE THAT IS IDENTIFIED ON SITE THAT IS NOT SHOWN WITHIN THESE PLANS SHALL BE IMMEDIATELY BOUGHT TO THE ATTENTION OF THE SUPERINTENDENT FOR COORDINATION WITH THE DESIGN SHOWN WITHIN THESE PLANS. NO WORK SHALL PROCEED PAST THIS POINT UNTIL APPROVAL IS GIVEN BY THE SUPERINTENDENT TO PROCEED.
- D.3 ANY DAMAGE CAUSED TO ANY EXISTING SERVICE DURING THE CONSTRUCTION PERIOD OF THIS PROJECT SHALL BE REPORTED IMMEDIATELY TO THE SUPERINTENDENT AND SUCH DAMAGE MADE GOOD AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE SUPERINTENDENT.
- D.4 ALL EXTENSIONS TO STORMWATER DRAINAGE TO BE CLASS 4 REINFORCE CONCRETE PIPES WITH RUBBER RING JOINTS.

PROTECTION AND EROSION AND SEDIMENT CONTROL

- E.1 IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT THE SITE AND SURROUNDING AREA FROM DAMAGE RESULTING FROM STORMWATER RUNOFF.
- E.2 ALL EROSION AND SEDIMENTATION CONTROL MEASURES IMPLEMENTED ON SITE DURING CONSTRUCTION WORKS ARE TO BE SELECTED AND INSTALLED IN ACCORDANCE WITH GRIFFITH CITY COUNCIL ENGINEERING GUIDELINES.
- E.3 REFER TO DRAWING No. 23-15329-C090 AND 23-15329-C091 FOR CONCEPT PLAN AND DETAILS.
- E.4 EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE IMPLEMENTED AND MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION TO MINIMISE THE EFFECTS OF WEATHER TO THE SATISFACTION OF THE SUPERINTENDENT.
- E.5 NO EXTENSIONS OF TIME WILL BE GRANTED SHOULD DAMAGE TO THE WORKS AND SURROUNDING AREAS RESULTING FROM THE CONTRACTOR'S NEGLIGENCE IN NOT PROVIDING ADEQUATE EROSION AND SEDIMENT CONTROL PROTECTION.

TOPSOIL AND TURFING / LANDSCAPING

- F.1 TOPSOIL SHALL BE UNIFORMLY APPLIED TO PROVIDE A MINIMUM DEPTH OF 100mm TO ALL RESTORED TOPSOILED AREAS, WITH SOIL LUMPS NOT EXCEEDING 50mm DIMENSION.
- F.2 CARE MUST BE TAKEN AT ALL TIMES TO PREVENT DAMAGE TO TREE ROOTS AND BRANCHES.
- F.3 NO CUTTING OF TREE ROOTS TO TAKE PLACE WITHOUT CONSULTING THE SUPERINTENDENT.

OVERHEAD POWER LINES

- G.1 THE CONTRACTOR SHALL NOT DISTURB THE FOOTINGS OF EXISTING STREET LIGHTING AND POWER POLES WHICH ARE NOT TO BE RELOCATED.
- G.2 THE CONTRACTOR IS TO DEMONSTRATE CARE WHEN OPERATING VEHICLES AND MACHINERY IN THE VICINITY OF OVERHEAD POWER LINES.

CONSTRUCTION NOTES

- H.1 THE CONTRACTOR SHALL ARRANGE FOR THE WORK TO BE INSPECTED BY THE SUPERINTENDENT AT THE HOLD POINTS AS PER THE GRIFFITH CITY COUNCIL SPECIFICATIONS.
- H.2 THE CONTRACTOR SHALL GIVE NOT LESS THAN TWENTY FOUR HOURS NOTICE WHEN REQUESTING AN INSPECTION OF CONSTRUCTION HOLD POINTS.

TESTING FREQUENCY

- I.1 TESTING REQUIREMENTS ARE SET OUT IN THE SPECIFICATION, NOTING THAT THE FOLLOWING MINIMUM REQUIREMENTS APPLY.

COMPACTION TESTS

SUBGRADE
1 TEST PER 500 SQUARE METRES OF SUBGRADE (2 MIN)

SUB-BASE
1 TEST PER 1000 SQUARE METRES OF SUB-BASE (1 MIN)

BASE
1 TEST PER 1000 SQUARE METRES OF BASE (1 MIN)

CBR TESTS
1 TEST PER 500 SQUARE METRES OF SUBGRADE (2 MIN)

RESPONSIBILITIES

- A. PRINCIPAL IS GRIFFITH CITY COUNCIL.
- B. SUPERINTENDENT IS PERSON NOMINATED BY PRINCIPAL TO ADMINISTER CONTRACT PURSUANT TO CONTRACT TERMS AND CONDITIONS.
- C. CONTRACTOR IS THE PARTY ENGAGED TO UNDERTAKE ALL WORK SHOWN IN THE DRAWINGS.
- D. DESIGNER IS GHD PTY. LTD. REFER TO CHRIS J. JOUBERT 02 9923 7405.



3	TELECOMS CONDUIT	RGM	CJ*	JW*	29.04.15
2	RESPONSIBILITIES REVISED	RGM	CJ*	JW*	21.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15

Plot Date: 7 May 2015 - 1:10 PM

Plotted by: Rhodolyn Martinez

Cad File No: Ims-na-001rml_projects\23-15329\CADD\Drawings\23-15329-C002.dwg

Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn: L. SOBREVILLA
Designer: R. SONEJA
Drafting Check: G. DOUGHERTY*
Design Check: G. DOUGHERTY*
Approved (Project Director): J. WEARNE*
Date: 25.02.15
Scale: NTS

Client: GRIFFITH CITY COUNCIL
Project: THARBOGANG WASTE TRANSFER STATION
Title: GENERAL NOTES AND LEGEND
Original Size: A1
Drawing No: 23-15329-C002
Rev: 3

GENERAL

- ALL NOTES ON DRAWING 23-15329-C003 ARE PROVIDED IN LIEU OF SEPARATE TECHNICAL SPECIFICATION DOCUMENT FOR STRUCTURAL WORKS AND THAT THESE NOTES ARE A NECESSARY PART OF THE DOCUMENTATION AND SPECIFICALLY RELATE TO THIS PROJECT.
- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT S.A.A. CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES.
- SETTING-OUT DIMENSIONS AND SIZES OF STRUCTURAL MEMBERS NOT TO BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS. ANY SETTING-OUT DIMENSIONS SHOWN IN THE STRUCTURAL DRAWINGS TO BE CHECKED BY THE CONTRACTOR BEFORE CONSTRUCTION COMMENCES. REFER ANY DISCREPANCY TO THE DESIGNER BEFORE PROCEEDING WITH THE WORK.
- DURING CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE STRUCTURE IS MAINTAINED IN A SAFE AND STABLE CONDITION AND NO PART IS OVERSTRESSED. TEMPORARY BRACING TO BE PROVIDED BY THE CONTRACTOR AS REQUIRED TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
- UNLESS NOTED OTHERWISE, ALL LEVELS ARE IN METRES AND ALL STRUCTURAL DIMENSIONS ARE IN MILLIMETRES.
- THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT S.A.A. CODES AND BUILDING CODE OF AUSTRALIA FOR THE FOLLOWING LOADINGS:-

ELEMENT	LIVE LOAD (kPa)
SHED FLOOR SLABS	5.0
CANOPY NON-TRAFFICABLE ROOF	0.25

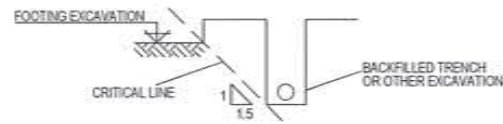
WIND LOADING HAS BEEN DETERMINED IN ACCORDANCE WITH AS 1170.2 BASED UPON A BASIC WIND VELOCITY OF 46m/s (VR) AND TERRAIN CATEGORY 3.

EARTHQUAKE LOADING HAS BEEN DETERMINED IN ACCORDANCE WITH AS 1170.4

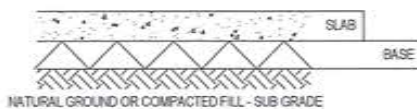
- EXCEPT WHERE VARYED BY THE SPECIFICATION AND/OR DRAWINGS.
- AS 3600 CONCRETE STRUCTURES CODE
- AS 4671 STEEL REINFORCING MATERIALS
- AS 4100 STEEL STRUCTURES CODE
- AS 1163 STRUCTURAL STEEL HOLLOW SECTIONS
- AS 1554 (PART 1) WELDING OF STEEL STRUCTURES
- AS 1720.1 TIMBER ENGINEERING CODE
- AS 1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES
- AS 3700 MASONRY CODE
- AS 3798 GUIDELINES FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS
- AS 3610 FORMWORK FOR CONCRETE

FOUNDATIONS

- FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING INTENSITY OF 100 kPa FOR RETAINING WALLS AND 500 kPa FOR BORED PIER.
- FOUNDATION MATERIAL TO BE APPROVED FOR THIS PRESSURE BY THE CONTRACTOR'S INDEPENDENT GEOTECHNICAL ENGINEER BEFORE REINFORCEMENT AND/OR CONCRETE ARE PLACED.
- FOOTINGS TO BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS U.N.O.
- RETAINING WALLS (OTHER THAN CANTILEVER WALLS) NOT TO BE BACKFILLED UNTIL FLOOR CONSTRUCTION AT TOP AND BOTTOM IS COMPLETED. ENSURE FREE DRAINING BACKFILL IS USED, AND DRAINAGE IS IN PLACE. CANTILEVER WALLS TO BE BACKFILLED ONLY AFTER MINIMUM CONCRETE STRENGTH IS ACHIEVED.
- BLINDING CONCRETE TO BE PLACED ON THE SAME DAY AS THE FINAL EXCAVATION TO THE FOUNDATION DESIGN LEVEL.
- FOOTING LEVELS, WHERE SHOWN, ARE ESTIMATES ONLY AND WILL BE ESTABLISHED DURING SITE INSPECTION.
- UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT THE LIMITATIONS OF EXCAVATIONS NEAR FOOTINGS SHALL BE AS FOLLOWS:-



- SUB GRADE AND SUB BASE FOR SLABS ON GROUND SHALL COMPLY WITH THE FOLLOWING:-



SUB GRADE: UNLESS OTHERWISE SPECIFIED THE SUB GRADE BELOW BASE COURSES FOR SLABS SHALL BE SUITABLE MATERIAL COMPACTED TO 95% OF MAXIMUM DRY DENSITY DETERMINED BY TEST AS 1289 E 2.1 OR 65% MINIMUM DENSITY INDEX FOR COHESIONLESS SOILS.

BASE: BASE SHALL BE APPROVED WELL GRADED NATURAL GRAVEL OR CRUSHED ROCK (MAX. SIZE 40mm) SPREAD AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY DETERMINED BY TEST AS 1289 E 2.1 OR 65% MINIMUM DENSITY INDEX FOR COHESIONLESS SOILS.

- ALL FREE DRAINING GRANULAR FILL MATERIAL BEHIND RETAINING WALLS SHALL BE OF STRONG DURABLE PARTICLES CONFORMING TO THE FOLLOWING GRADINGS:-

AS SIEVE SIZE	% PASSING
53mm	100
9.5mm	45-100
2.36mm	20-75
600µm	10-20
75µm	<15

- WHERE SELECT FILL IS SHOWN ON THE DRAWINGS, FILL SHALL COMPLY WITH THE FOLLOWING:-

1. REMOVE TOPSOIL (IF ANY) AND EXISTING FILL
2. COMPACT SURFACE TO 95% MMD
3. PLACE FILL IN MAX. 150 THICK LAYERS, EACH LAYER COMPACTED TO 95% MMD
4. FILL TO COMPLY WITH:-

- MAX. PARTICLE SIZE 75mm
- PERCENTAGE PASSING 0.075mm SIEVE 25% MAX.
- PLASTICITY INDEX NOT GREATER THAN 15% AND NOT LESS THAN 2%
- MINIMUM SOAKED CBR TO BE 15%

CONCRETE

- ALL WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH A.S.3600 AND THE CONCRETE SPECIFICATION.
- CONCRETE QUALITY:-

ELEMENT	SLUMP	MAX. SIZE AGGREGATE	CEMENT TYPE	CONCRETE GRADE
RETAINING WALLS	80	20	GP	32 MPa
SHED FLOOR SLABS	80	20	GP	32 MPa
BORED PIER	80	20	GP	32 MPa
MASS CONCRETE	80	20	GP	15 MPa

MIN. CEMENT CONTENT = 270kg/m³ MAX. W/C RATIO = 0.5

- PROJECT CONTROL TESTING TO BE CARRIED OUT IN ACCORDANCE WITH A.S.3600.
- NO ADMIXTURES TO BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
- CONCRETE DIMENSIONS SHOWN DO NOT INCLUDE THICKNESSES OF APPLIED FINISHES.
- DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS U.N.O.
- ALL EXPOSED EDGES AND CORNERS TO BE PROVIDED WITH 25mm FILLETS OR CHAMFERS.
- MAINTAIN COVER TO REINFORCEMENT AT THESE DETAILS UNLESS OTHERWISE INDICATED.
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS TO BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT.
- CONSTRUCTION JOINTS WHERE NOT SHOWN TO BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT. DETAILS OF CONSTRUCTION JOINTS TO BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL.
- THE FINISHED CONCRETE TO BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS, TO BE COMPACTED WITH MECHANICAL VIBRATORS.
- CURING OF ALL CONCRETE TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 3 DAYS, AND PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT. APPROVED SPRAYED OR CURING COMPOUNDS MAY BE USED WHERE COMPATIBLE WITH FLOOR FINISHES. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.
- CONSTRUCTION SUPPORT PROPPING TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING.
- CONDUITS, PIPES ETC. ONLY TO BE LOCATED AS SHOWN IN THE DRAWINGS OR AS APPROVED BY THE SUPERINTENDENT.
- ALL FORMWORK AND PROPPING UNDER SUSPENDED CONCRETE WORKS SHALL BE REMOVED BEFORE ANY MASONRY WORK IS BUILT ABOVE.
- CAMBERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS AND EXCEPT FOR PRESTRESSED WORK SHALL BE PROVIDED IN BEAMS AND SLABS AS FOLLOWS:-

i) SPANS - 0.002 x SPAN

ii) CANTILEVERS - 0.004 x CANTILEVER LENGTH

- CAMBERS SHALL BE CHECKED BEFORE AND AFTER DEPROPPING TO DETERMINE THE DEFLECTION OF THE MEMBERS UNDER THEIR SELF WEIGHT. PROVISION SHALL BE MADE IN THE FORMWORK SYSTEM FOR THE CONTRACTOR'S STRUCTURAL ENGINEER TO VARY THE SPECIFIED CAMBERS ON THE BASIS OF THIS INFORMATION. THE TOP SURFACE OF A CAMBERED MEMBER SHALL BE FINISHED TO MAINTAIN THE SPECIFIED DEPTH OF THE MEMBER.
- SHRINKAGE
- MAXIMUM DRYING SHRINKAGE STRAIN MEASURED IN ACCORDANCE WITH AS 1012 PART 13 SHALL NOT EXCEED 650×10^{-6} AT 8 WEEKS. UNDERTAKE TESTING (IE SHRINKAGE BARS) TO DEMONSTRATE COMPLIANCE WITH THIS REQUIREMENT FOR ALL SUSPENDED CONCRETE ELEMENTS.
- BACKPROPPING FOR FORMWORK TO BE DESIGNED IN ACCORDANCE WITH AS 3610 AND CERTIFIED BY ENGINEER ENGAGED BY THE CONTRACTOR.
- THE STRUCTURAL DESIGN FOR SUSPENDED STRUCTURES ASSUMES:-

1. A MAXIMUM COMBINED VERTICAL DEFLECTION OF FORMWORK AND PROPS OF 2mm UNDER THE WEIGHT OF CONCRETE, REINFORCEMENT AND CONSTRUCTION LIVE LOAD.
2. REMOVAL OF FORMWORK AND PROPS SHALL COMPLY WITH CLAUSE 19.6.2 OF AS3600

FORMWORK

- THE DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK AND FALSEWORK IS THE RESPONSIBILITY OF THE CONTRACTOR. DESIGN AND CONSTRUCTION OF FORMWORK TO BE IN ACCORDANCE WITH A.S.3610 UNLESS OTHERWISE APPROVED IN WRITING BY THE DESIGNER.

REINFORCEMENT

- CLEAR CONCRETE COVER TO ALL REINFORCEMENT TO BE AS FOLLOWS, UNLESS SHOWN OTHERWISE.

ELEMENT	COVER(mm) NOT EXPOSED TO WEATHER	COVER(mm) EXPOSED TO WEATHER
RETAINING WALLS	50	50
SHED FLOOR SLABS ON GROUND	20	40
BORED PIER		75

- ALL REINFORCEMENT TO BE FIRMLY SUPPORTED NOT GREATER THAN 1mm CENTRES BOTH WAYS. UNLESS NOTED OTHERWISE BARS TO BE TIED AT ALTERNATE INTERSECTIONS.

REINFORCEMENT SYMBOLS

- N - DENOTES GRADE 500 DEFORMED BARS TO A.S.4671
- Y - DENOTES GRADE 400 Y BARS TO A.S.1302 GRADE Y (TEMPCORE)
- R - DENOTES GRADE 250 R HOT ROLLED PLAIN BARS TO A.S.1302
- SL, RL - DENOTES FABRIC TO AS 4671 (GRADE 500)
- F - DENOTES GRADE 450 F HARD-DRAWN WIRE REINFORCING FABRIC TO A.S.1303
- W - DENOTES GRADE 450 W HARD-DRAWN PLAIN WIRE TO A.S.1303
- 17/20-250 means:-
- 17 - (NUMBER OF BARS IN GROUP)
- N - (BAR GRADE AND TYPE)
- 20 - (NOMINAL BAR SIZE IN mm)
- 250 - (SPACING IN mm)

THE FIGURE FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO A.S.1303

- REINFORCEMENT BARS TO BE LAID IN LAYERS TAGGED ON PLANS AS FOLLOWS:-

- (1) - DENOTES BARS LAID IN BOTTOM LAYER FIRST.
- (2) - DENOTES BARS LAID IN BOTTOM LAYER SECOND.
- (3) - DENOTES BARS LAID IN TOP LAYER FIRST.
- (4) - DENOTES BARS LAID IN TOP LAYER LAST.

- REINFORCEMENT IS REPRESENTED DIAGMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.

- SPLICES IN REINFORCEMENT TO BE MADE ONLY IN POSITION SHOWN, OR OTHERWISE APPROVED IN WRITING BY THE SUPERINTENDENT/DESIGNER. HOOKS, LAPS, SPLICES AND BENDS TO BE IN ACCORDANCE WITH AS 3600.
- LAPS TO BE NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR SHOWN BELOW U.N.O.

BAR SIZE (mm)	SPLICE LENGTH (mm)
N12	475
N16	625
N20	800
N24	950
N28	1250
N32	1575

- WELDING OF REINFORCEMENT NOT TO BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE DESIGNER.
- JOGGLES TO BARS TO BE 1 BAR DIAMETER OVER A LENGTH OF 12 BAR DIAMETERS U.N.O.
- FABRIC TO BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. BUNDLED BARS TO BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.
- AT PENETRATIONS IN SLABS, UNLESS OTHERWISE DETAILED REINFORCEMENT, NOT TO BE CUT BUT TO BE GATHERED EQUALLY TO EACH SIDE OF PENETRATION AND EXTRA REINFORCEMENT PROVIDED BETWEEN THE PENETRATIONS, AS DIRECTED BY THE SUPERINTENDENT.
- DISTRIBUTION BARS TO MAIN REINFORCEMENT IN SLABS SHALL BE N12 AT 300cs. U.N.O.
- NOTIFY AND PROVIDE ACCESS TO THE ELECTRICAL SUBCONTRACTOR TO CONNECT EARTHING

LIGHT STEEL FRAMING

- ROOF AND WALL FRAMING INCLUDING ROOF AND WALL BRACING, BLOCKING AND TIE DOWNS TO RESIST UPLIFT, ETC TO BE DESIGNED TO AS4600 AND NASH STANDARD FOR RESIDENTIAL AND LOWRISE STEEL FRAMING AND CERTIFIED BY THE CONTRACTOR'S CHARTERED STRUCTURAL ENGINEER. PROVIDE WORKSHOP DRAWINGS AND DESIGN CALCULATIONS. SUBMIT THREE COPIES OF EACH TO SUPERINTENDENT FOR REVIEW OF GENERAL COMPLIANCE WITH DESIGN CONCEPTS. DO NOT COMMENCE FABRICATION UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED. SUPERINTENDENT'S REVIEW DOES NOT INCLUDE CHECKING OF DIMENSIONS, AND DOES NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS. ALLOW 14 DAYS FOR SUPERINTENDENT'S REVIEW
- DESIGN CALCULATIONS/SHOP DRAWINGS TO SHOW: ARRANGEMENT OF MEMBERS, LOCATION OF MEMBER IN BUILDING LOADING PARAMETERS AND BRACING LENGTHS ASSUMED IN DESIGN, SIZE OF EACH MEMBER, TOLERANCES ON MEMBER SIZES, JOINT DETAILS INCLUDING LIFTING POINTS, METHOD OF FIXING AND BRACING, CORROSION PROTECTION, LONG TERM DEFLECTION, METHOD OF FABRICATION, SIZE AND SPECIFICATION OF GUSSETS, GUSSET FASTENINGS, BASE PLATE DETAILS, FIXINGS FOR PURLINS/GIRTS AND BRACING, METHOD OF HANDLING AND ERECTION (INCLUDING TEMPORARY BRACING REQUIRED, IF ANY) PRECAMBER, ETC

STRUCTURAL STEEL

- ALL WORKMANSHIP AND MATERIALS TO BE IN ACCORDANCE WITH A.S.4100 AND A.S.1554.
- UNLESS OTHERWISE NOTED, ALL STEEL TO BE GRADE 300 TO AS3679 (HOLLOW SECTIONS TO BE GRADE C350 TO AS1163), (GRADE 450 TO AS1397 FOR PURLINS & GIRTS), (GRADE 250 TO AS3678 FOR PLATES)
- ALL CONNECTION AND STIFFENER PLATES TO BE 10mm THICK U.N.O.
- ALL WELDS TO BE 6mm CONTINUOUS FILLET WELDS U.N.O.
- ALL WELDING TO BE SP U.N.O. FROM E480X(ELECTRODES)/W50X(WIRE)
- ALL BUTT WELDS TO BE FULL (COMPLETE) PENETRATION
- ALL FILLET WELDS TO BE CONTINUOUS ALL ROUND BOTH SIDES U.N.O.
- ALL BOLTS TO BE M20 AND NO CONNECTION TO HAVE LESS THAN 2 BOLTS U.N.O.
- ALL BOLTS TO BE HOT DIP GALVANISED GRADE 8.8/5 U.N.O.
- PURLIN CONNECTIONS TO BE AS PER MANUFACTURER'S SPECIFICATION U.N.O.
- ALL HOLDING DOWN BOLTS TO BE HOT DIP GALVANISED GRADE 8.8/5 U.N.O.
- U.N.O. IN THE SPECIFICATION, STRUCTURAL STEEL WHICH IS PROTECTED FROM WEATHER TO BE ABRASIVE BLAST CLEANED TO CLASS 2.5 TO AS 1627.4, TO BE PRIMED BY INTERZINC 7 OR APPROVED EQUIVALENT TO 75µm DFT. ALL OTHER STRUCTURAL STEEL ITEMS TO BE FULLY GALVANISED TO AS 4680 U.N.O. ON THE DRAWINGS.
- SHOP DRAWINGS TO BE SUBMITTED IN TRIPPLICATE TO THE DESIGNER FOR APPROVAL. FABRICATION NOT TO COMMENCE UNTIL APPROVAL HAS BEEN GIVEN.
- EXAMINATION OF WELDS TO BE (INSPECTION AND TEST RECORDS TO BE SUBMITTED TO THE DESIGNER):-

- VISUAL SCANNING TO AS1554.1 SECTION 7 ON 100% OF WELDS;
- VISUAL EXAMINATION TO A.S.1554.1 SECTION 7 ON 10% OF GP WELDS AND 20% OF SP WELDS.
- MAGNETIC PARTICLE EXAMINATION TO BE PERFORMED ON 1% OF GP WELDS AND 5% OF SP WELDS AND AS NOTED ON THE DRAWINGS.
- ULTRASONIC TESTING TO BE PERFORMED ON 25% FILLET WELDS AND 10% OF BUTT WELDS AND AS NOTED ON THE DRAWINGS. IF EXAMINATION REVEALS SUBSTANDARD WELDS FURTHER EXAMINATION AND/OR REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE.
- 11. THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK TO BE SUPERVISED BY A PERSON EXPERIENCED IN SUCH SUPERVISION TO ENSURE THAT ALL REQUIREMENTS OF THE DESIGN ARE MET. CERTIFICATE OF COMPLIANCE TO BE PROVIDED TO THE SUPERINTENDENT.
- 12. THE CONTRACTOR TO PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL ELEMENTS WHETHER OR NOT DETAILED ON THE DRAWINGS.
- 13. SUITABLE EQUIPMENT TO BE USED DURING LOADING, TRANSPORT AND ERECTION OF STEELWORK TO AVOID DAMAGE TO THE STEELWORK FINISHES. STEELWORK STORED ON SITE TO BE PROTECTED AGAINST CORROSION OR DETERIORATION OF PAINTED SURFACES.
- 14. AFTER TIGHTENING, EXPOSED FACES OF BOLTS, NUTS AND WASHERS SHALL BE PREPARED AND COATED AS SPECIFIED OR AS FOR ADJACENT STEELWORK.
- 15. THE ENDS OF ALL HOLLOW SECTIONS SHALL BE SEALED.
- 16. ALL COLD FORMED SECTIONS TO CONFORM TO AS 1163 AND SHALL BE ROLL-FORMED FROM ZINC COATED HIGH STRENGTH STEEL STRIP. ZINC-HIGH-TEN MINIMUM YIELD STRESS 450 MPa, 350 g/m² MINIMUM COATING MASS UNLESS OTHERWISE NOTED ON DRAWINGS.
- 17. ALL PURLINS, GIRTS AND BRIDGING TO BE LYSAGHT OR APPROVED EQUIVALENT.
- 18. ALL CASES OF DAMAGE TO THE PROTECTIVE COATING OF STEELWORK SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER. WITH THE DESIGNER'S APPROVAL, MINOR DAMAGE MAY BE REPAIRED AS FOLLOWS:-
- 19. MECHANICALLY GRIND SURFACE TO ACHIEVE SMOOTH AND BRIGHT METAL COMPARABLE TO CLASS 2ZL. APPLY ZINC RICH PRIMER TO A DRY FILM THICKNESS AS PER SPECIFICATION REQUIREMENTS.
- 18. ABBREVIATIONS
- CFW - CONTINUOUS FILLET WELD
- DFT - DRY FILM THICKNESS
- FSBW - FULL PENETRATION BUTT WELD
- GP - GENERAL PURPOSE WELD
- MMD - MAXIMUM MODIFIED DRY DENSITY
- PPBW - PARTIAL PENETRATION BUTT WELD
- SP - STRUCTURAL PURPOSE WELD
- U.N.O. - UNLESS NOTED OTHERWISE
- 19. THE LOCATION OF ALL EXISTING ELEMENTS SHALL BE SITE MEASURED PRIOR TO THE PREPARATION OF SHOP DRAWINGS.
- 20. ALL REACTIONS SHOWN ARE IN N U.N.O.
- 21. SERVICES AND CEILINGS SHALL BE SUSPENDED FROM PURLIN WEBS ONLY. SUSPENSION FROM BOTTOM FLANGES IS NOT PERMITTED.
- 22. THE CONTRACTOR SHALL HAVE SAMPLE BOLTS TESTED TO DESTRUCTION IN ACCORDANCE WITH THE SPECIFICATION.
- 23. WIRE HANG HORIZONTAL BRACING FROM PURLINS AT MIDSPAN.

GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17-2015-831
DATE: 26/5/2015
SIGNED: [Signature]



DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn: D WILKINSON	Designer: B REMEDIOS
Drafting Check: B REMEDIOS	Design Check: R THOMPSON
Approved (Project Director): J BEARNE	Date: 20.02.15
Scale: NTS	This Drawing must not be used for construction unless signed as Approved

GRIFFITH CITY COUNCIL THARBOGANG WASTE TRANSFER STATION

GENERAL STRUCTURAL NOTES

Drawing No: 23-15329-C003

Rev: 2



NOTES:

- FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002
- FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012

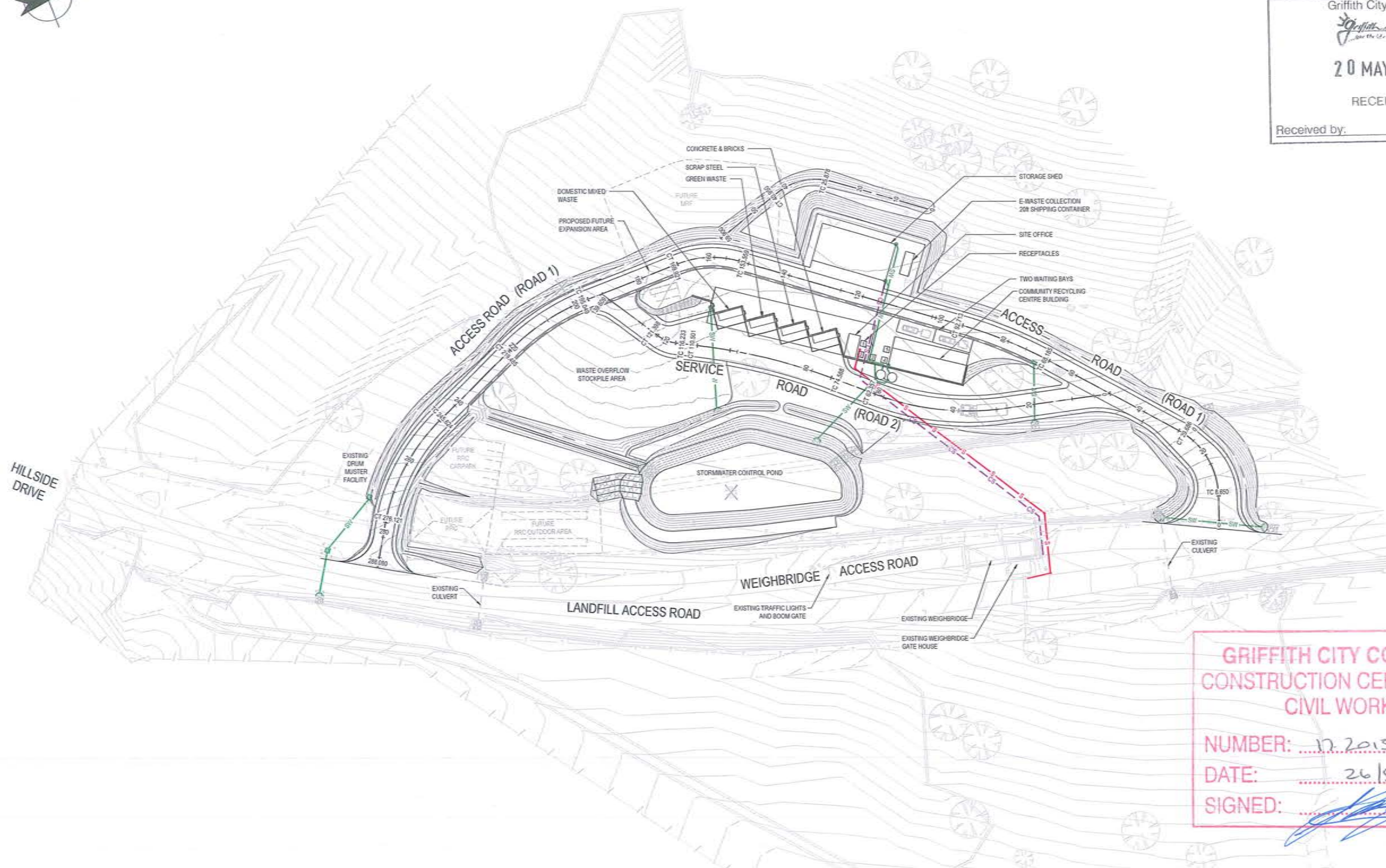
Griffith City Council



20 MAY 2015

RECEIVED

Received by: _____



GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.83.1

DATE: 26/5/2015

SIGNED: _____

No	Revision	Date	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS	19.03.15	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	25.02.15	ROP	CJ*	JW*	25.02.15

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3209
E cbrnml@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*		
Date	25.02.15		
Scale	1:500		

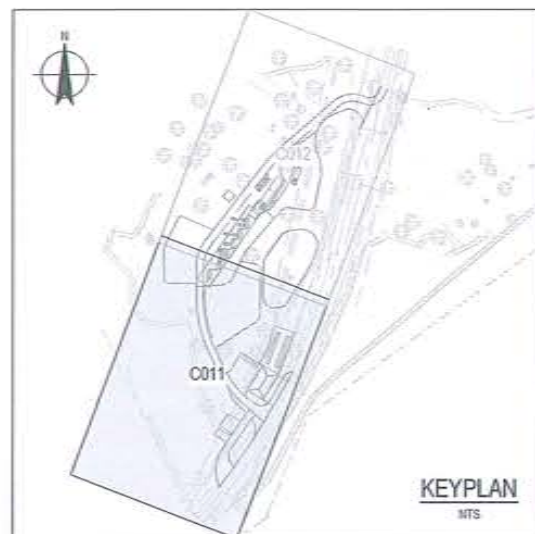
This Drawing must not be used for Construction unless signed as Approved

Client: GRIFFITH CITY COUNCIL
Project: THARBOGANG WASTE TRANSFER STATION

SITE PLAN

Original Size
Drawing No: 23-15329-C010

Rev: 1



NOTES:

1. FOR NOTES AND LEGENDS, REFER TO DRAWING No. 23-15329-C002.
2. FOR STORMWATER, REFER TO DRAWING No. 23-15329-C060.
3. FOR SERVICES, REFER TO DRAWING No. 23-15329-C070.
4. FOR RETAINING WALL AND CANOPY, REFER TO DRAWING No. 23-15329-C085 TO C087.

GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015-83.1

DATE: 26/5/2015

SIGNED: [Signature]

Griffith City Council



20 MAY 2015

RECEIVED

Received by:

HILLSIDE DRIVE

GRATE INLET PIT

PROVIDE 2 x GUIDEPOSTS AT GRATE INLET PIT

EXISTING WATERMAIN DEPTH TO BE CONFIRMED ON SITE. STORMWATER TO BE INSTALLED UNDER EXISTING WATERMAIN

MATCH TO EXISTING HARDBAND

GRATE INLET PIT

PROVIDE 4 x GUIDEPOSTS AT GRATE INLET PIT

PROPOSED STORMWATER 8375mm RCP CLASS 4

EXISTING TELSTRA DEPTH TO BE CONFIRMED ON SITE. SCOUR PROTECTION TO BE PROVIDED OVER EXISTING TELSTRA.

EXISTING DRUM MUSTER FACILITY

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

SWALE

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

ACCESS ROAD

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

OPEN CONCRETE INVERT (OCI)

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

LANDFILL ACCESS ROAD

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

FUTURE MPF

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

STORMWATER CONTROL POND

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

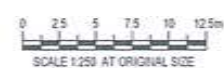
ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

ROCK SCOUR PROTECTION

FOR CONTINUATION
SEE DRG. No. 23-15329-C012

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

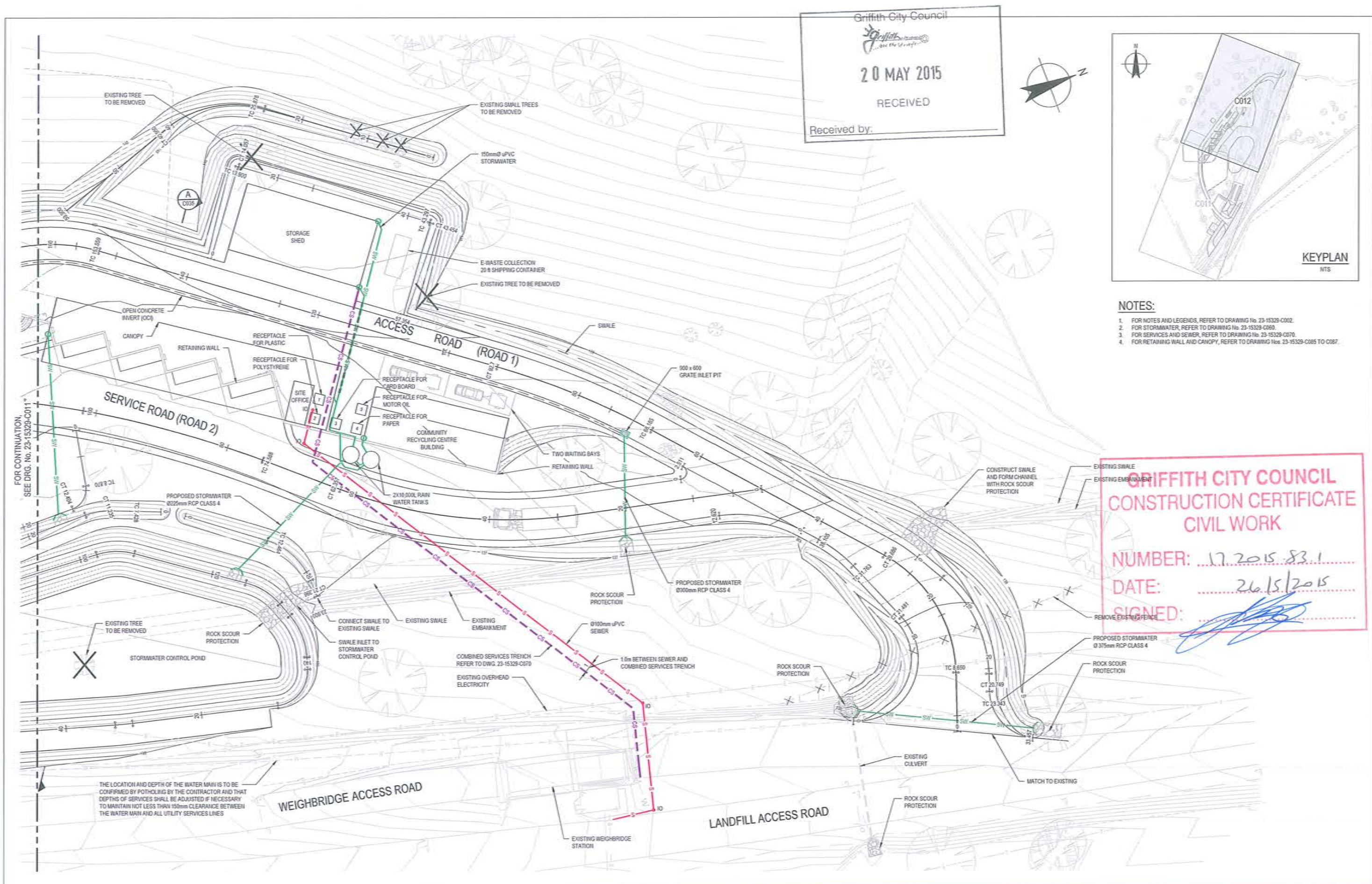


DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*		
Date	25.02.15		
Scale	1:250		

Client	Griffith City Council
Project	THARBOGANG WASTE TRANSFER STATION
Title	GENERAL ARRANGEMENT PLAN
Original Size	A1
Drawing No.	23-15329-C011
Rev.	1



<p>2 FURTHER REVISIONS FOLLOWING GCC COMMENTS</p> <p>1 REVISION FOLLOWING CLIENT'S COMMENTS</p> <p>0 FOR CONSTRUCTION</p>					<p>Scale 1:250 AT ORIGINAL SIZE</p> <p>0 2.5 5 7.5 10 12.5m</p>		<p>GHD</p> <p>Level 7, 16 Marcus Clarke Street Canberra ACT 2601 Australia GPO Box 1877 Canberra ACT 2601 T 61 2 6113 3200 F 61 2 6113 3299 E cbrnml@ghd.com W www.ghd.com</p>		<p>DO NOT SCALE</p> <p>Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.</p>		<p>Drawn L. SOBREVILLA Designer R. SONEJA</p> <p>Drafting Check G. DOUGHERTY* Design Check G. DOUGHERTY*</p> <p>Approved (Project Director) J. WEARNE* Date 25.02.15</p> <p>Scale 1:250</p>		<p>Client GRIFFITH CITY COUNCIL</p> <p>Project THARBOGANG WASTE TRANSFER STATION</p> <p>Title GENERAL ARRANGEMENT PLAN</p> <p>Original Size A1 Drawing No. 23-15329-C012</p>		Rev: 2
---	--	--	--	--	---	--	--	--	---	--	---	--	--	--	--------

Griffith City Council



20 MAY 2015

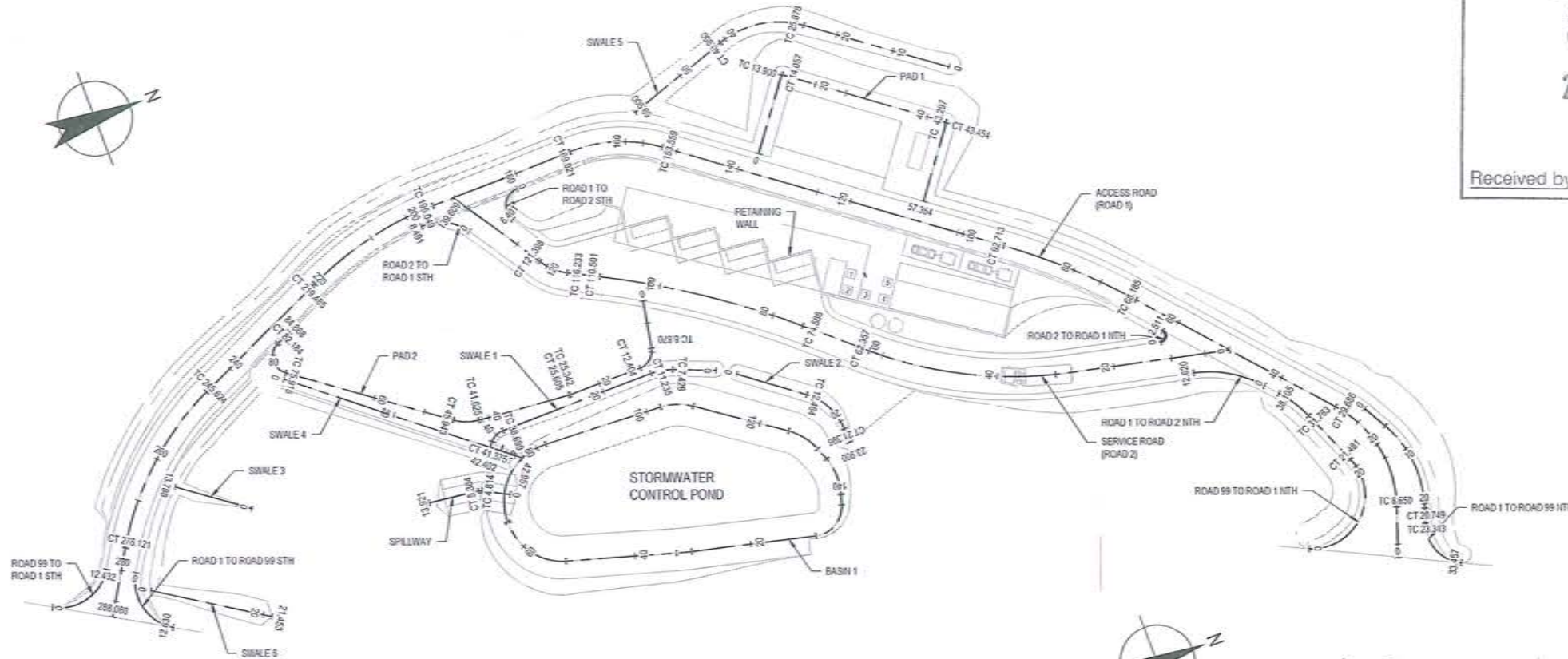
RECEIVED

Received by: _____

NOTES:

1. FOR NOTES AND LEGENDS, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C011 TO 23-15329-C012.
3. FOR SETOUT TABLES, REFER TO DRAWING 23-15329-C021 TO 23-15329-C022.

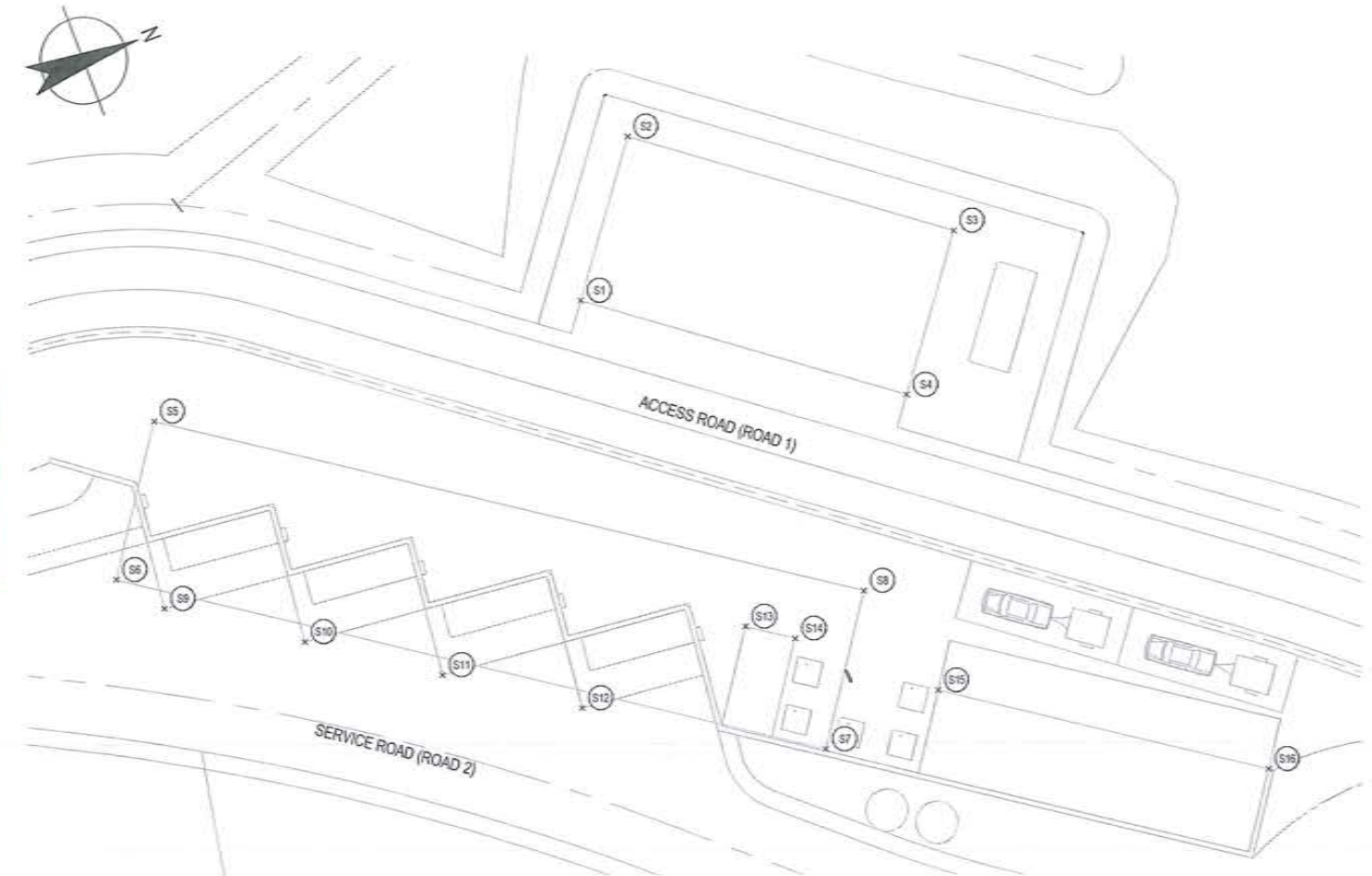
SETOUT POINTS		
POINT	EASTING	NORTHING
S1	406167.568	6211036.433
S2	406160.011	6211042.462
S3	406172.070	6211058.418
S4	406180.048	6211052.388
S5	406185.559	6211010.505
S6	406173.433	6211005.087
S7	406197.744	6211040.491
S8	406189.868	6211045.900
S9	406176.040	6211007.145
S10	406180.802	6211014.079
S11	406185.564	6211021.014
S12	406190.328	6211027.946
S13	406189.341	6211038.671
S14	406191.039	6211041.145
S15	406199.894	6211047.893
S16	406208.211	6211054.383



SETOUT PLAN
SCALE 1:500

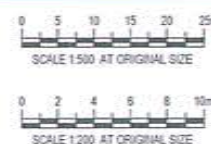
**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 17.2015.831
DATE: 26/5/2015
SIGNED: _____



STRUCTURE SETOUT PLAN
SCALE 1:200

No	Revision	Note	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS		ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION		ROP	CJ*	JW*	25.02.15



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*		
Date	25.02.15		
Scale	AS SHOWN		

This Drawing must not be
used for Construction unless
signed as Approved

**GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION**

SETOUT PLAN

Drawing No: **23-15329-C020**

Rev: 1

SETOUT TABLE - ACCESS ROAD (ROAD 1)							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406271.951	6211110.908	289°34'01.51"			
TC	8.65	406263.8	6211113.805	289°34'01.51"			
	10	406262.514	6211114.214	289°42'01.00"			
IP2	19.168	406252.852	6211117.893		-20	21.036	60°15'51.25"
	20	406252.621	6211114.451	251°03'08.59"			
CT	29.686	406244.051	6211118.123	229°18'10.71"			
	30	406243.823	6211109.919	229°18'10.71"			
	40	406236.241	6211103.398	229°18'10.71"			
	50	406228.66	6211096.878	229°18'10.71"			
	60	406221.078	6211090.357	229°18'10.71"			
TC	68.185	406214.872	6211085.02	229°18'10.71"			
	70	406213.506	6211083.826	228°23'56.31"			
	80	406206.326	6211076.87	229°25'00.00"			
IP3	80.449	406205.539	6211076.992		-115	24.527	12°13'12.61"
	90	406199.777	6211069.316	218°26'03.83"			
CT	92.713	406198.116	6211067.172	217°04'58.11"			
	100	406193.722	6211061.358	217°04'58.11"			
	110	406187.692	6211053.381	217°04'58.11"			
	120	406181.662	6211045.403	217°04'58.11"			
	130	406175.633	6211037.425	217°04'58.11"			
	140	406169.603	6211029.448	217°04'58.11"			
	150	406163.573	6211021.47	217°04'58.11"			
TC	153.558	406161.428	6211018.631	217°04'58.11"			
	160	406158.245	6211013.051	202°19'13.61"			
IP4	161.74	406156.311	6211011.861		-25	16.382	37°29'56.64"
CT	169.921	406156.372	6211003.375	179°35'01.41"			
	170	406156.373	6211003.296	179°35'01.41"			
	180	406156.446	6210993.296	179°35'01.41"			
	190	406156.516	6210983.296	179°35'01.41"			
TC	195.049	406156.555	6210978.248	179°35'01.41"			
	200	406156.795	6210973.304	174°51'21.32"			
IP5	207.267	406156.645	6210965.858		-80	24.435	23°20'04.51"
	210	406156.516	6210963.465	165°18'23.85"			
CT	219.485	406161.635	6210954.518	156°14'56.95"			
	220	406161.842	6210954.045	156°14'56.95"			
	230	406165.87	6210944.883	156°14'56.95"			
	240	406169.898	6210935.74	156°14'56.95"			
TC	245.624	406172.163	6210930.593	156°14'56.95"			
	250	406174.098	6210926.699	151°14'03.91"			
	260	406179.752	6210918.441	139°45'31.01"			
IP6	260.872	406178.502	6210916.186		-50	30.457	34°58'49.36"
	270	406186.928	6210911.501	128°18'58.05"			
CT	276.121	406191.95	6210908.009	121°18'07.51"			
	280	406195.265	6210905.993	121°18'07.51"			
IP7	288.08	406202.169	6210901.795	121°18'07.51"			

SETOUT TABLE - SERVICE ROAD (ROAD 2)							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406228.59	6211096.819	193°08'58.04"			
	10	406226.315	6211087.08	193°08'58.04"			
	20	406224.94	6211077.342	193°08'58.04"			
TC	27.767	406222.273	6211069.779	193°08'58.04"			
	30	406221.731	6211067.613	184°58'37.51"			
	40	406218.469	6211059.17	203°09'43.91"			
IP2	45.062	406218.257	6211052.566		70	34.59	28°18'44.80"
	50	406213.891	6211048.288	211°20'50.31"			
	60	406208.097	6211041.147	219°31'56.77"			
CT	62.357	406206.566	6211039.355	221°27'42.84"			
	70	406201.506	6211033.627	221°27'42.84"			
TC	74.588	406198.468	6211030.189	221°27'42.84"			
	80	406194.999	6211026.07	218°23'40.45"			
	90	406188.874	6211018.136	215°34'29.41"			
IP3	92.545	406186.522	6211016.668		-150	35.914	13°43'04.88"
	100	406183.332	6211009.615	211°45'18.48"			
	110	406178.358	6211001.142	207°56'07.45"			
CT	110.501	406178.122	6211000.699	207°44'37.96"			
TC	116.233	406175.454	6210995.627	207°44'37.96"			
IP4	118.816	406174.224	6210993.288		90	5.166	29°35'50.34"
	120	406173.121	6210992.697	229°19'44.42"			
CT	121.398	406172	6210991.653	237°20'28.30"			
	130	406164.759	6210987.221	237°20'28.30"			
IP5	139.776	406156.528	6210981.949	237°20'28.30"			

SETOUT TABLE - ROAD 1 TO ROAD 99 NTH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406246.103	6211114.588	80°44'11.11"			
TC	4.654	406250.198	6211116.883	80°44'11.11"			
	10	406255.127	6211118.801	75°44'11.84"			
IP2	12.721	406257.95	6211121.059		19	16.955	42°24'50.86"
	20	406265.007	6211118.488	106°53'32.27"			
CT	28.749	406265.719	6211118.258	109°09'01.59"			
TC	23.343	406268.17	6211117.405	109°09'01.59"			
IP3	28.4	406273.998	6211115.381		-7	10.114	82°47'04.34"
	30	406274.515	6211118.308	54°39'46.00"			
IP4	33.457	406276.738	6211120.909	25°21'57.63"			

SETOUT TABLE - ROAD 99 TO ROAD 1 NTH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406265.028	6211097.284	24°13'23.06"			
IP2	5.37	406267.536	6211102.859		-8	10.74	68°22'32.80"
	10	406263.771	6211106.694	320°33'39.94"			
CT	10.74	406263.277	6211107.246	315°50'50.26"			
IP3	16.111	406259.019	6211111.632		-9	10.74	58°22'32.80"
	20	406254.78	6211109.742	258°53'56.82"			
CT	21.481	406253.372	6211109.29	247°28'17.45"			
	30	406245.503	6211106.026	247°28'17.45"			
TC	31.783	406243.874	6211105.35	247°28'17.45"			
IP4	34.934	406240.92	6211104.125		-20	6.342	18°10'06.74"
IP5	38.105	406238.466	6211102.04	229°18'10.71"			

SETOUT TABLE - ROAD 1 TO ROAD 99 STH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406196.529	6210908.151	121°18'07.51"			
IP2	6.216	406200.419	6210903.961		-8	12.63	90°27'16.96"
	10	406205.882	6210908.888	49°40'56.58"			
IP3	12.63	406207.554	6210910.884	30°50'50.60"			

SETOUT TABLE - ROAD 99 TO ROAD 1 STH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406196.532	6210902.848	30°20'34.75"			
IP2	6.216	406200.506	6210899.638		-8	12.432	89°02'27.19"
	10	406196.04	6210902.167	318°43'23.74"			
IP3	12.432	406194.184	6210903.725	301°18'07.51"			

SETOUT TABLE - ROAD 1 TO ROAD 2 NTH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406236.431	6211100.264	229°18'10.71"			
IP2	6.31	406231.481	6211096.007		-20	12.62	36°09'12.61"
	10	406230.758	6211092.155	200°39'18.31"			
IP3	12.62	406229.896	6211089.65	190°08'58.04"			

SETOUT TABLE - ROAD 2 TO ROAD 1 NTH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406223.074	6211086.392	13°08'58.04"			
IP2	0.628	406223.239	6211087.099		-1	1.255	71°50'23.61"
CC	1.255	406222.618	6211087.475	301°13'34.38"			
IP3	1.883	406221.598	6211087.851		-1	1.255	71°50'23.61"
IP4	2.511	406221.448	6211087.378	229°18'10.71"			



SETOUT TABLE - ROAD 2 TO ROAD 1 STH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406162.827	6210982.42	237°20'28.30"			
IP2	4.248	406158.875	6210979.686		-8	8.491	60°48'51.90"
IP3	8.491	406159.159	6210975.2	176°31'36.40"			

SETOUT TABLE - ROAD 1 TO ROAD 2 STH							
PT	CHAINAGE	EASTING	NORTHING	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406158.951	6210992.527	179°35'01.41"			
IP2	1.6	406158.964	6210990.755		-3	3.2	61°07'16.50"
CC	3.2	406160.521	6210989.911	118°27'44.88"			
IP3	4.8	406162.079	6210989.067		-3	3.2	61°07'16.50"
IP4	8.401	406163.57	6210990.023	57°29'28.30"			

SETOUT TABLE - PAD 1								
PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RADISPIRAL	A LENGTH	D.ANGLE
IP1	0	406168.378	6211033.631	139.145	307°04'58.11"			
	10	406160.4	6211039.661	139.245	307°04'58.11"			
TC	13.9	406157.289	6211042.613	139.284	307°04'58.11"			
IP2	13.979	406157.209	6211042.073	139.284		0.1	0.157	89°59'50.00"
CT	14.057	406157.27	6211042.153	139.285	37°04'58.11"			
	20	406160.853	6211046.894	139.315	37°04'58.11"			
	30	406166.883	6211054.871	139.317	37°04'58.11"			
	40	406172.912	6211062.849	139.263	37°04'58.11"			
TC	43.297	406174.9	6211065.479	139.245	37°04'58.11"			
IP3	43.376	406174.961	6211065.559	139.244		0.1	0.157	90°00'00.00"
CT	43.454	406175.04	6211065.499	139.244	127°04'58.11"			
	50	406180.262	6211061.552	139.178	127°04'58.11"			
IP4	57.354	406186.129	6211057.118	139.105	127°04'58.11"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406214.228	6211079.889	138.585	227°20'04.51"			
IP2	0	406214.228	6211079.889	138.585				
IP3	8.451	406207.53	6211073.716	138.727		-18.429	16.921	52°36'33.59"
IP4	16.921	406208.367	6211064.644	138.869				
IP5	16.921	406208.367	6211064.644	138.869				
IP6	22.245	406212.755	6211061.631	138.958				
IP7	54.607	406194.435	6211034.954	139.350				
IP8	61.952	406187.131	6211035.732	139.350				
IP9	69.352	406186.347	6211028.374	139.350				
IP10	73.352	406182.369	6211028.798	139.350				
IP11	80.752	406181.595	6211021.44	139.350				
IP12	84.752	406177.607	6211021.864	139.350				
IP13	92.152	406176.823	6211014.508	139.350				
IP14	96.152	406172.845	6211014.53	139.350				
IP15	101.582	406172.061	6211007.572	139.350				
IP16	106.977	406168.055	6211007.535	139.350				
IP17	112	406165.626	6211003.927	139.350				
TC	129.645	406165.689	6210995.283	138.626	179°34'48.16"			
IP18	122.083	406165.701	6210993.723	138.586		3	2.876	54°55'29.04"
CT	123.521	406164.431	6210992.818	138.545	234°30'18.20"			
TC	126.389	406162.099	6210991.153	138.453	234°30'18.20"			
IP19	127.372	406161.206	6210990.518	138.435		1.8	1.955	62°32'21.50"
IP20	128.354	406160.232	6210991.015	138.407				
IP21	128.354	406160.232	6210991.015	138.407				
IP22	129.336	406159.259	6210991.512	138.379		1.8	1.955	62°32'21.30"
IP23	130.319	406159.251	6210992.605	138.352				
IP24	130.319	406159.251	6210992.605		359°35'01.40"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406214.23	6211079.888		234°24'35.77"			
IP2	0	406214.23	6211079.888					
IP3	9.584	406208.266	6211071.181	138.053		-18.427	19.169	59°36'13.16"
IP4	19.169	406212.758	6211061.631	137.547				
IP5	19.169	406212.758	6211061.631	137.546				
IP6	51.534	406184.436	6211034.951	137.314				
IP7	58.878	406187.133	6211035.73	137.307				
IP8	66.278	406188.348	6211028.372	137.287				
IP9	70.278	406182.371	6211028.796	137.283				
IP10	77.678	406181.586	6211021.438	137.263				
IP11	81.678	406177.609	6211021.862	137.259				
IP12	89.078	406176.824	6211014.504	137.24				
IP13	93.078	406172.847	6211014.508	137.236				
IP14	100.478	406172.062	6211007.569	137.217				
IP15	103.904	406168.056	6211007.533	137.221				
IP16	106.225	406167.256	6211006.081	137.224				
IP17	106.227	406167.256	6211006.08	137.224				
IP18	107.634	406168.493	6211005.144	137.233		2.7	2.813	59°42'08.86"
CT	109.041	406168.309	6211003.606	137.247	189°49'58.20"			
TC	117.758	406167.267	6210994.91	137.663	189°49'58.20"			
IP19	120.002	406166.986	6210992.569	137.79		5	4.408	50°30'30.10"
CT	122.205	406165	6210991.296	137.904	237°20'28.30"			
TC	124.057	406163.408	6210990.275	137.991	237°20'28.30"			
IP20	125.537	406162.066	6210989.415	138.068		2.7	2.88	61°57'16.58"
CC	126.977	406160.664	6210990.175	138.171	298°27'44.88"			
IP21	128.417	406159.263	6210990.535	138.26		2.7	2.88	61°57'16.58"
IP22	129.857	406159.251	6210992.529	138.349	359°35'01.47"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406228.131	6211025.888	135.497	107°30'33.36"			
TC	1.261	406229.334	6211025.489	135.497	107°30'33.36"			
IP2	5.035	406233.818	6211024.074	135.497		5	7.547	86°29'03.53"
CT	8.808	406232.681	6211019.512	135.497	193°59'38.89"			
	10	406232.393	6211019.355	135.497	193°59'38.89"			
	20	406229.975	6211008.652	135.497	193°59'38.89"			
	30	406227.557	6210998.949	135.497	193°59'38.89"			
TC	30.241	406227.499	6210998.715	135.497	193°59'38.89"			
IP3	31.525	406227.188	6210997.469	135.497		50	2.566	2°56'26.61"
CT	32.808	406226.814	6210996.242	135.497	196°56'03.55"			
	40	406224.719	6210999.381	135.497	196°56'03.55"			
	50	406221.807	6210979.795	135.497	196°56'03.55"			
TC	51.596	406221.225	6210977.885	135.497	196°56'03.55"			
IP4	58.44	406219.037	6210970.697	135.497		10	12.888	73°50'38.15"
	60	406216.231	6210971.504	135.497	242°47'33.93"			
CT	64.884	406211.523	6210970.799	135.497	270°46'39.71"			
TC	65.135	406211.272	6210970.802	135.497	270°46'39.71"			
	70	406206.613	6210972.025	135.497	258°38'57.60"			
IP5	71.877	406203.282	6210970.911	135.497		10	13.483	77°15'08.51"
CT	78.619	406201.625	6210979.727	135.497	348°01'48.22"			
TC	78.932	406201.56	6210979.634	135.497	348°01'48.22"			
	80	406201.365	6210980.086	135.497	354°09'03.93"			
IP6	80.277	406201.28	6210980.357	135.497		10	2.89	15°24'44.34"
CT	81.622	406201.361	6210981.708	135.497	3°28'32.56"			
	90	406201.864	6210980.071	135.497	3°28'32.56"			
	100	406202.464	6211000.053	135.497	3°28'32.56"			
TC	102.521	406202.516	6211002.57	135.497	3°28'32.56"			
IP7	105.328	406202.789	6211005.446	135.497		10	5.61	32°08'33.41"
CT	108.131	406204.465	6211007.789	135.497	35°35'05.97"			
	110	406205.553	6211009.308	135.497	39°35'05.97"			
	120	406211.372	6211017.441	135.497	35°35'05.97"			
TC	125.016	406214.291	6211021.52	135.497	35°35'05.97"			
IP8	127.679	406216.067	6211024.003	135.497		10	5.925	33°56'59.83"
	130	406218.962	6211024.7	135.497	64°08'28.69"			
CT	130.941	406218.927	6211025.07	135.497	69°32'05.79"			
TC	133.238	406221.079	6211025.873	135.497	69°32'05.79"			
IP9	136.549	406224.299	6211027.075	135.497		10	6.822	37°56'28.69"
CT	139.86	406227.578	6211025.043	135.497	101°28'34.49"			
	140	406227.711	6211026.001	135.497	107°28'34.49"			
IP10	140.44	406228.131	6211025.888	135.497	107°28'34.49"			

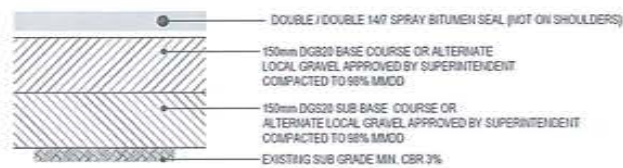
PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406207.146	6210972.901	135.197	298°20'46.23"			
TC	4.944	406204.758	6210968.55	135.197	298°20'46.23"			
IP2	5.198	406204.677	6210968.325	135.194		-1.5	0.507	19°21'38.83"
CT	5.451	406204.637	6210968.072	135.189	188°59'07.40"			
	10	406203.926	6210963.579	135.084	188°59'07.40"			
IP3	13.888	406203.317	6210959.728	134.994	188°59'07.40"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406200.154	6211013.65	136.457	292°06'17.20"			
TC	7.428	406197.399	6211006.769	136.368	292°06'17.20"			
IP2	9.331	406196.674	6211004.984	136.368		-10	3.807	21°48'44.17"
	10	406196.746	6211004.288	136.358	180°21'57.35"			
CT	11.235	406196.664	6211003.057	136.333	180°17'33.02"			
	20	406196.619	6210994.291	136.045	180°17'33.02"			
	30	406196.568	6210984.292	135.768	180°17'33.02"			
TC	38.699	406196.523	6210975.593	135.615	180°17'33.02"			
	40	406196.795	6210974.331	135.592	155°28'32.89"			
IP3	40.037	406196.516	6210974.158	135.591		-3	2.876	51°06'52.36"
CT	41.375	406197.628	6210973.252	135.567	129°10'48.56"			
IP4	42.402	406198.434	6210972.603	135.549	129°10'48.56"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING	RAD/SPRAL	A.LENGTH	D.ANGLE
IP1	0	406202.06	6211016.769	136.454	37°37'46.40"			
	10	406208.165	6211024.689	136.385	37°37'46.40"			
TC	12.454	406209.669	6211026.54	136.365	37°37'46.40"			
IP2	15.93	406212.583	6211030.433	136.329		10	8.932	51°10'42.99"
	20	406215.962	6211030.406	136.305	80°48'30.92"			
CT	21.366	406217.381	6211030.532	136.254	88°49'29.38"			
IP3	23.9	406219.685	6211030.584	136.274	88°49'29.38"			

PT	CHAINAGE	EASTING	NORTHING	LEVEL	BEARING
IP1	0	406193.524	6210930.838	134.383	216°25'08.97"
	10	406187.588	6210922.791	134.215	216°25'08.97"
IP2	13.788	406185.339	6210919.743	134.151	216°25'08.97"

Pt	Chainage	Easting	Northing	Level	Bearing
IP1	0	406174.462	6210939.144	135.176	36°54'19.25"
	10	406180.467	6210947.141	135.126	36°54'19.25"
	20	406186.472	6210955.137	135.076	36°54'19.25"
	30	406192.477	6210963.133	135.026	36°54'19.25"
	40	406198.482	6210971.13	134.976	36°54'19.25"
IP2	48.538	406203.608	6210977.957	134.933	36°54'19.25"



PAVEMENT TYPE 1

PAVEMENT AREA = 4,000 m²
SEAL AREA = 3,370 m²



PAVEMENT TYPE 2

PAVEMENT AREA = 180 m²

NOTE: FOR CONCRETE SLAB DETAIL, REFER TO DRAWING Nos. 23-15329-C085 TO 23-15329-C087.

PAVEMENT TYPE 3

PAVEMENT AREA = 600 m²

HILLSIDE DRIVE

ACCESS ROAD (ROAD 1)

WASTE OVERFLOW STOCKPILE AREA

SERVICE ROAD (ROAD 2)

STORMWATER CONTROL POND

WEIGHBRIDGE ACCESS ROAD

LANDFILL ACCESS ROAD

NOTES:

- FOR NOTES AND LEGENDS, REFER TO DRAWING No. 23-15329-C002.
- FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012.
- MMD = MAXIMUM MODIFIED DRY DENSITY

Griffith City Council



20 MAY 2015

RECEIVED

Received by:

GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.83.1

DATE: 26/5/2015

SIGNED:

No	Revision	Note	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS		ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION		ROP	CJ*	JW*	25.02.15

SCALE 1:500 AT ORIGINAL SIZE



DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:500	This Drawing must not be used for Construction unless signed as Approved	

Client	GRIFFITH CITY COUNCIL
Project	THARBOGANG WASTE TRANSFER STATION
Title	PAVEMENT PLAN AND DETAILS
Original Size	A1
Drawing No:	23-15329-C030

Rev: 1

Griffith City Council

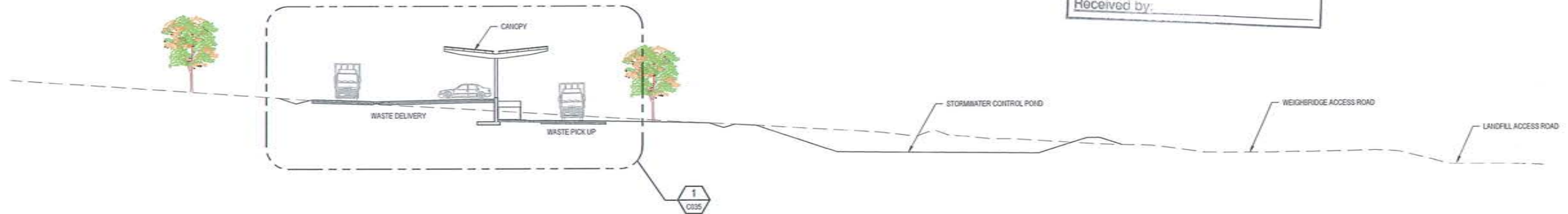
20 MAY 2015

RECEIVED

Received by: _____

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012.
3. FOR RETAINING WALL AND CANOPY, REFER TO DRAWING Nos. 23-15329-C085 TO 23-15329-C087.
4. FOR STORMWATER CONTROL POND, REFER TO DRAWING No. 23-15329-C061.



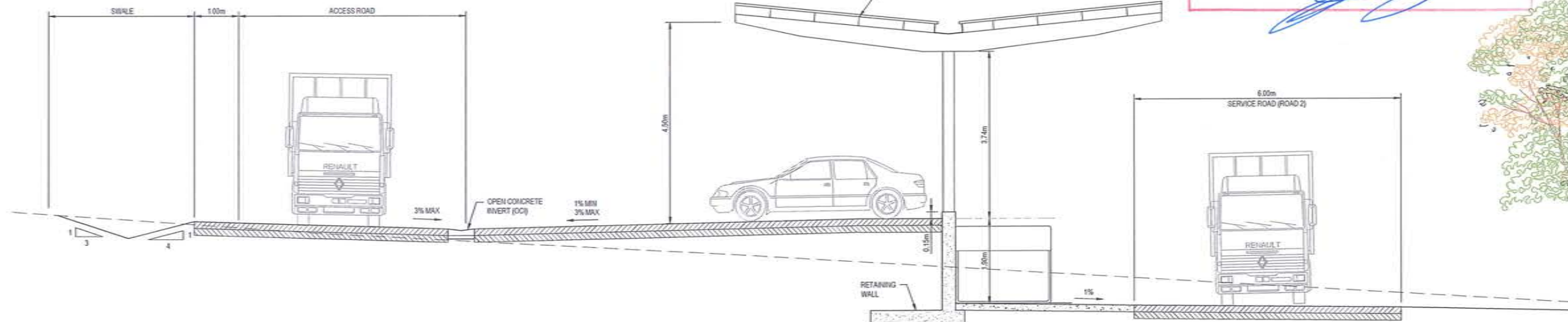
A TYPICAL SECTION
C012 SCALE 1: 200

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 172015-SS-1

DATE: 26/5/2015

SIGNED: _____



1 DETAIL
C005 SCALE 1: 50

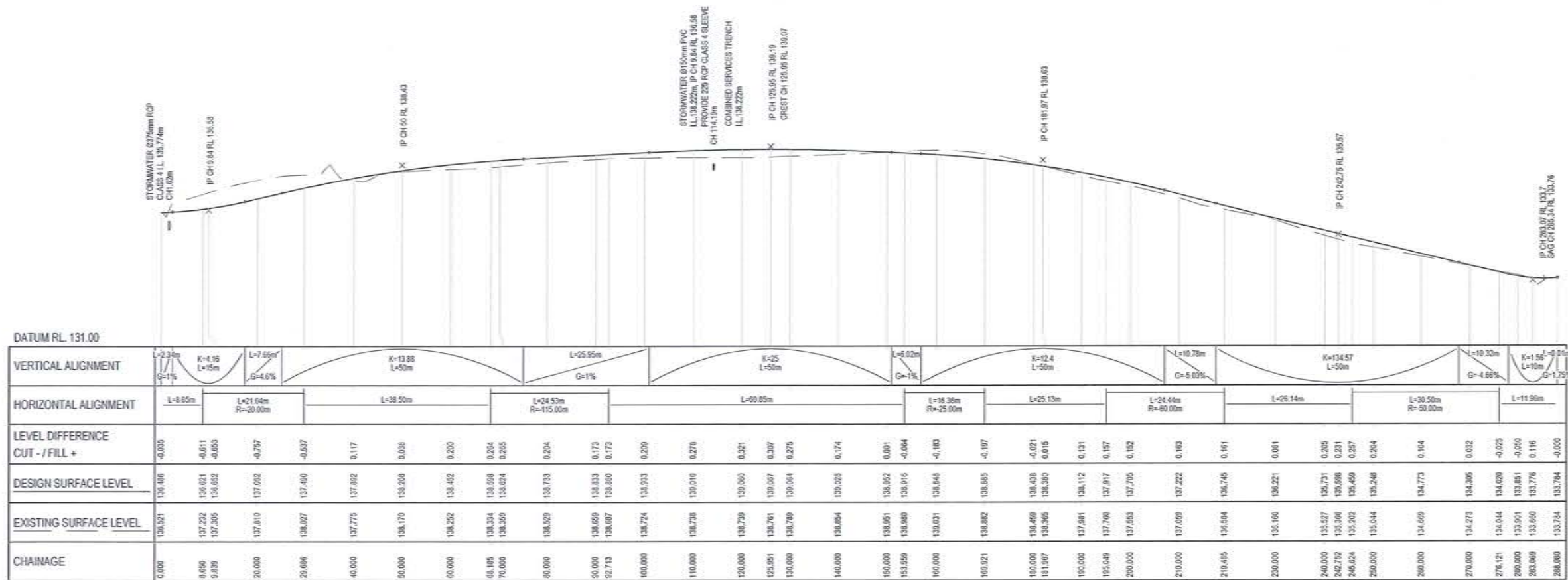
<p>0 FOR CONSTRUCTION</p>					<p>ROP CJ* JW* 25.02.15</p>		<p>Drawn Job Manager Project Director Date</p>		<p>Scale 1:200 AT ORIGINAL SIZE</p>		<p>Scale 1:50 AT ORIGINAL SIZE</p>		<p>Griffith City Council ...love the lifestyle...</p>		<p>GHD Level 7, 16 Marcus Clarke Street Canberra ACT 2601 Australia GPO Box 1877 Canberra ACT 2601 T 61 2 6113 3200 F 61 2 6113 3299 E cbrmail@ghd.com W www.ghd.com</p>		<p>DO NOT SCALE</p>		<p>Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.</p>		<p>Drawn: K. PALARCA Drafting Check: G. DOUGHERTY* Approved (Project Director): J. WEARNE* Date: 25.02.15 Scale: AS SHOWN</p>		<p>Designer: G. DOUGHERTY* Design Check: G. DOUGHERTY* This Drawing must not be used for Construction unless signed as Approved.</p>		<p>Client: GRIFFITH CITY COUNCIL Project: THARBONG WASTE TRANSFER STATION Title: TYPICAL SECTIONS Original Size: A1 Drawing No: 23-15329-C035</p>		<p>Rev: 0</p>	
---------------------------	--	--	--	--	-----------------------------	--	--	--	-------------------------------------	--	------------------------------------	--	---	--	--	--	---------------------	--	---	--	---	--	--	--	---	--	---------------	--



20 MAY 2015

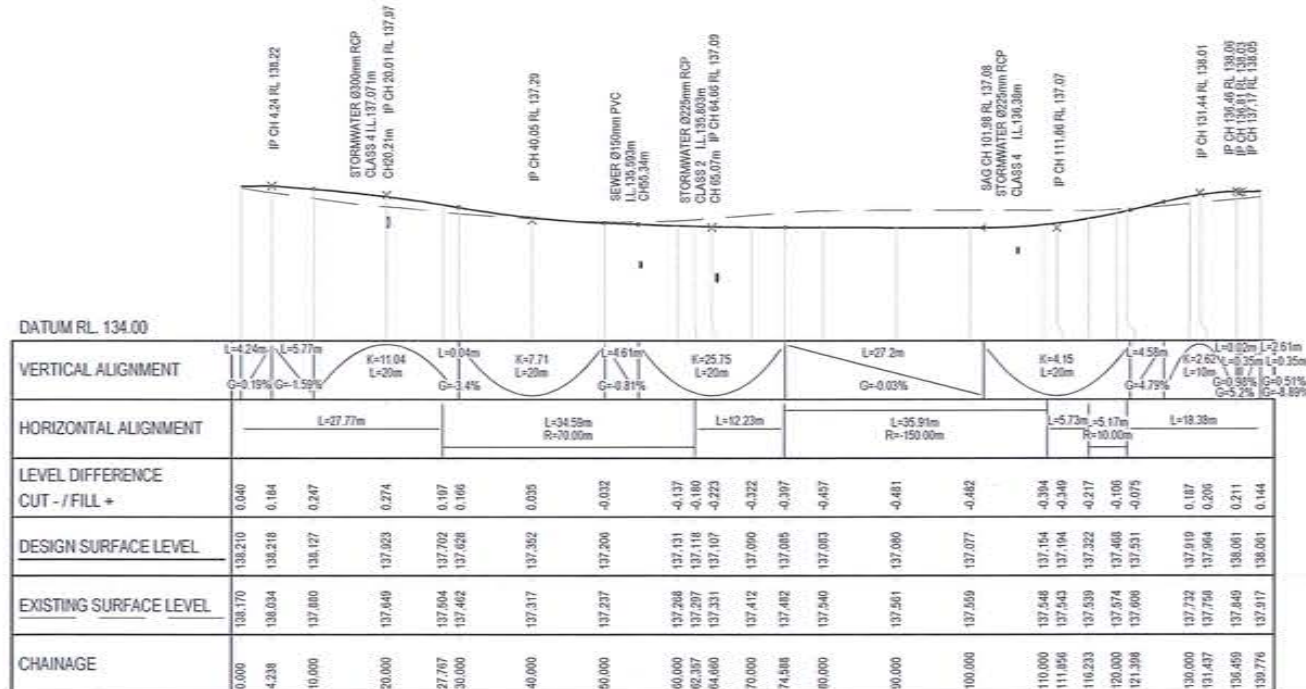
RECEIVED

Received by: _____



LONGITUDINAL SECTION - ACCESS ROAD (ROAD 1)

SCALE 1:500H, 1:100V



LONGITUDINAL SECTION - SERVICE ROAD (ROAD 2)

SCALE 1:500H, 1:100V

Griffith City Council CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.831

DATE: 26/5/2015

SIGNED: _____

NOTES:

- FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012.
- FOR ALIGNMENT DETAILS AND SETOUT TABLE, REFER TO DRAWING Nos. 23-15329-C020 TO 23-15329-C021.

1 REVISION FOLLOWING CLIENT'S COMMENTS 0 FOR CONSTRUCTION				ROP CJ* JW*	19.02.15 25.02.15
No Revision Note: * Indicates signatures on original issue of drawing or last revision of drawing				Drawn Job Manager Project Director	Date

VERTICAL 1:100
AT ORIGINAL SIZE

HORIZONTAL 1:500
AT ORIGINAL SIZE

Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE		Drawn K. PALARCA	Designer G. DOUGHERTY	Client Project	Griffith City Council THARBOGANG WASTE TRANSFER STATION ROAD LONGITUDINAL SECTIONS Drawing No: 23-15329-C040
Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.		Drafting Check G. DOUGHERTY*	Design Check G. DOUGHERTY*	Title	
		Approved (Project Director) J. WEARNE*	Date 25.02.15		
		Scale H 1:500 V 1:100	This Drawing must not be used for construction unless signed as Approved. Original Size A1		

Plot Date: 21 April 2015 - 1:11 PM

Plotted by: Rhodolyn Martinez

Cad File No: \mri-na-001\MLA_P\Projects\23-15329\CA00 Drawings\23-15329-C040.dwg

Rev: 1

20 MAY 2015

RECEIVED

Received by:

DATUM R/L 136.00

DESIGN SURFACE LEVEL	137.892	137.878	137.743	137.612	137.500	137.449	138.034	138.122	138.436	138.687	138.733	138.608	138.638	138.463	138.917
DEPTH CUT - / FILL +	0.041	0.001	-0.019	-0.035	-0.040	-0.055	-0.093	-0.055	0.204	0.264	0.204	0.148	0.104	-0.395	-0.000
EXISTING SURFACE LEVEL	137.851	137.877	137.763	137.577	137.540	137.394	137.927	138.176	138.232	138.392	138.529	138.660	138.733	138.859	138.917
OFFSET FROM CENTRELINE	-17.000	-16.018	-13.647	-12.275	-10.792	-8.732	-4.244	-4.737	-9.682	-2.800	0.000	2.500	3.500	5.000	6.573

CH 80

DATUM R/L 136.00

DESIGN SURFACE LEVEL	137.113	137.274	137.619	137.812	137.957	138.008	138.645	138.128	138.178	138.377	138.452	138.527	138.557	138.167	138.743
DEPTH CUT - / FILL +	0.000	0.166	0.266	0.395	0.351	0.310	0.297	0.242	0.212	0.265	0.200	0.069	0.044	-0.442	0.000
EXISTING SURFACE LEVEL	137.113	137.209	137.354	137.527	137.606	137.699	137.749	137.886	137.966	138.092	138.252	138.458	138.512	138.623	138.743
OFFSET FROM CENTRELINE	-15.918	-14.700	-13.560	-12.193	-10.865	-9.511	-8.474	-7.240	-6.007	-4.603	-2.500	0.000	2.500	5.000	6.684

CH 60

DATUM R/L 136.00

DESIGN SURFACE LEVEL	137.771	137.742	137.787	137.817	137.892	137.892	138.259
DEPTH CUT - / FILL +	-0.000	-0.411	-0.467	-0.133	0.117	0.029	-0.000
EXISTING SURFACE LEVEL	137.771	137.331	137.320	137.684	137.909	138.020	138.259
OFFSET FROM CENTRELINE	-8.078	-5.000	-3.500	-2.500	0.000	2.500	6.885

CH 40

DATUM R/L 135.00

DESIGN SURFACE LEVEL	137.472	136.670	136.880	137.022	137.662	137.113	137.136	138.151	138.143
DEPTH CUT - / FILL +	0.000	-0.880	-0.712	-0.021	-0.757	-0.806	-0.816	-1.240	0.003
EXISTING SURFACE LEVEL	137.472	137.550	137.592	137.043	137.410	137.919	137.951	136.911	138.146
OFFSET FROM CENTRELINE	-10.093	-7.714	-6.688	-5.143	0.000	3.342	4.300	5.887	10.160

CH 20

DATUM R/L 136.00

DESIGN SURFACE LEVEL	137.408	137.462	138.467	138.933	139.008	139.038	138.603	139.125
DEPTH CUT - / FILL +	-0.227	-0.262	0.325	0.209	0.122	0.094	-0.392	-0.000
EXISTING SURFACE LEVEL	137.635	137.724	138.792	139.192	139.130	139.132	139.000	139.125
OFFSET FROM CENTRELINE	-17.000	-15.954	-2.800	0.000	2.500	3.500	5.000	6.386

CH 100

Griffith City Council CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.831

DATE: 26/5/2015

SIGNED:

0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No	Revision	Note: * indicates signature on original issue of drawing or last revision of drawing		Drawn	Job
				Project	Date

VERTICAL 1:100
AT ORIGINAL SIZE
HORIZONTAL 1:500
AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1677 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn	L. SOBEVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	H 1:500 V 1:100	This Drawing must not be used for Construction unless signed as Approved	

Client
Project
Title
Griffith City Council
THARBOGANG WASTE TRANSFER STATION
ACCESS ROAD (ROAD 1)
CROSS SECTIONS - SHEET 1 OF 3

Original Size
Drawing No: 23-15329-C050

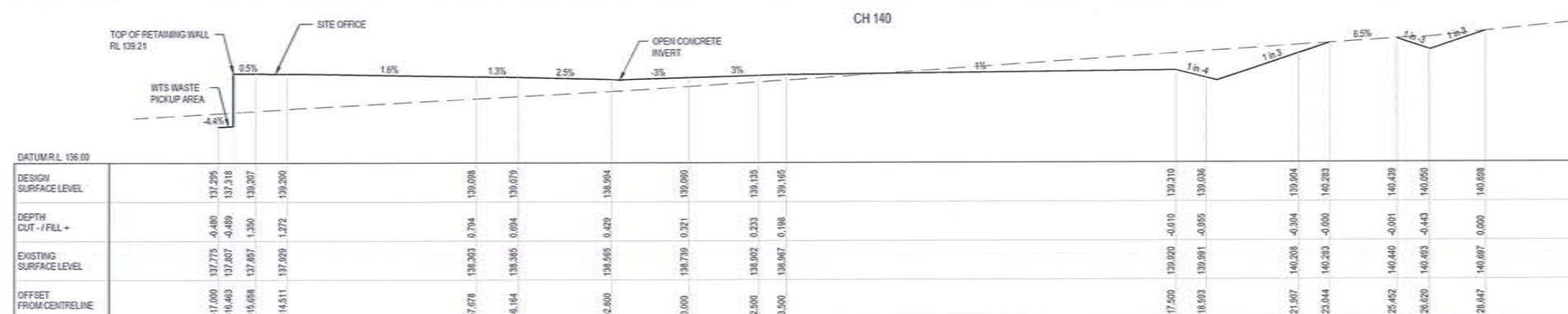
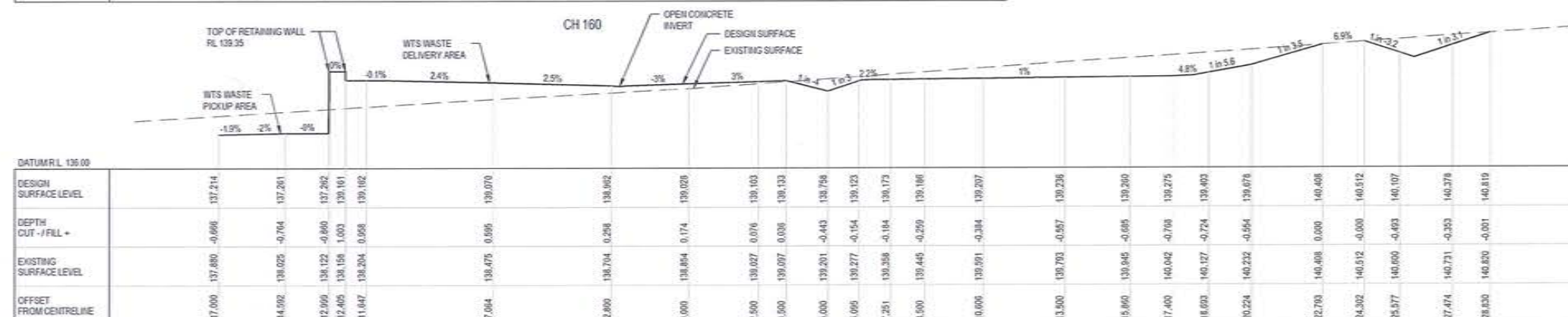
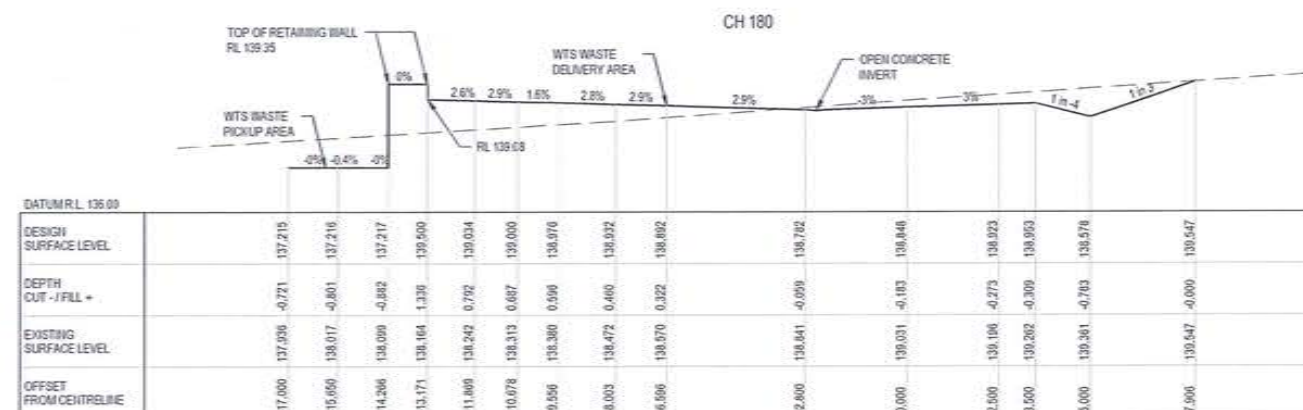
Rev: 0



20 MAY 2015

RECEIVED

Received by: _____



GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015-83.1
DATE: 26/5/2015
SIGNED: _____



20 MAY 2015

RECEIVED

Received by: _____

SWALE

9.3% 8.1%

1 in 4 1 in 4 3% 3% 1 in 4 1 in 3

DATUM R.L. 133.00	
DESIGN SURFACE LEVEL	134.424 134.413 134.569 134.604 134.608 134.773 134.848 134.878 134.933 134.921
DEPTH CUT - / FILL +	-0.008 -0.031 -0.000 -0.000 0.003 0.104 0.156 0.176 0.384 0.000
EXISTING SURFACE LEVEL	134.432 134.444 134.569 134.604 134.605 134.690 134.702 134.717 134.721 134.721
OFFSET FROM CENTRELINE	-17.000 -14.937 -6.065 -6.035 -2.000 0.000 2.500 3.500 5.079 6.843

CH 260

SWALE

1 in 4 1 in 4 3% 3% 1 in 4 1 in 3

DATUM R.L. 134.00	
DESIGN SURFACE LEVEL	135.461 135.097 135.472 135.656 135.731 135.606 135.598 135.570 135.195 135.604
DEPTH CUT - / FILL +	0.000 -0.399 -0.000 0.149 0.205 0.200 0.279 0.000 -0.304 0.000
EXISTING SURFACE LEVEL	135.461 135.498 135.472 135.507 135.527 135.546 135.597 135.570 135.589 135.604
OFFSET FROM CENTRELINE	-4.709 -5.617 -4.117 -2.500 0.000 2.500 3.500 4.504 6.064 7.292

CH 240

WASTE OVERFLOW STOCKPILE AREA

OPEN CONCRETE INVERT

DESIGN SURFACE

EXISTING SURFACE

-1.2% -0.2% -0.9% 0.3% 0.1% 3% 3% 1 in 4 1 in 3

DATUM R.L. 135.00	
DESIGN SURFACE LEVEL	136.594 136.626 136.628 136.630 136.635 136.640 136.650 136.654 136.658 136.719 136.734 136.824 136.834 136.816
DEPTH CUT - / FILL +	0.429 0.410 0.393 0.370 0.339 0.299 0.279 0.222 0.155 0.195 0.139 0.132 0.430 0.000
EXISTING SURFACE LEVEL	136.165 136.215 136.235 136.260 136.296 136.341 136.390 136.432 136.473 136.544 136.605 136.692 136.764 136.816
OFFSET FROM CENTRELINE	-17.000 -14.454 -13.401 -12.030 -10.191 -7.801 -5.710 -3.619 -2.500 0.000 2.500 3.500 5.461 6.900

CH 220

WASTE OVERFLOW STOCKPILE AREA

OPEN CONCRETE INVERT

SWALE

1 in 4 1 in 3

DATUM R.L. 135.00	
DESIGN SURFACE LEVEL	137.229 137.548 137.592 137.639 137.705 137.780 137.810 137.852 137.869 137.869
DEPTH CUT - / FILL +	0.000 0.224 0.221 0.214 0.192 0.114 0.098 0.443 0.000 0.000
EXISTING SURFACE LEVEL	137.229 137.323 137.370 137.426 137.593 137.667 137.712 137.796 137.869 137.869
OFFSET FROM CENTRELINE	-17.000 -5.949 -4.921 -2.800 0.000 2.500 3.500 5.332 6.882 6.882

CH 200

SWALE

1 in 3 1 in 2 3% 3% 3%

DATUM R.L. 132.00	
DESIGN SURFACE LEVEL	133.996 133.937 133.714 133.774 133.951 133.926 133.956
DEPTH CUT - / FILL +	-0.000 -0.469 -0.192 -0.127 -0.050 0.025 0.054
EXISTING SURFACE LEVEL	133.996 133.938 133.906 133.901 133.901 133.901 133.901
OFFSET FROM CENTRELINE	-6.763 -5.203 -3.026 -2.567 0.000 2.500 3.500

CH 280

Griffith City Council CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.881

DATE: 26/5/2015

SIGNED: _____

No	Revision	Date	By	For
0	FOR CONSTRUCTION	25.02.15	JW*	Project Director

VERTICAL 1:100
AT ORIGINAL SIZE
HORIZONTAL 1:500
AT ORIGINAL SIZE



Level 7, 18 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

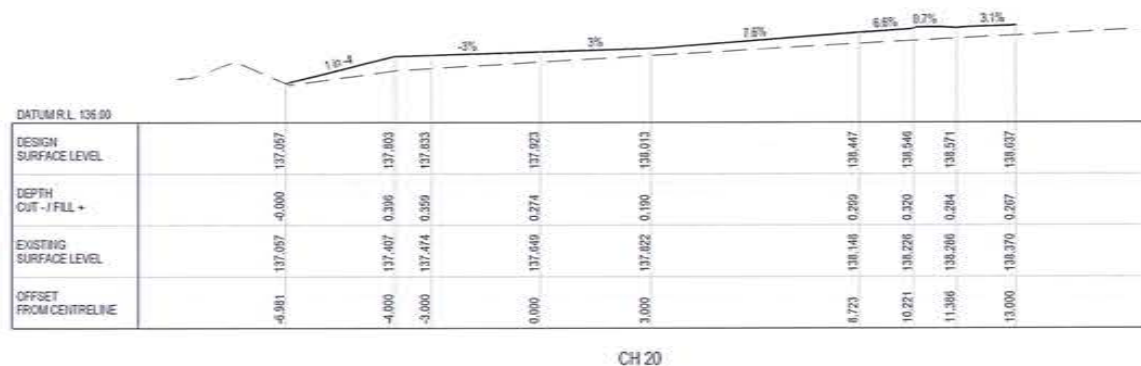
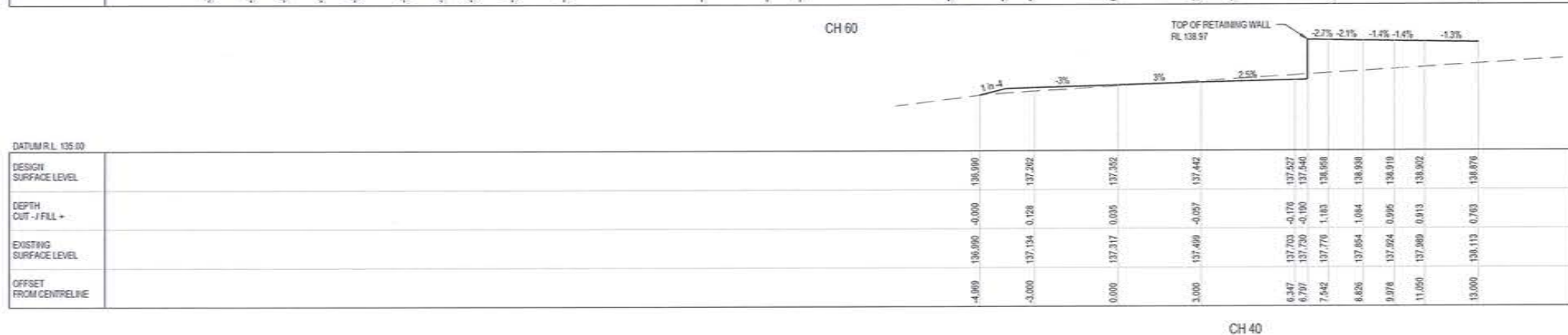
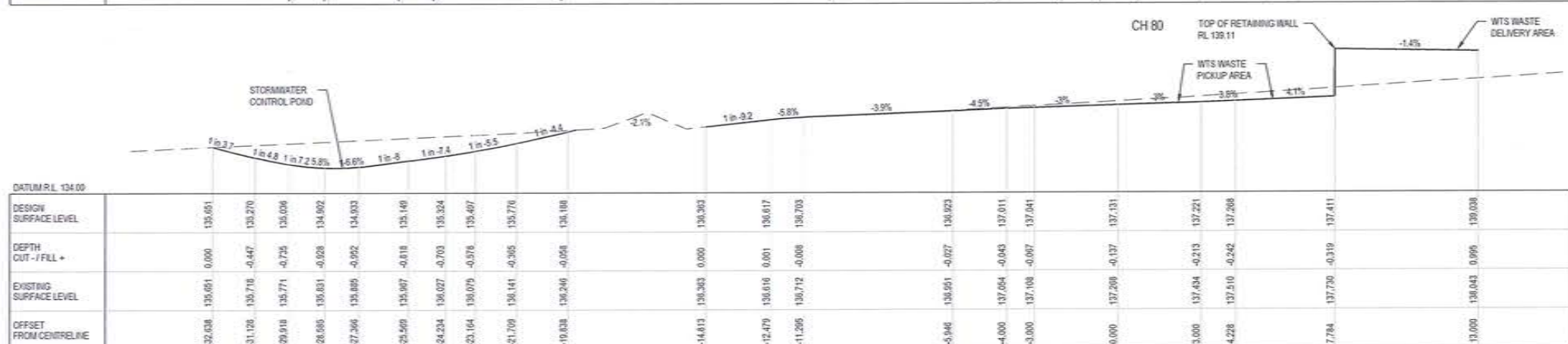
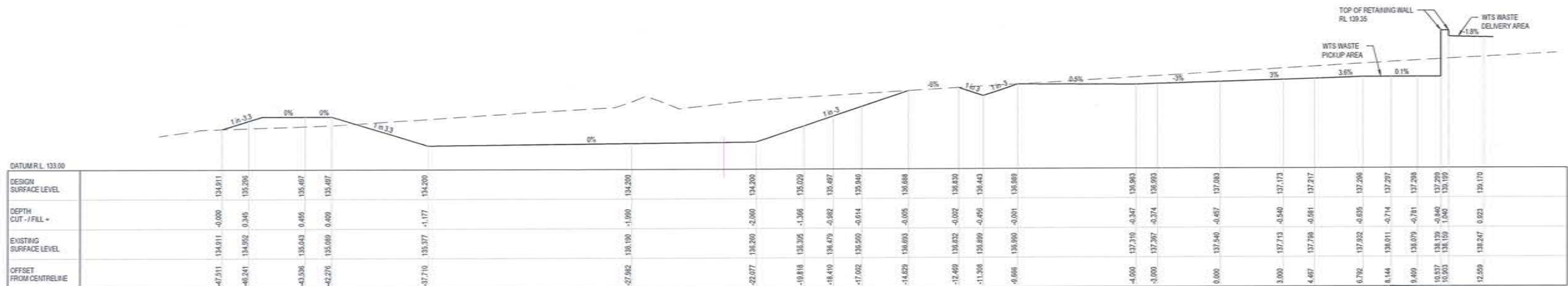
Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	H 1:500 V 1:100	This Drawing must not be used for Construction unless signed as Approved	

Client
Project
Title

Griffith City Council
THARBOGANG WASTE TRANSFER STATION
ACCESS ROAD (ROAD 1)
CROSS SECTIONS - SHEET 3 OF 3

Original Size
Drawing No: 23-15329-C052

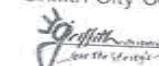
Rev: 0



Griffith City Council

 20 MAY 2015
 RECEIVED
 Received by: _____

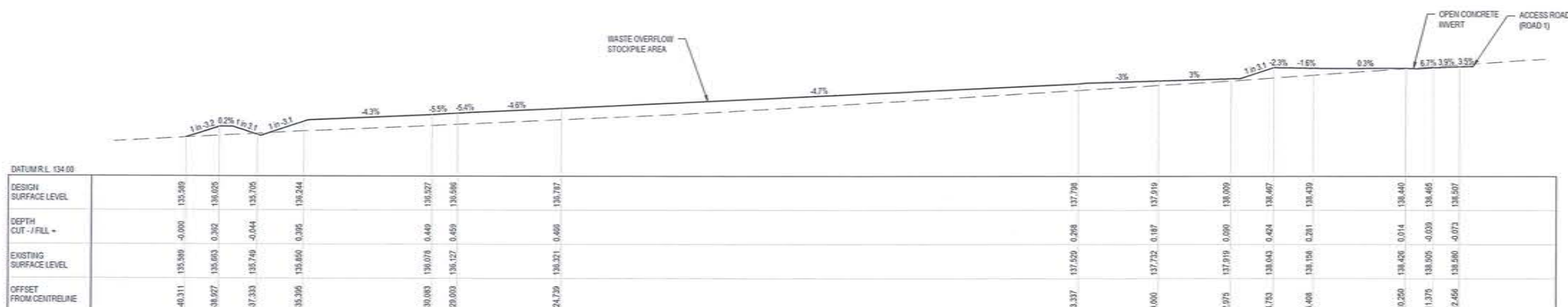
GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK
 NUMBER: 17.2015.83.1
 DATE: 26/5/2015
 SIGNED: _____



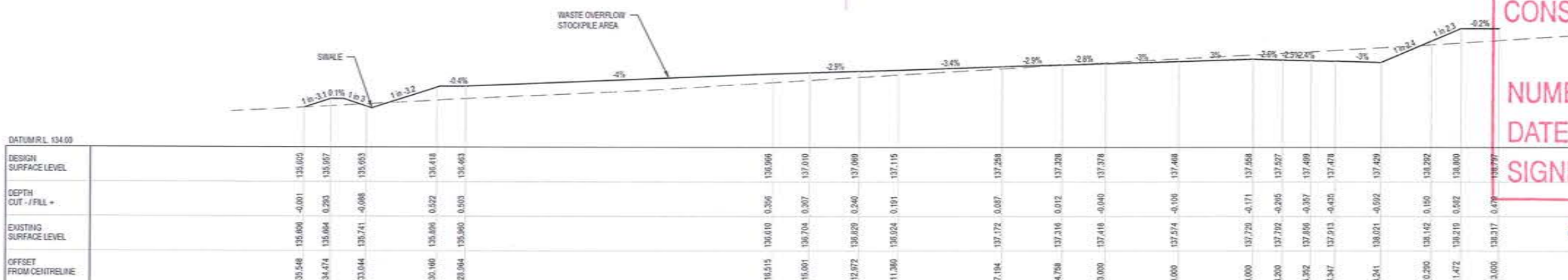
20 MAY 2015

RECEIVED

Received by:



CH 130



CH 120



CH 100

Griffith City Council CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.831

DATE: 26/5/2015

SIGNED:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

VERTICAL 1:20
AT ORIGINAL SIZE
HORIZONTAL 1:200
AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn L. SOBREVILLA
Designer R. SONEJA
Drafting Check G. DOUGHERTY*
Design Check G. DOUGHERTY*
Approved (Project Director)
Date 25.02.15
Scale H 1:500 V 1:100

This Drawing must not be
used for construction unless
signed as Approved

Client
Project
Title
Original Size
Drawing No: 23-15329-C054
Rev: 2



NOTES:

1. FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C011 TO 23-15329-C012.
3. FOR STORMWATER CONTROL POND, REFER TO DRAWING No. 23-15329-C061.
4. FOR PIT SCHEDULE, REFER TO DRAWING No. 23-15329-C062.
5. FOR SWALE LONGSECTIONS, REFER TO DRAWING No. 23-15329-C065.

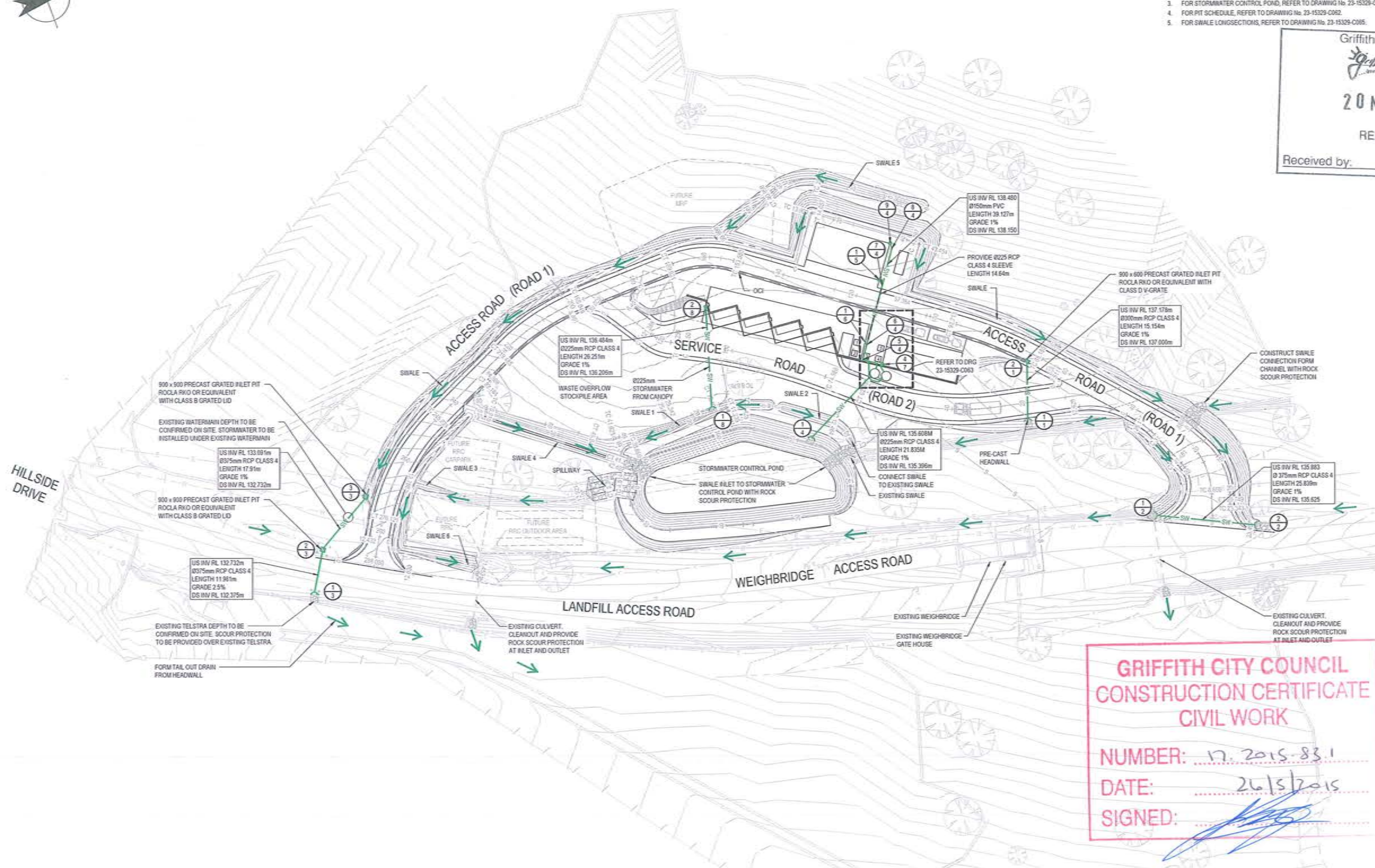
Griffith City Council



20 MAY 2015

RECEIVED

Received by:



GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015-83.1

DATE: 26/5/2015

SIGNED: [Signature]

4	ADDED MISSING STORMWATER PIPE LENGTHS	RGM	CJ*	JW*	08.05.15			
3	NODE LABEL	RGM	CJ*	JW*	21.04.15			
2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	CJ*	JW*	01.04.15			
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15			
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15			
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing			Drawn	Job	Project	Date



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

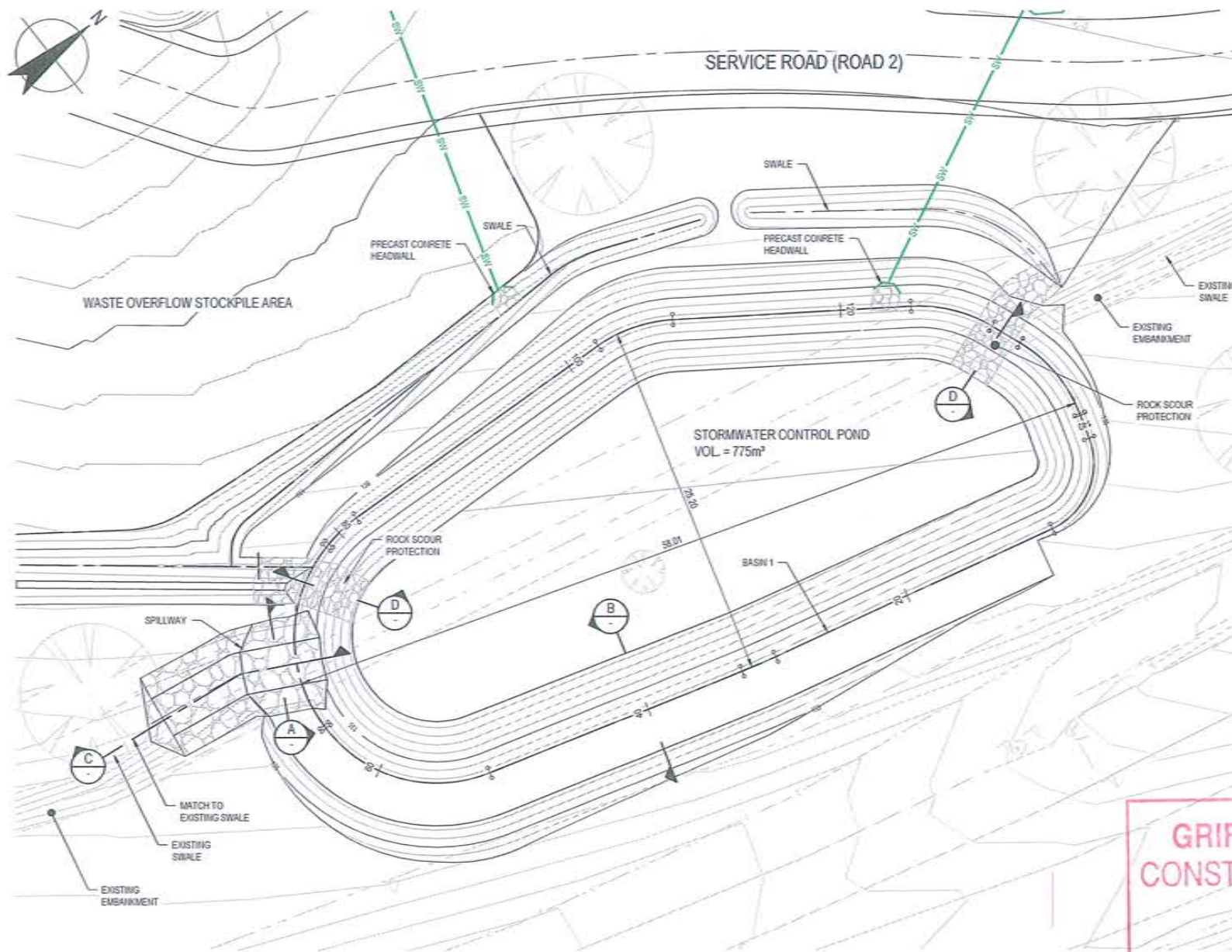
DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

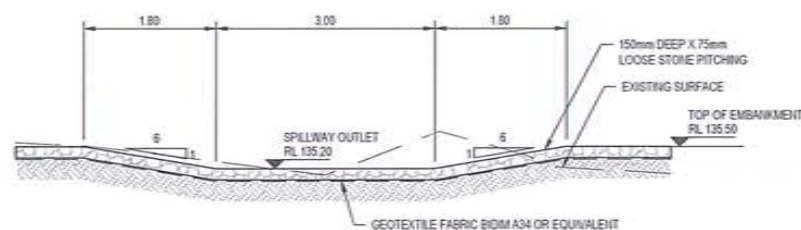
Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:500	This Drawing must not be used for Construction unless signed as Approved	

Client	GRIFFITH CITY COUNCIL
Project	THARBOGANG WASTE TRANSFER STATION
Title	STORMWATER PLAN
Original Size	A1
Drawing No.	23-15329-C060

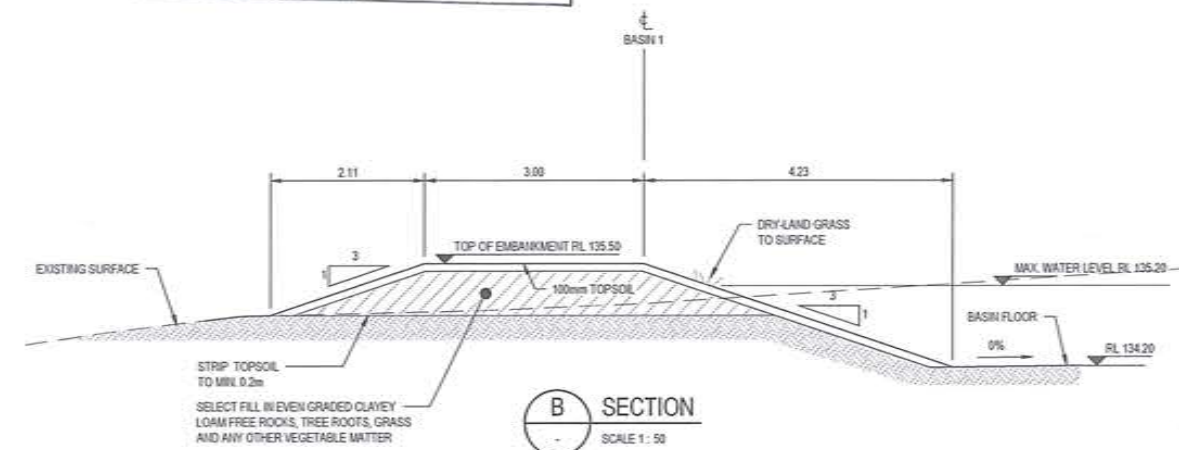
Rev: 4



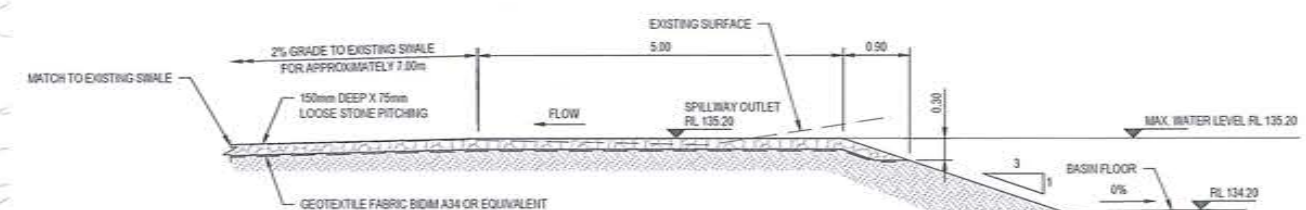
PLAN
SCALE 1:200



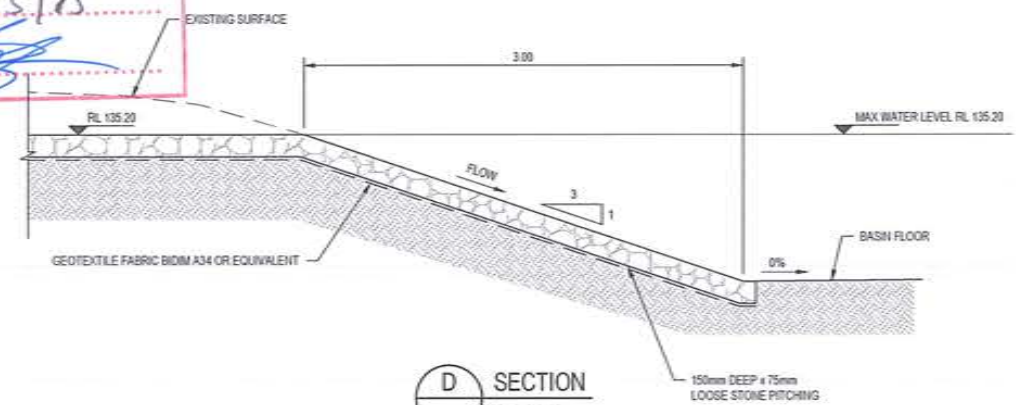
A SECTION
SCALE 1:50



B SECTION
SCALE 1:50



C SECTION
SCALE 1:50



D SECTION
SCALE 1:25

Griffith City Council



20 MAY 2015

RECEIVED

Received by: _____

NOTES:

1. FOR NOTES AND LEGENDS, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C011 TO 23-15329-C012.
3. FOR ALIGNMENT PLAN AND SETOUT TABLE, REFER TO DRAWING No. 23-15329-C020 TO 23-15329-C022.
4. FOR STORMWATER PLAN, REFER TO DRAWING No. 23-15329-C060.
5. CALCULATIONS FOR STORMWATER CONTROL POND WERE SUPPLIED IN SPREADSHEET BY GRIFFITH CITY COUNCIL.
6. ROCK SCOUR PROTECTION DETAIL, SAME AS SHOWN IN SECTION A.
7. STONE FOR LOOSE STONE PITCHING IS NOMINAL 75mm SINGLE SIZE AGGREGATE.

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17 2015 831

DATE: 26/5/15

SIGNED: _____

0 2 4 6 8 10m
SCALE 1:200 AT ORIGINAL SIZE

0 0.5 1.0 1.5 2.0 2.5m
SCALE 1:50 AT ORIGINAL SIZE

0 0.25 0.5 0.75 1.0 1.25m
SCALE 1:25 AT ORIGINAL SIZE

2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	CJ*	JW*	01.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn K. PALARCA

Designer R. SONEJA

Drafting Check G. DOUGHERTY*

Design Check G. DOUGHERTY*

Approved (Project Director)

J. WEARNE*

Date 25.02.15

Scale AS SHOWN

This Drawing must not be
used for Construction unless
signed as Approved

Client
Project
Title
**GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION**

STORMWATER CONTROL POND

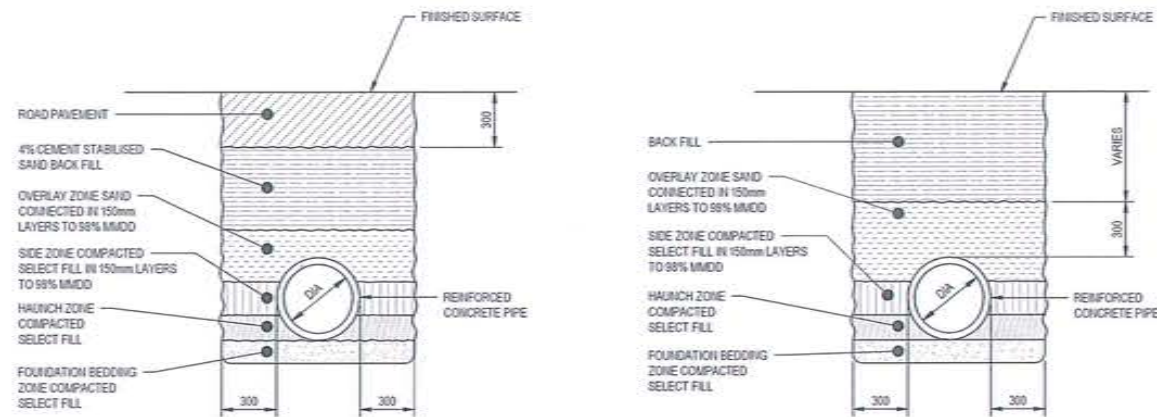
Original Size
A1 Drawing No: **23-15329-C061**

Rev: 2

20 MAY 2015

RECEIVED

Received by: _____



TRAFFICABLE STORMWATER TYPE HS3

TRENCH DETAILS

SCALE 1:20

NON-TRAFFICABLE STORMWATER TYPE HS3

TRENCH DETAILS

SCALE 1:20

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 17.2015.83.1

DATE: 26/5/2015

SIGNED: _____

TRAFFICABLE BACKFILL CONDITION FOR
PVC PIPES

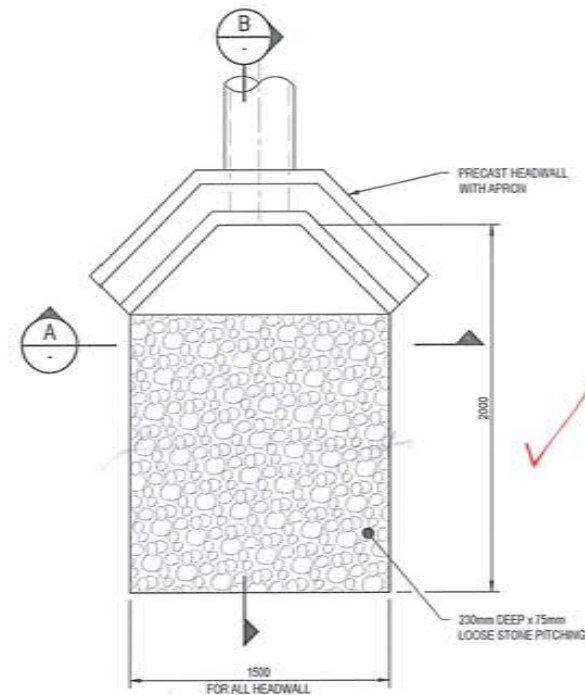
SCALE 1:20

NON-TRAFFICABLE BACKFILL CONDITION FOR
PVC PIPES

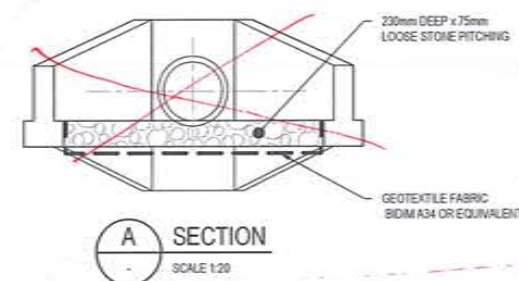
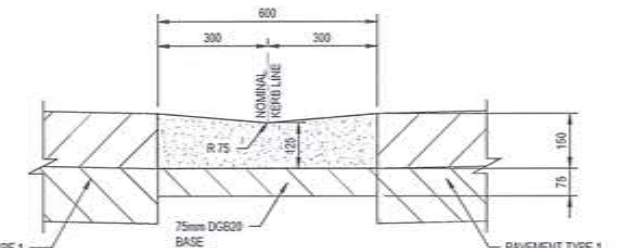
SCALE 1:20

* DIMENSIONS IN MILLIMETRES

PIT SCHEDULE										
PIT			INLET		OUTLET		PIT			
NAME	TYPE	EASTING	NORTHING	DIA	HW LEV	DIA	HW LEV	SETOUT RL	DEPTH	REMARKS
2/1	GRATE INLET PIT	406214.285	621080.746	-	-	300	137.152	136.577	1.426	900 x 600 PRECAST WITH CLASS D V-GRATE
1/1	HEADWALL	406228.011	621075.812	300	137.000	-	-	137.000	0.000	PIPE INVERT LEVEL
2/2	HEADWALL	406275.443	621121.489	-	-	375	135.883	135.883	0.000	PIPE INVERT LEVEL
1/2	HEADWALL	406263.894	621098.382	375	135.625	-	-	135.625	0.000	PIPE INVERT LEVEL
3/3	GRATE INLET PIT	406184.317	621090.618	-	-	375	132.804	133.879	1.075	900 x 900 PRECAST WITH CLASS B GRATED LID
2/3	GRATE INLET PIT	406193.055	621089.975	375	132.625	375	132.625	133.616	0.991	900 x 900 PRECAST WITH CLASS B GRATED LID
1/3	HEADWALL	406203.283	621084.736	375	132.505	-	-	133.978	1.473	PIPE INVERT LEVEL
9/4	DOWN PIPE	406172.070	621058.418	-	-	150	138.300	139.285	0.965	
8/4	45° BEND	406173.424	621058.418	150	138.286	150	138.286	139.250	0.964	
7/4	45° JUNCTION	406181.534	621052.628	150	138.186	-	-	139.152	0.968	
6/4	45° JUNCTION	406194.610	621043.294	150	138.028	-	-	139.101	1.075	
5/4	90° BEND	406197.913	621040.936	150	137.985	150	137.985	139.157	1.172	
4/4	90° BEND	406200.191	621044.123	150	137.948	150	137.948	139.128	1.182	
3/4	TANK	406202.385	621042.551	150	137.919	150	135.664	138.250	2.596	CENTRE OF TANK
2/4	TEE JUNCTION	406202.910	621040.806	150	135.648	225	135.648	137.222	1.578	
1/4	HEADWALL	406212.041	621021.282	225	135.395	-	-	135.395	0.000	PIPE INVERT LEVEL
1/5	DOWN PIPE	406180.047	621052.389	-	-	150	138.201	138.186	0.965	
1/6	DOWN PIPE	406193.806	621043.196	-	-	150	138.034	139.055	1.061	
4/7	DOWN PIPE	406200.825	621045.193	-	-	150	138.196	138.117	0.921	
3/7	TANK	406204.117	621045.055	150	138.150	150	135.669	138.300	2.601	CENTRE OF TANK
2/7	45° BEND	406204.836	621042.673	150	135.674	150	135.674	137.230	1.555	
1/7	45° BEND	406203.729	621041.065	-	-	150	135.655	137.213	1.558	
2/8	DOWN PIPE	406178.999	621007.387	-	-	150	136.444	137.230	0.778	
1/8	HEADWALL	406195.124	621059.456	-	-	150	136.182	136.182	0.000	PIPE INVERT LEVEL

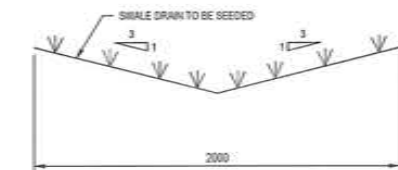
CONCRETE HEADWALL WITH
OUTLET SCOUR PROTECTION

SCALE 1:20

A SECTION
SCALE 1:20

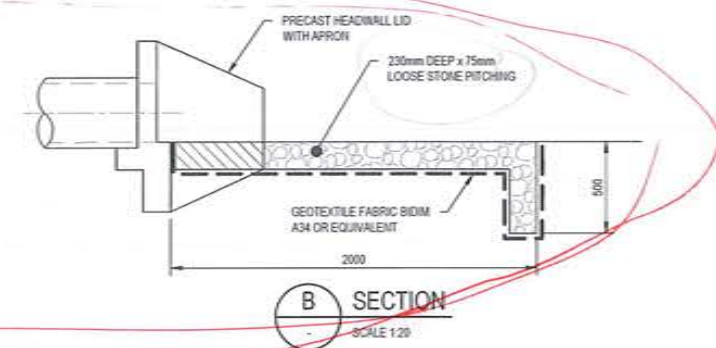
OPEN CONCRETE INVERT (OCI)

SCALE 1:10



TYPICAL SWALE SECTION

SCALE 1:20

B SECTION
SCALE 1:20

3	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15
2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	CJ*	JW*	01.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15

No Revision Note: * Indicates signatures on original issue of drawing or last revision of drawing

Drawn: Job Manager Project Director Date

SCALE 1:20 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street,
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3259
E cbrmail@ghd.com W www.ghd.com

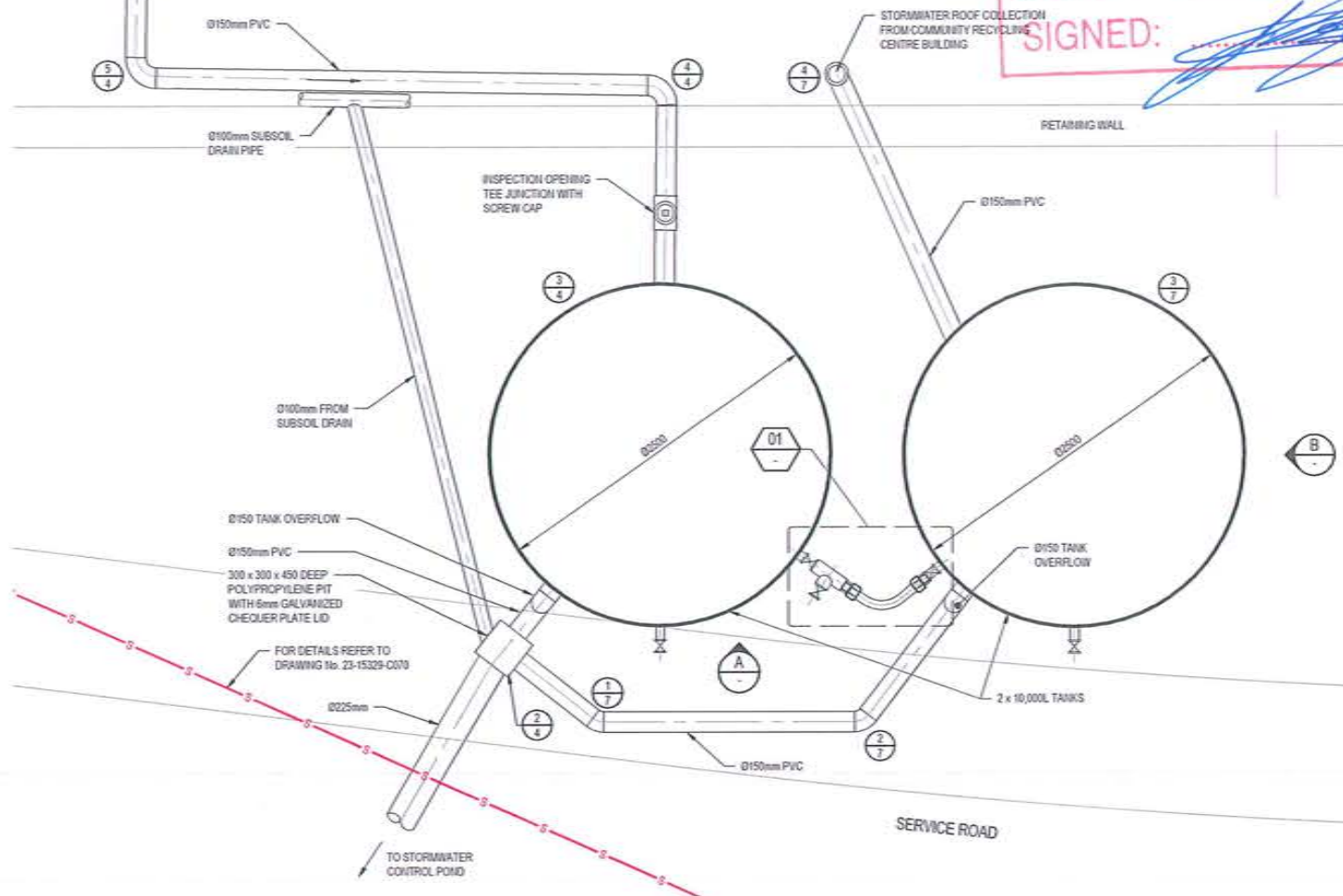
DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn: L. SOBREVILLA Designer: R. SONEJA
Drafting Check: G. DOUGHERTY* Design Check: G. DOUGHERTY*
Approved (Project Director): J. WEARNE*
Date: 25.02.15
Scale: AS SHOWN

This Drawing must not be used for construction unless signed as Approved

Client: GRIFFITH CITY COUNCIL
Project: THARBOGANG WASTE TRANSFER STATION
Title: STORMWATER DETAILS AND PIT SCHEDULE
Original Size: A1 Drawing No: 23-15329-C062
Rev: 3



Griffith City Council

Jeff Little
Love the lifestyle

20 MAY 2015

RECEIVED

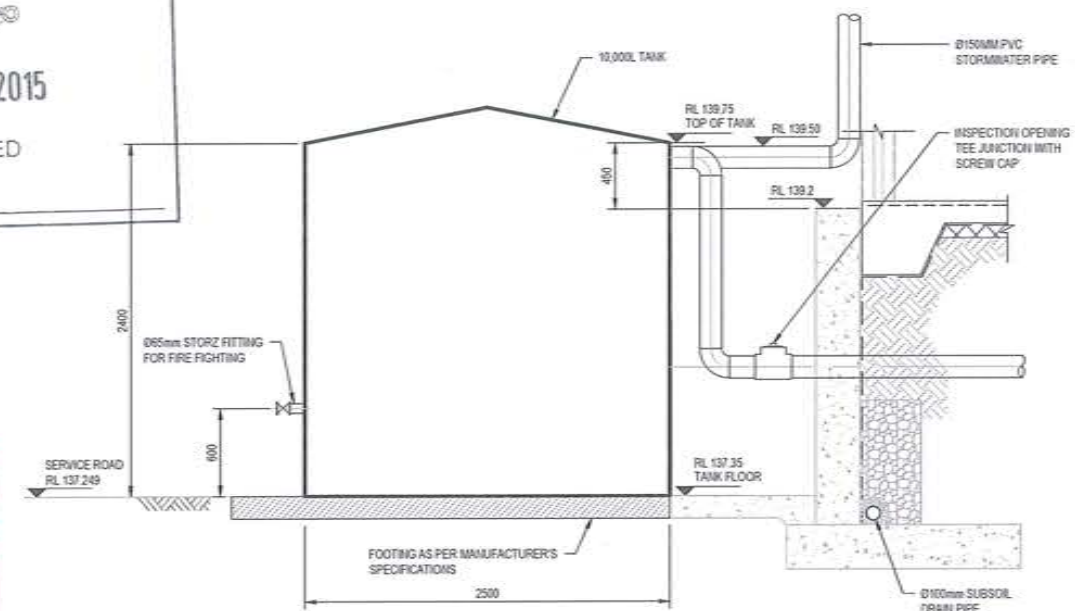
Received by:

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

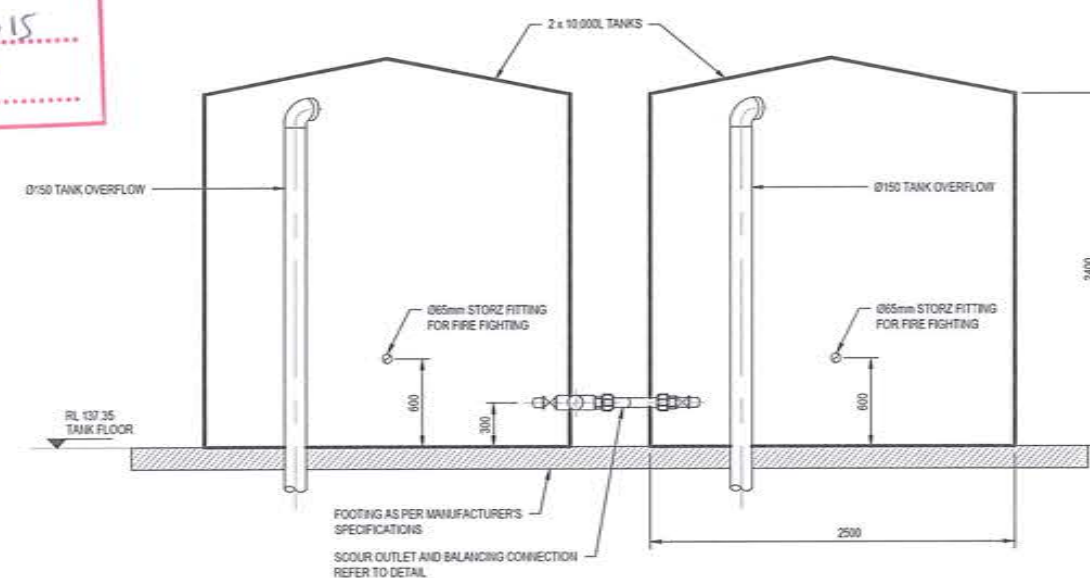
NUMBER: 17-2015-83.1

DATE: 26/5/2015

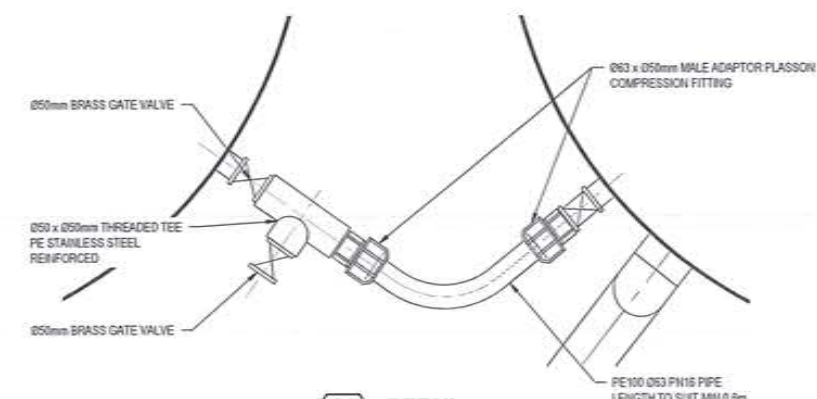
LECTION
CLING
SIGNED: 



B ELEVATION
SCALE 1:25



A ELEVATION
SCALE 1 : 25

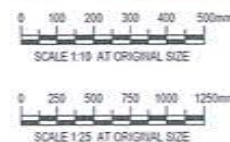


01 DETAIL
SCALE 1:10

* DIMENSIONS IN MILLIMETRES

PLAN
SCALE 1:25

4	TANK TYPE	RGM	CJ*	JW*	21.04.15
3	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15
2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	CJ*	JW*	01.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No	Revision	Note: * indicates signatures on original/issue of drawing or last revision of drawing			
		Drawn	Job Manager	Project Manager	Date



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T61 2 6113 3200 F61 2 6113 3299
Ecdnmail@ghd.com Wwww.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn L. SOBREVILLA

Drafting Check G.DOUGHERTY

Check	
Approved	J. WEARN

(Project Director)
Date 25.02.15

Scale	AS SHOWN
-------	----------

Designer R. SONEJA

Design	G.DOUGHERTY
--------	-------------

ONE*

This Drawing must not be
used for Construction unless

Client	
--------	--

Y*	Project
----	---------

	Title
--	-------

1

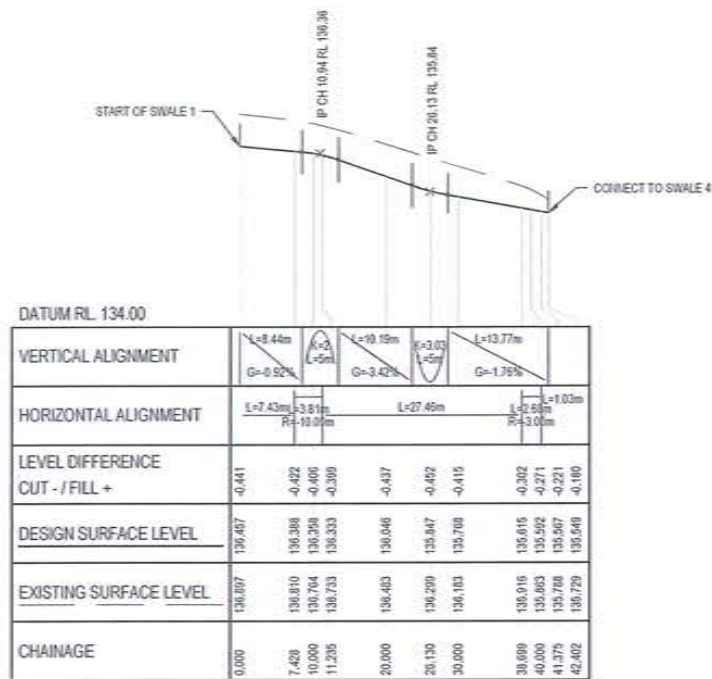
Original Score	4.4
----------------	-----

GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION

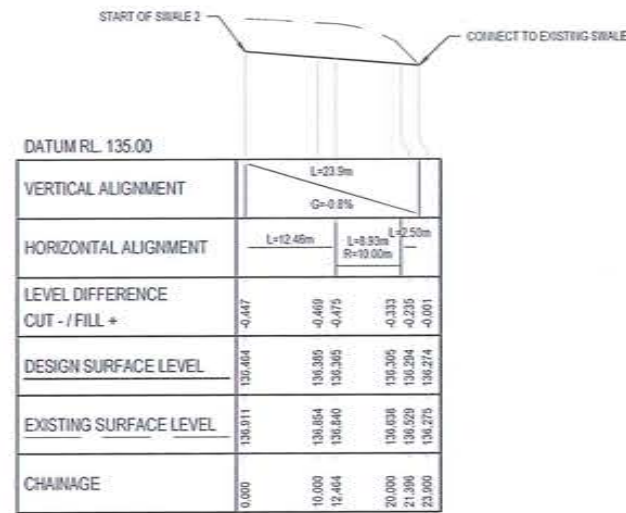
10,000L RAINWATER TANKS

Drawing No: **23-15329-C063**

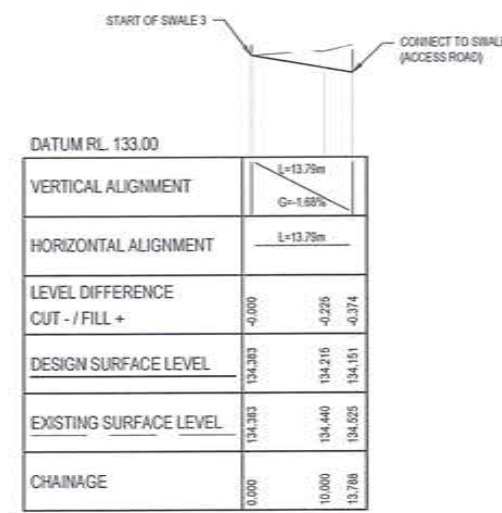
Rev: 4



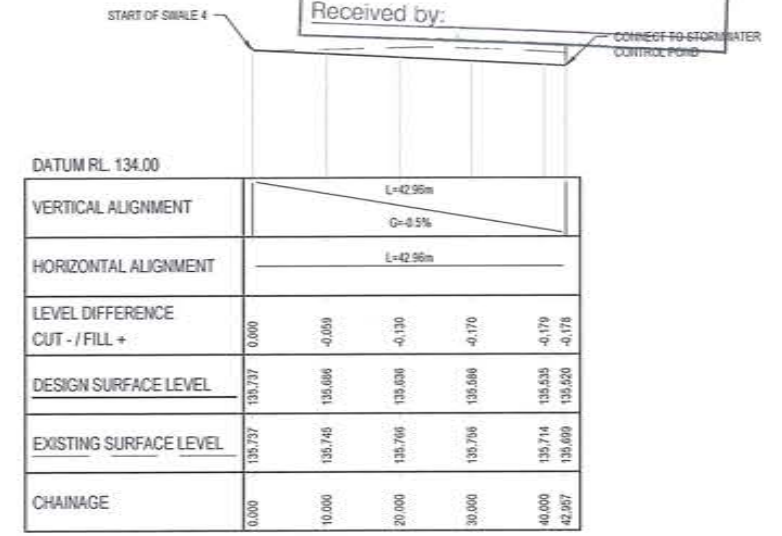
LONGITUDINAL SECTION - SWALE 1
SCALE 1:500H, 1:100V



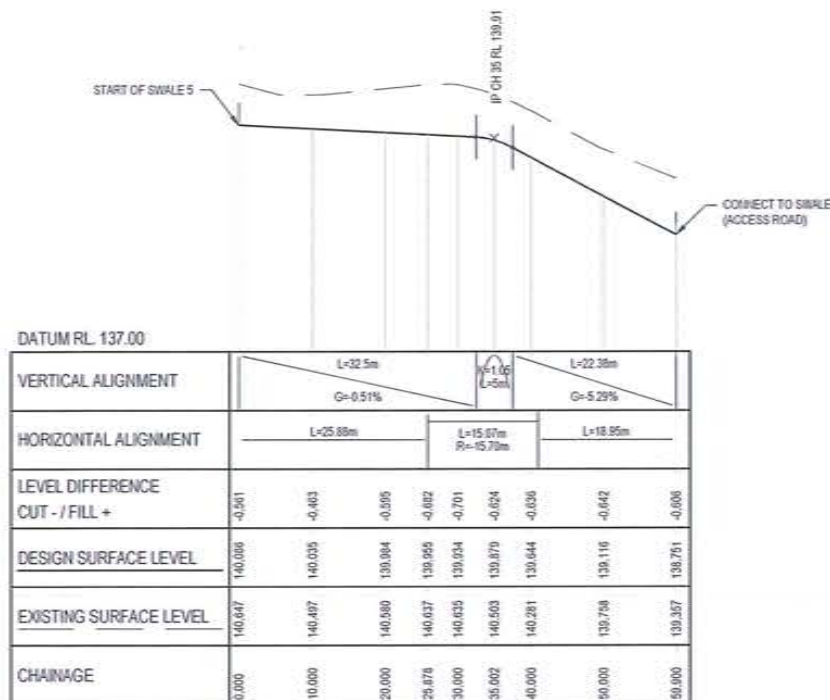
LONGITUDINAL SECTION - SWALE 2
SCALE 1:500H, 1:100V



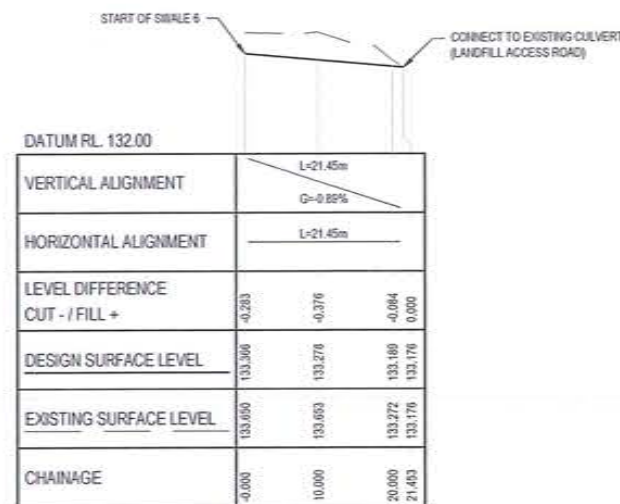
LONGITUDINAL SECTION - SWALE 3
SCALE 1:500H, 1:100V



LONGITUDINAL SECTION - SWALE 4
SCALE 1:500H, 1:100V



LONGITUDINAL SECTION - SWALE 5
SCALE 1:500H, 1:100V

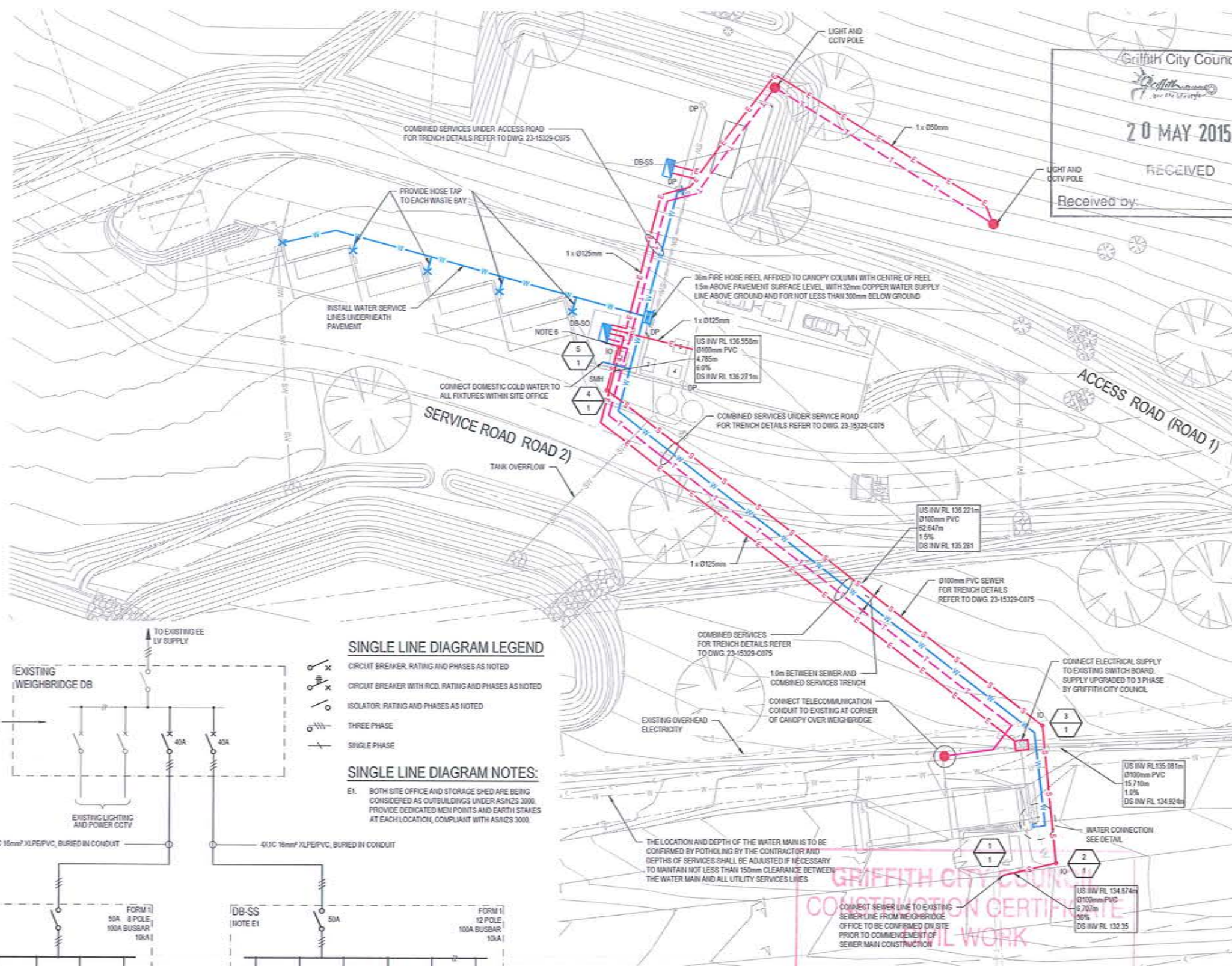
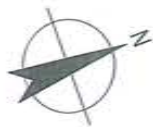


LONGITUDINAL SECTION - SWALE 6
SCALE 1:500H, 1:100V

Griffith City Council
20 MAY 2015
RECEIVED
Received by: _____
CONNECT TO STORMWATER CONTROL POND

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 17.2015.83.1
DATE: 26/5/2015
SIGNED: _____



NOTES:

- FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
- FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C011 TO 23-15329-C012.
- FOR SECURITY LIGHTING LAYOUT, REFER TO DRAWING No. 23-15329-C071.
- FOR CCTV CAMERA LAYOUT, REFER TO DRAWING No. 23-15329-C072.
- FOR SEWER LONGSECTION, SEWER PIT SCHEDULE AND SERVICES TRENCH DETAILS, REFER TO DRAWING No. 23-15329-C075.
- ELECTRICAL AND COMMUNICATIONS CONDUITS TO TURN UP INTO THE FLOOR OF THE SITE OFFICE REFER TO DRAWING 23-15329-C073 FOR PENETRATION AND CONDUIT REQUIREMENTS.
- INSTALL 2 CAT. 6 COMMUNICATION CABLES IN CONDUIT BETWEEN WEIGHBRIDGE AND SITE OFFICE IN ADDITION TO CABLE FOR SECURITY CAMERA SYSTEM.

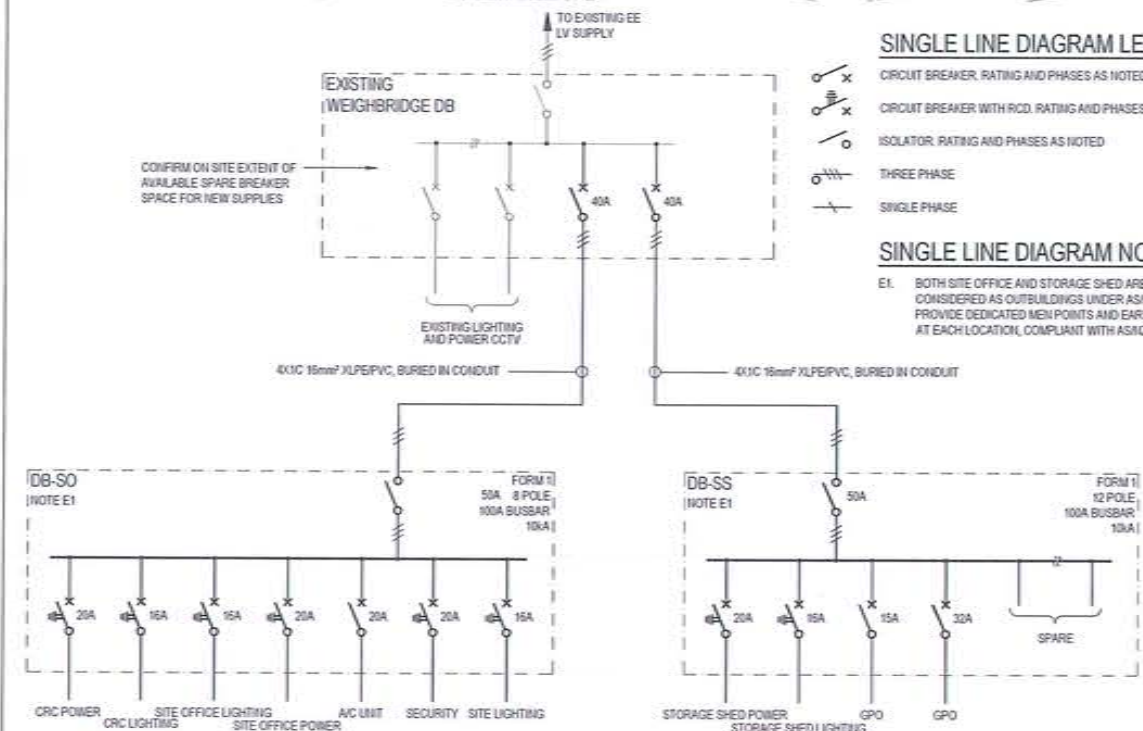
- LEGEND:**
- 1 x 50mm HD uPVC RIGID (WHITE) TELECOMMUNICATION CONDUIT REFER NOTE 7
 - 40mm HDPE CLASS 16 WATER PIPE
 - ELECTRICAL HD uPVC RIGID (ORANGE) CONDUITS (SIZES AS MARKED)
 - DN 150 PVC SEWER PIPE CLASS S18 (LAID AT CONTINUOUSLY FALLING GRADE NOT LESS THAN 1 IN 60)
 - STORMWATER PIPE (REFER TO DRAWING 23-15329-C060)
 - DOWN PIPE ON BUILDING OR STRUCTURE
 - INSPECTION OPENING
 - SEWER MAINHOLE
 - HOSE COCK ATTACHED TO BUILDING OR STRUCTURE 900mm ABOVE SURFACE LEVEL
 - HOSE REEL ATTACHED TO COLUMN - STAINLESS STEEL HOSE REEL WITH FIRE HOSE MOUNTED 1500mm ABOVE SURFACE LEVEL
 - DISTRIBUTION BOARD
 - SEWER MAINHOLE SEQUENCE NUMBER

SINGLE LINE DIAGRAM LEGEND

- CIRCUIT BREAKER, RATING AND PHASES AS NOTED
- CIRCUIT BREAKER WITH RCD, RATING AND PHASES AS NOTED
- ISOLATOR, RATING AND PHASES AS NOTED
- THREE PHASE
- SINGLE PHASE

SINGLE LINE DIAGRAM NOTES:

E1. BOTH SITE OFFICE AND STORAGE SHED ARE BEING CONSIDERED AS OUTBUILDINGS UNDER AS/NZS 3000. PROVIDE DEDICATED MEN POINTS AND EARTH STAKES AT EACH LOCATION, COMPLIANT WITH AS/NZS 3000.



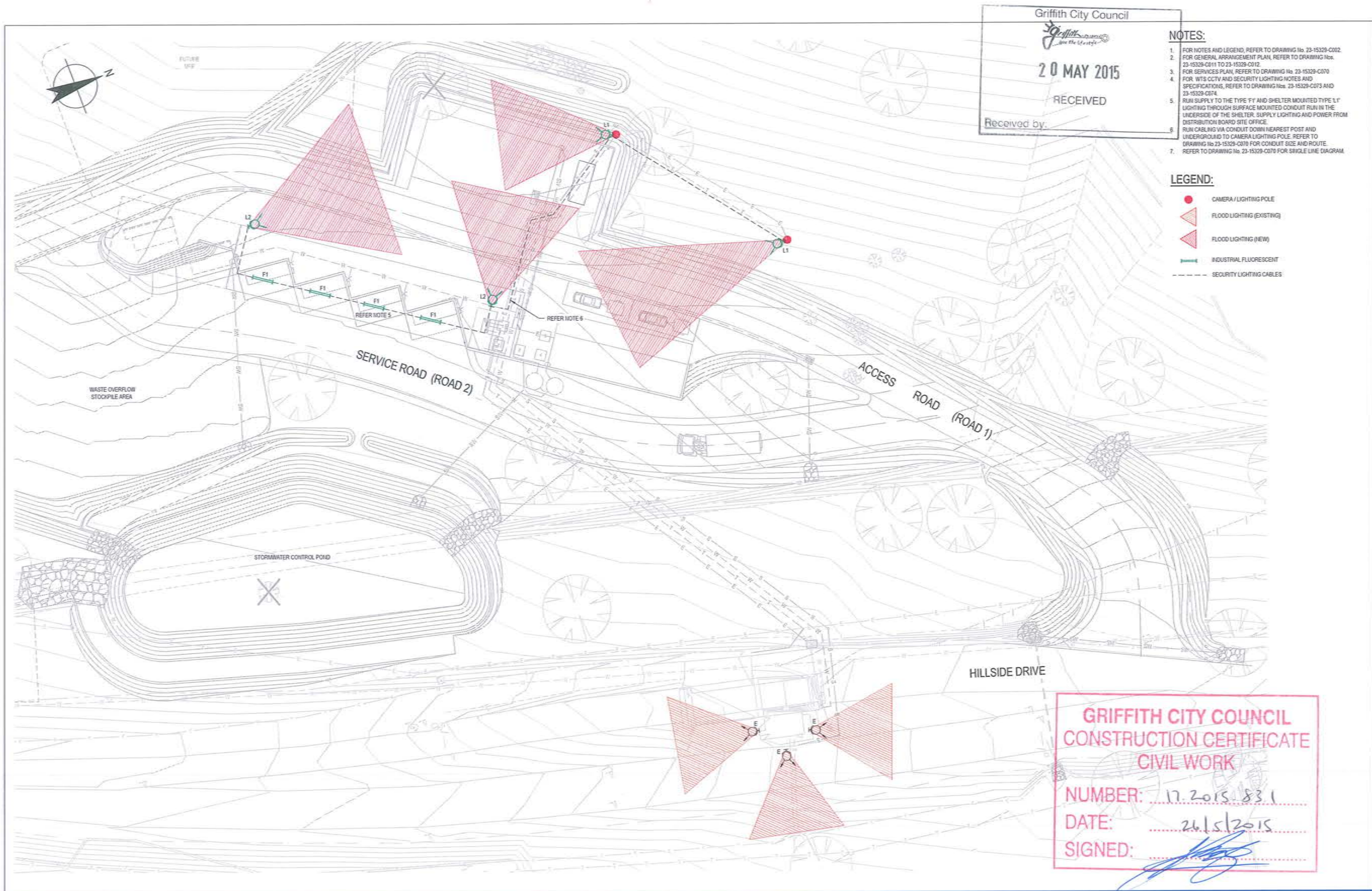
SINGLE LINE DIAGRAM

WATER CONNECTION DETAIL
NTS

SERVICE	CONDUIT TYPE	LENGTH (m)
TELECOMS	1 x 50mm uPVC	143.7
ELECTRICAL	1 x 50mm uPVC	47.6
ELECTRICAL	1 x 125mm uPVC	105.4
WATER	400mm HDPE	141.5
CONDUIT LENGTHS		438.2

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
FOR CIVIL WORK

NUMBER: 12.2015.83.1
DATE: 26/5/2015
SIGNED: [Signature]



Griffith City Council
Griffith
...love the lifestyle
20 MAY 2015
RECEIVED
Received by: _____

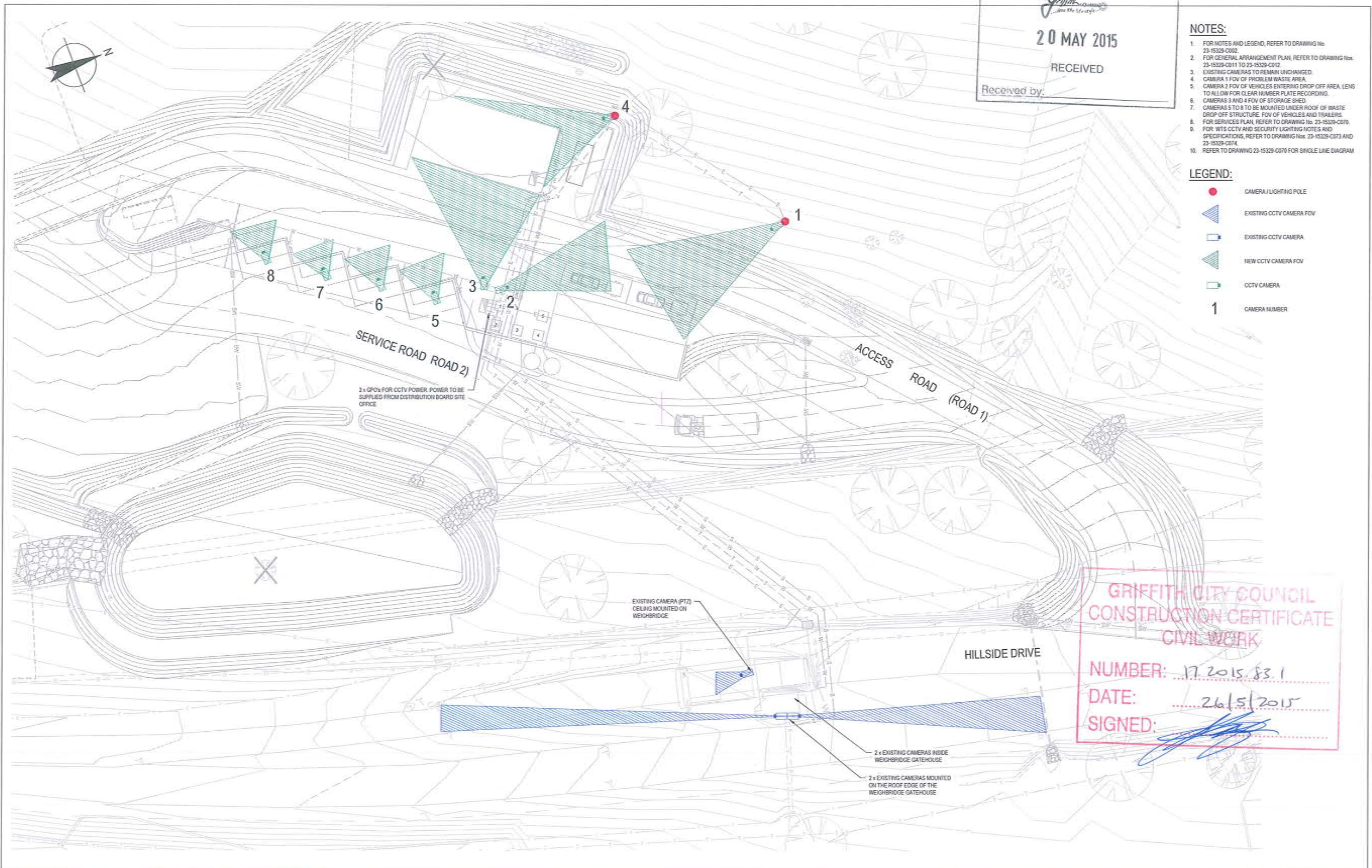
- NOTES:**
1. FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
 2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C011 TO 23-15329-C012.
 3. FOR SERVICES PLAN, REFER TO DRAWING No. 23-15329-C020.
 4. FOR WTS CCTV AND SECURITY LIGHTING NOTES AND SPECIFICATIONS, REFER TO DRAWING Nos. 23-15329-C073 AND 23-15329-C074.
 5. RUN SUPPLY TO THE TYPE 'F1' AND SHELTER MOUNTED TYPE 'L1' LIGHTING THROUGH SURFACE MOUNTED CONDUIT RUN IN THE UNDERSIDE OF THE SHELTER. SUPPLY LIGHTING AND POWER FROM DISTRIBUTION BOARD SITE OFFICE.
 6. RUN CABLES VIA CONDUIT DOWN NEAREST POST AND UNDERGROUND TO CAMERA LIGHTING POLE. REFER TO DRAWING No. 23-15329-C070 FOR CONDUIT SIZE AND ROUTE.
 7. REFER TO DRAWING No. 23-15329-C070 FOR SINGLE LINE DIAGRAM.

- LEGEND:**
- CAMERA / LIGHTING POLE
 - ▨ FLOOD LIGHTING (EXISTING)
 - ▨ FLOOD LIGHTING (NEW)
 - F1 INDUSTRIAL FLUORESCENT
 - SECURITY LIGHTING CABLES

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 17.2015.83.1
DATE: 26/5/2015
SIGNED: _____

<div>2 FURTHER REVISIONS FOLLOWING GCC COMMENTS ROP CJ* JW* 01.04.15</div> <div>1 REVISION FOLLOWING CLIENT'S COMMENTS ROP CJ* JW* 19.03.15</div> <div>0 FOR CONSTRUCTION ROP CJ* JW* 25.02.15</div> <div>No Revision Note: * Indicates signatures on original issue of drawing or last revision of drawing</div>	<div>Drawn Job Manager Project Director Date</div> <div>Drawn Job Manager Project Director Date</div>	<div>0 2.5 5 7.5 10 12.5m</div> <div>SCALE 1:250 AT ORIGINAL SIZE</div>	<div></div> <div></div> <div>Level 7, 16 Marcus Clarke Street Canberra ACT 2601 Australia GPO Box 1877 Canberra ACT 2601 T 61 2 6113 3200 F 61 2 6113 3299 E cbrmail@ghd.com W www.ghd.com</div>	<div>DO NOT SCALE</div> <div>Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.</div>	<div>Drawn L. SOBREVILLA Designer R. SONEJA</div> <div>Drafting Check G. DOUGHERTY Design Check G. DOUGHERTY</div> <div>Approved (Project Director) J. WEARNE Date 25.02.15</div> <div>Scale 1:250 This Drawing must not be used for Construction unless signed as Approved</div>	<div>Client GRIFFITH CITY COUNCIL</div> <div>Project THARBOGANG WASTE TRANSFER STATION</div> <div>Title SECURITY LIGHTING LAYOUT</div> <div>Original Size A1 Drawing No: 23-15329-C071</div>	Rev: 2
---	---	---	--	--	---	--	--------



No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS		ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION		ROP	CJ*	JW*	25.02.15

SCALE 1:250 AT ORIGINAL SIZE



GHD
 Level 7, 16 Marcus Clarke Street
 Canberra ACT 2601 Australia
 GPO Box 1577 Canberra ACT 2601
 T 61 2 6113 3200 F 61 2 6113 3299
 E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use.
 This document may only be used by
 GHD's client (and any other person who
 GHD has agreed can use this document)
 for the purpose for which it was prepared
 and must not be used by any other
 person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting	G. DOUGHERTY*	Design	G. DOUGHERTY*
Check		Check	
Approved	J. WEARNE*		
(Project Director)			
Date	25.02.15		
Scale	1:250		

This Drawing must not be
 used for Construction unless
 signed as Approved

Client **GRIFFITH CITY COUNCIL**
 Project **THARBOGANG WASTE TRANSFER STATION**

Title **CCTV CAMERA LAYOUT**

Original Size **A1** Drawing No: **23-15329-C072**

Rev: 1

SPECIFICATION FOR SECURITY WORKS (PART 1)

GENERAL CONDITIONS

CO-ORDINATE THE LOCATION OF THE SERVICES UNDER CONTRACTOR'S WORK SCOPE WITH OTHER TRADES. ALL WORK IS TO COMPLY WITH ALL RELEVANT BRIEFS & REQUIREMENTS.

INFORMATION

THE CONTRACTOR IS TO FULLY INFORM THEMSELVES OF ALL ASPECTS OF THIS EXISTING INSTALLATION PRIOR TO TENDER & COMMENCEMENT OF CONSTRUCTION. UNDERTAKE A MANDATORY SITE INSPECTION TO ASSESS THE SCOPE OF NEW WORKS.

STANDARDS, RULES & REGULATIONS

THE WORK PERFORMED UNDER THIS SPECIFICATION SHALL COMPLY WITH ALL APPLICABLE AUSTRALIAN AND LOCAL STANDARDS, STATUTORY REGULATIONS, AND OTHER RELEVANT GOVERNMENT STANDARDS INCLUDING THE FOLLOWING:

- THE NATIONAL CONSTRUCTION CODE (FORMALLY THE BUILDING CODE OF AUSTRALIA (BCA));
- THE LOCAL ELECTRICITY SUPPLY AUTHORITY REGULATIONS;
- AUSTRALIAN COMMUNICATIONS AUTHORITY (ACA) REGULATIONS & STANDARDS;
- IEEE 587 SURGE VOLTAGES IN LOW-VOLTAGE AC POWER CIRCUITS
- IEEE C62.41.1 - IEEE GUIDE TO THE SURGE ENVIRONMENT IN LOW-VOLTAGE (1000V AND LESS) AC POWER CIRCUITS.
- AS/NZS CISPR 14 1:2013 ELECTROMAGNETIC COMPATIBILITY - REQUIREMENTS FOR HOUSEHOLD APPLIANCES, ELECTRIC TOOLS AND SIMILAR APPARATUS;
- AS 1100 PART 101 - TECHNICAL DRAWING - GENERAL PRINCIPLES;
- AS 1102 GRAPHICAL SYMBOLS FOR ELECTROTECHNOLOGY;
- AS 1103 DIAGRAMS, CHARTS AND TABLES FOR ELECTROTECHNOLOGY;
- AS 2053 CONDUITS AND FITTINGS FOR ELECTRICAL INSTALLATIONS (ALL PARTS);
- AS3000 SAA WIRING RULES;
- AS 3147 PVC INSULATED ELECTRIC CABLES AND FLEXIBLE CABLES FOR WORKING VOLTAGES OF 0.6/1KV;
- AS/NZS 3008:2010 REQUIREMENTS FOR CUSTOMER CABLEING PRODUCTS;
- AS/NZS 3005:2013 INSTALLATION REQUIREMENTS FOR CUSTOMER CABLEING (WIRING RULES);
- AS 3089. TELECOMMUNICATIONS INSTALLATIONS - INTEGRATED TELECOMMUNICATIONS CABLEING SYSTEMS FOR COMMERCIAL PREMISES;
- AS 3084 TELECOMMUNICATIONS INSTALLATIONS - TELECOMMUNICATIONS PATHWAYS AND SPACES FOR COMMERCIAL BUILDINGS;
- AS 3085.1 TELECOMMUNICATIONS INSTALLATIONS - ADMINISTRATION OF COMMUNICATIONS CABLEING SYSTEMS;
- AS 3087 TELECOMMUNICATIONS INSTALLATIONS - GENERIC CABLEING SYSTEMS - SPECIFICATION FOR THE TESTING OF BALANCED COMMUNICATIONS CABLEING IN ACCORDANCE WITH VALUES SET OUT IN AS/NZS 3080;
- AS/NZS 3359.2:28-1996 SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES - PARTICULAR REQUIREMENTS - BATTERY CHARGERS
- AS 4117 SURGE PROTECTIVE DEVICES FOR TELECOMMUNICATIONS APPLICATIONS;
- AS 4282.1 TELECOMMUNICATION OVER-VOLTAGES - PROTECTION OF PERSONS;
- AS 4282.2 TELECOMMUNICATION OVER-VOLTAGES - PROTECTION OF EQUIPMENT;
- AS 4806.1-2006 CLOSED CIRCUIT TELEVISION (CCTV) - MANAGEMENT AND OPERATION;
- AS 4806.2-2006 CLOSED CIRCUIT TELEVISION (CCTV) - APPLICATION GUIDELINES;
- AS 5000.1 ELECTRIC CABLES - POLYMERIC INSULATED - PART 1: FOR WORKING VOLTAGES UP TO AND INCLUDING 0.6/1 (1.2) KV.
- AS/NZS/ISO/IEC 14763-3:2012 INFORMATION TECHNOLOGY - IMPLEMENTATION AND OPERATION OF CUSTOMER PREMISES CABLEING - TESTING OF OPTICAL FIBRE CABLEING.
 - AS/NZS 61000.3.6:2001 - ELECTROMAGNETIC COMPATIBILITY (EMC) - LIMITS - ASSESSMENT OF EMISSION LIMITS FOR DISTURBING LOADS IN MV AND HV POWER SYSTEMS, AND
 - WORKPLACE HEALTH AND SAFETY ACT.

MAINTENANCE DURING DEFECTS LIABILITY PERIOD

THE CONTRACTOR SHALL PROVIDE ALL MAINTENANCE FOR THE WORKS DURING THE DEFECTS LIABILITY PERIOD OF 52 WEEKS FOR ALL NEW CCTV EQUIPMENT SPECIFIED FROM THE DATE OF COMMISSIONING. THE CONTRACTOR MUST ALSO ENSURE THAT ANY SOFTWARE UPDATES, WHICH ARE REQUIRED TO BE UNDERTAKEN AND RECOMMENDED BY THE MANUFACTURER, ARE PERFORMED DURING THE DEFECTS LIABILITY PERIOD, AT NO ADDITIONAL COST TO THE CLIENT.

LOCATION, POSITIONING AND ALIGNMENT OF EQUIPMENT

THE LOCATION OF EQUIPMENT AS SHOWN ON THE CONTRACT DRAWINGS IS INDICATIVE ONLY. FINAL EQUIPMENT AND CABLEING LOCATIONS SHALL BE DETERMINED THROUGH LIAISON WITH THE SUPERINTENDENT AND OTHER RELEVANT CONTRACTORS ON SITE.

THE CONTRACTOR SHALL CO-ORDINATE THE LOCATION OF EQUIPMENT AND CABLEING WITH ALL OTHER SERVICES LOCATED IN THE AREA, AND WITH REGARD TO ANY OTHER RESTRICTIONS ON LOCATIONS AS SPECIFIED HEREIN AND/OR ADVISED BY THE SUPERINTENDENT.

THE CONTRACTOR SHALL POSITION ALL EQUIPMENT AND CABLEING SO AS NOT TO CAUSE AN OBSTRUCTION TO EXISTING FITTINGS.

ALL EQUIPMENT INSTALLED UNDER THIS SPECIFICATION SHALL BE NEATLY AND ACCURATELY ALIGNED TO THE COMPLETE SATISFACTION OF THE SUPERINTENDENT.

EQUIPMENT DEEMED BY THE SUPERINTENDENT TO BE MISALIGNED OR POORLY INSTALLED SHALL BE REMOVED AND REINSTALLED TO THE SATISFACTION OF THE SUPERINTENDENT AT THE CONTRACTORS COST.

WORKSHOP DRAWINGS AND SAMPLES

SUBMIT THE FOLLOWING DETAILED SHOP DRAWINGS TO THE SUPERINTENDENT FOR REVIEW PRIOR TO COMMENCING INSTALLATION WORKS:

- CCTV EQUIPMENT AND TECHNICAL DATA

ALLOW A MINIMUM OF 10 WORKING DAYS FOR RECEIPT OF COMMENTS

PROVIDE THE FOLLOWING SAMPLES TO THE SUPERINTENDENT FOR REVIEW PRIOR TO COMMENCING INSTALLATION WORKS:

- CCTV CAMERAS.

WORKMANSHIP

ALL WORKMANSHIP AND MATERIALS SHALL BE TO THE SATISFACTION OF THE SUPERINTENDENT. ALL MATERIALS SHALL BE NEW UNLESS OTHERWISE NOTED. ANY MATERIALS OR WORKMANSHIP, WHICH ARE CONSIDERED INFERIOR OR NON-COMFORMING BY THE SUPERINTENDENT SHALL BE REPLACED AT THE CONTRACTORS COST.

ELECTRICAL WORKS

THE CONTRACTOR SHALL COORDINATE THE SUPPLY AND INSTALLATION OF MULTIPLE SINGLE PHASE 240V A.C. POWER CIRCUITS, COMPLETE WITH CIRCUIT BREAKER, FROM THE IDENTIFIED LOCAL DISTRIBUTION BOARD, AND GENERAL PURPOSE OUTLETS (GPO'S) FOR THE CONNECTION OF THE NECESSARY CCTV SYSTEMS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE LOCATION OF THE GPO'S REQUIRED FOR THE SPECIFIED SYSTEMS.

COORDINATE MATCHING MAINS POWER PLUGS AND SOCKETS AS PER THE RELEVANT STANDARDS, WHERE PRACTICABLE USE PLUGS WHICH SCREW TO PENDANTS TO PREVENT THE PLUGS FROM BEING DISCONNECTED UNINTENTIONALLY.

GPO'S SHALL BE LABELLED WITH THE CORRESPONDING DISTRIBUTION BOARD AND CIRCUIT NUMBERS.

CO-ORDINATION AND CO-OPERATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-ORDINATION AND FOR SETTING OUT OF WORKS. THE CONTRACTOR SHALL COORDINATE ALL WORKS AS NECESSARY TO AVOID CONSTRUCTION DELAYS AND ENSURE THE DELIVERY OF A QUALITY PROJECT.

USE OF TRAINED PERSONNEL

THE CONTRACTOR SHALL ONLY USE PERSONNEL WHO HAVE BEEN PROPERLY TRAINED AND ARE COMPETENT IN THEIR RESPECTIVE TRADES COVERED BY THE WORKS.

SCOPE OF WORK

THE INSTALLATION OF EIGHT (8) NEW ANALOGUE CCTV CAMERAS IS REQUIRED TO FULLY INTEGRATE WITH THE EXISTING ANALOGUE CCTV SYSTEM.

THE CCTV WORKS DETAILED IN THESE SPECIFICATION NOTES ARE TO BE CARRIED OUT IN CONJUNCTION WITH THE OTHER SITE WORKS, AND INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

- SUPPLY, INSTALL, TEST AND COMMISSION EIGHT (8) NEW ANALOGUE CLOSED CIRCUIT TELEVISION (CCTV) CAMERAS
- SUPPLY, INSTALL, TEST AND COMMISSION THE REQUIRED EQUIPMENT TO INTEGRATE THE NEW ANALOGUE CCTV CAMERAS WITH THE EXISTING ANALOGUE CCTV SYSTEM.
- SUPPLY, INSTALL, TEST AND COMMISSION A DEDICATED FIBRE CONNECTION FROM THE NEW SITE OFFICE BUILDING BACK TO THE EXISTING WEIGHBRIDGE BUILDING TO NETWORK THE NEW ANALOGUE CCTV CAMERAS WITH THE EXISTING ANALOGUE CCTV SYSTEM, AND
- PROVISION OF TRAINING, DOCUMENTATION AND DEFECTS LIABILITY PERIOD (DLP) AS SPECIFIED.

APPROVAL OF EQUIPMENT, UNIFORMITY AND NEW MATERIALS

ALL EQUIPMENT SHALL BE OF A TYPE APPROVED BY THE SUPERINTENDENT AND SHALL MEET THE REQUIREMENTS OF THE PRINCIPAL.

UNIFORMITY OF TYPE AND MANUFACTURE OF INDIVIDUAL EQUIPMENT'S SHALL BE PRESERVED THROUGHOUT THE INSTALLATION.

UNLESS OTHERWISE SPECIFIED ALL MATERIALS, FITTINGS, ACCESSORIES, AND APPARATUS SHALL BE NEW AND SHALL COMPLY WITH THE RELEVANT S.A.A. SPECIFICATIONS.

BUILDING WORK

THE CONTRACTOR SHALL MAKE GOOD ANY DAMAGE THAT MAY BE NECESSARY AS A RESULT OF THEIR ACTIONS INCLUDING REPAIR AND FINISHING. THIS INCLUDES PAINTING, PLASTERING, RENDERING, POLISHING, REPLACEMENT OF DAMAGED ITEMS ETC. TO THE SATISFACTION OF THE SUPERINTENDENT.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MOUNTING HARDWARE FOR THE EQUIPMENT TO BE SUPPLIED AND INSTALLED WITHIN THEIR SCOPE OF WORKS INCLUDING BUT NOT LIMITED TO SCREWS, BRACKETS, ETC.

PENETRATIONS

STRUCTURAL PENETRATIONS AND SIMPLE SINGLE TRADE SPECIFIC PENETRATIONS INTO AND THROUGH SLABS, BEAMS, WALLS AND THE LIKE SHALL BE FORMED BY THE CONTRACTOR.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIRE OR ACOUSTICALLY SEAL STRUCTURAL AND TRADE SPECIFIC PENETRATIONS IN ACCORDANCE WITH THE APPROPRIATE FIRE OR ACOUSTIC RATING AND INCLUDE ALL ASSOCIATED COSTS.

THE CONTRACTOR SHALL USE ACCEPTABLE METHODS OF FIRE AND/OR ACOUSTICALLY SEALING PENETRATIONS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. SLEEVES AROUND PIPES, CONDUITS, CABLE TRAYS, CABLE DUCTS, COVERS, HATCHES AND THE LIKE, SHALL BE ACCURATELY LOCATED AND SEALED. STRUCTURAL INTEGRITY OF WALLS, FLOORS, BEAMS, AND THE LIKE FOR FIRE AND ACOUSTIC PENETRATIONS SHALL BE MAINTAINED.

FOR EACH TYPE OF FIRE STOPPING INSTALLATION, PROVIDE A TEST CERTIFICATE FROM AN INDEPENDENT TESTING AUTHORITY SHOWING THAT A REPRESENTATIVE SPECIMEN OF THIS ELEMENT OF CONSTRUCTION, INCORPORATING THE PROPOSED FIRE STOPPING, HAS ATTAINED THE REQUIRED FIRE RESISTANCE RATING WHEN TESTED TO AUSTRALIAN STANDARDS.

ALL STRUCTURAL PENETRATIONS SHALL BE MARKED ON SHOP DRAWINGS AND A REQUEST FOR APPROVAL FROM THE SUPERINTENDENT SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS.

PAINTING REQUIREMENTS

EQUIPMENT SUPPLIED AND INSTALLED UNDER THIS SPECIFICATION SHALL BE APPROPRIATELY SEALED AGAINST CORROSION THROUGH EITHER PAINTING, POWDER COATING OR GALVANISING, WHERE REQUIRED.

LABELLING REQUIREMENTS

THE CONTRACTOR SHALL LABEL ALL NEW AND REMAINING EQUIPMENT TO THE APPROVAL OF THE SUPERINTENDENT. DETAILS OF WORKING AND SIZE OF LETTERING SHALL BE TO THE APPROVAL OF THE SUPERINTENDENT.

SIGNAGE REQUIREMENTS

THE CONTRACTOR SHALL SUPPLY AND INSTALL CCTV SIGNAGE AS PER PRINCIPAL'S REQUIREMENTS AND LOCAL LEGISLATION. THE CONTRACTOR SHALL ALLOW FOR THE COST OF TWO (2) PROFESSIONALLY MANUFACTURED SIGNS, AND PROVIDE COSTS PER UNIT FOR ADDITIONAL SIGNS.

INTERFERENCE, E.M.I. AND TRANSIENT SURGE PROTECTION

ELECTRICAL EQUIPMENT AND ALL WIRING SHALL BE SO DESIGNED THAT IT WILL NOT CAUSE INTERFERENCE WITH COMPUTING, TELECOMMUNICATIONS, RADIO, TELEVISION OR OTHER ELECTRICAL EQUIPMENT IN THE SAME LOCALITY.

IN THE EVENT OF THE INHERENT CHARACTERISTICS OF EQUIPMENT BEING SUCH THAT INTERFERENCE IS POSSIBLE, SUCH EQUIPMENT SHALL BE PROVIDED WITH EFFECTIVE INTERFERENCE SUPPRESSORS TO ELIMINATE THE INTERFERENCE.

RADIO AND TELEVISION INTERFERENCE LEVELS SHALL BE WITHIN THE LIMITS AS SET OUT IN AS/NZS CISPR 14.1:2003 OR EQUIVALENT.

ELECTRICAL DISTURBANCES SHALL BE WITHIN THE LIMITS AS SET OUT IN AS/NZS 61000.3.6:2001 OR EQUIVALENT.

SUPPLY AND INSTALL SUITABLE LIGHTNING SURGE PROTECTION TO IEEE 587 TO PROTECT THE EQUIPMENT (I.E. POWER AND SIGNAL LINES).

PROVIDE SUITABLE LIGHTNING SURGE PROTECTION TO IEEE C62.41.1 TO PROTECT THE EQUIPMENT.

EARTHING REQUIREMENTS

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EARTHING TERMINALS AND CONNECTIONS AS REQUIRED TO OPERATE ITS EQUIPMENT. EXISTING POWER EARTHS MAY BE USED, IF SUITABLE.

THE CONTRACTOR SHALL TEST THE QUALITY OF THE EXISTING EARTH SYSTEMS IN THE BUILDING (RESISTANCE, HARMONIC VOLTAGES, ETC.) AND SHALL PROVIDE ANY SUPPLEMENTARY MEASURES AS MAY BE NECESSARY TO SUCCESSFULLY OPERATE ITS EQUIPMENT.

MAKING GOOD

DAMAGED FINISHES - EXISTING BUILDING FINISHES DAMAGED BY THE CONTRACTOR DURING DELIVERY, INSTALLATION AND/OR ERECTION OF EQUIPMENT SHALL BE MADE GOOD AND RE-FINISHED AT THE CONTRACTORS COST TO THE APPROVAL OF THE SUPERINTENDENT.

REPAIR OF DAMAGED PAINTWORK - PAINTWORK DAMAGED BY THE SECURITY CONTRACTOR DURING THE PROGRESS OF THE WORK OR IN TRANSPORT, SHALL BE REPAIRED SO THAT NO BLEMISH OCCURS AFTERWARDS. WHERE THE PRIMING COAT HAS BEEN DAMAGED, THE STEEL SHALL BE PREPARED AND PRIMED AS SPECIFIED, BEFORE THE UNDERCOAT AND FINISHING COATS ARE APPLIED. THE FINISHING PAINT FILM SHALL BE SMOOTH AND UNIFORM IN THICKNESS AT ALL PLACES INCLUDING EDGES AND PROJECTIONS AND SHALL BE FREE FROM SAGGING, STREAMING, FLORATING AND OTHER DEFECTS. STEEL SURFACES AND PARTS TO WHICH ACCESS FOR PAINTING WILL BE IMPRACTICABLE AFTER ASSEMBLY, SHALL BE COMPLETELY PAINTED AND THE PAINT ALLOWED TO DRY HARD BEFORE ASSEMBLY.

CLEANING UP - THE CONTRACTOR SHALL LEAVE EACH LOCATION WHERE WORK HAS BEEN CARRIED OUT, IN A NEAT AND TIDY MANNER IN ACCORDANCE WITH AUSTRALIAN OCCUPATIONAL SAFETY & HEALTH (OH&S) PRINCIPLES AND ANY SITE REGULATIONS, GUIDELINES OR INSTRUCTIONS. THE STORAGE OF TOOLS, EQUIPMENT ETC. MUST BE IN SUCH A MANNER AS NOT TO CAUSE A HAZARD OR IMPEDIMENT TO ANY OTHER TRADES OR PERSONS WORKING IN THE BUILDING.

SOFTWARE AND PROGRAMMING

THE CONTRACTOR SHALL INCLUDE IN THE WORKS THE SUPPLY, INSTALLATION TESTING AND COMMISSIONING OF ALL SOFTWARE (INCLUDING HARDWARE REQUIRED FOR RELIABLE SOFTWARE OPERATION) AND PROGRAMMING INCLUDING SYSTEMS SUPPORT DOCUMENTATION, AS NECESSARY TO OPERATE THE COMPLETE SYSTEMS INCLUDING CAPACITY FOR FUTURE REQUIREMENTS.

WIRING AND CABLEING

DEDICATED, SEPARATE AND INDIVIDUAL CABLEING SHALL BE USED FOR THE CCTV SYSTEM. THE PRINCIPAL'S BACKBONE CABLEING SHALL NOT BE USED FOR ANY COMPONENT OF THE CCTV SYSTEM.

THE CONTRACTOR MAY UTILISE THE EXISTING CABLES AND/OR CABLE ROUTES WHERE THESE ARE APPROPRIATE. THE CONTRACTOR MUST ENSURE THAT ANY EXISTING CABLES AND/OR CABLE ROUTES UTILISED ARE SUFFICIENTLY SIZED AND CAPABLE TO ACCOMMODATING NEW CABLEING.

SECURITY WIRING SHALL BE RUN AT LEAST 300MM CLEAR OF POWER, DATA AND COMMUNICATIONS CABLES. WHERE THIS IS NOT POSSIBLE, THE SECURITY WIRING SHALL BE IN SHIELDED CABLE OR RUN IN STEEL CONDUIT.

ALL WIRING IN WHICH KINKS OR ABRASIONS OCCUR WILL BE CONDEMNED AND SHALL BE REPLACED BY THE CONTRACTOR AT ITS OWN EXPENSE.

UNDERSIZED CABLE NOT CONFORMING TO THE MINIMUM SIZES SPECIFIED BY THE MANUFACTURER WILL BE REMOVED FROM SITE (EVEN IF INSTALLED) AT THE EXPENSE OF THE CONTRACTOR.

ALL WIRING SHALL COMPLY WITH THE LATEST ISSUE OF AUSTRALIAN STANDARD AS/NZS 3000 (S.A.A. WIRING RULES). THE REQUIREMENTS OF THE LOCAL SUPPLY AUTHORITY WHERE RELEVANT, ANY ADDITIONAL REQUIREMENTS SPECIFIED HEREUNDER, AND THE INSTALLATION AND CABLE ROUTE SHALL BE TO THE SATISFACTION OF THE SUPERINTENDENT.

FIBRE OPTIC CABLEING - WHERE NEW CABLEING IS REQUIRED BETWEEN THE NEW CCTV EQUIPMENT AND THE EXISTING ANALOGUE EQUIPMENT MULTIMODE FIBRE OPTIC CABLE SHALL BE USED. SUPPLY, INSTALL, TEST AND COMMISSION COMPATIBLE FIBRE OPTIC CABLEING AND ENCODERS/DECODERS WHERE REQUIRED FOR FULL OPERATION OF THE CCTV SYSTEM UNLESS OTHERWISE NOTED. FIBRE OPTIC CABLES SHALL BE INSTALLED AND SECURED AS SPECIFIED BELOW.

SPECIAL WIRING - WHERE EQUIPMENT TO BE SUPPLIED AND INSTALLED UNDER THIS SPECIFICATION REQUIRES SPECIAL WIRING, (I.E. SHIELDED CABLES OR OTHER SPECIAL TYPES OF CABLE) THESE CABLES SHALL BE INCLUDED.

INSTALLATION - SECURITY WIRING SHALL BE RUN AT LEAST 300MM CLEAR OF POWER, DATA AND COMMUNICATIONS WIRING. WHERE THIS IS NOT POSSIBLE, THE SECURITY WIRING SHALL BE IN SHIELDED CABLE OR RUN IN STEEL CONDUIT. ALL WIRING SHALL BE INSTALLED WITHIN THE BUILDING PERIMETER, WHERE CABLES ARE NOT CONCEALED IN SKIRTING DUCTING, PARTITION FRAMES, WALL CAVITIES OR IN THE CEILING SPACE THEN ALL CABLES SHALL BE PROTECTED BY CONDUIT OR CABLE DUCTING. WHERE WIRING IS TO BE CONCEALED BEHIND APPROVED PURPOSE MADE CABLE DUCTING OR IN CONDUIT, THE DUCTING AND/OR CONDUIT SHALL BE PAINTED OR FINISHED TO MATCH THE SURROUNDING SURFACES. WHERE CABLES ARE TO BE RUN IN THE CEILING SPACE THEY SHALL BE NEATLY RUN IN A REGULAR MANNER AND FIXED AT 1250MM INTERVALS. MULTIPLE RUNS SHALL BE TIED TOGETHER ALONG THE COMMON ROUTE AT 500MM INTERVALS AND SHALL BE EITHER GIVEN TO A CABLE TRAY OR CATENARY. CABLES SHALL NOT BE LEFT LYING ON THE FLOOR. DO NOT ATTACH CABLES TO CEILING HANGERS OR ANY OTHER SERVICE SUPPORT. THE SUPERINTENDENT MUST APPROVE OTHER METHODS EXCLUDING THE FOREMENTIONED, BEFORE INSTALLATION IS COMMENCED.

JOINTING & TERMINATIONS PROPRIETARY CONNECTORS ARE NOT PERMITTED. ALL CONNECTORS AND TERMINALS SHALL BE READILY AVAILABLE. WHERE JOINTING OF WIRING CANNOT BE AVOIDED, WIRING SHALL BE JOINED USING TERMINAL BLOCK/CONNECTORS WITHIN PANELS, CABINETS OR FIELD EQUIPMENT.

THE SUPERINTENDENT SHALL APPROVE THE METHOD USED. JOINTING OF CABLES EXTERNAL TO A DEVICE OR ENCLOSURE WILL NOT BE PERMITTED. WHERE CABLEING IS TO TERMINATE TO A PLUG OR JACK, THE APPROPRIATE CONNECTOR AND METHOD OF TERMINATION SHALL BE USED. WHERE CABLEING IS TO TERMINATE TO TERMINAL BLOCKS, TERMINATIONS SHALL BE MADE BY USING CABLE LUGS OR TUNNEL TYPE TERMINALS. CABLE LUGS AND TUNNEL TYPE CONNECTORS SHALL BE USED THROUGHOUT SITE IN FIELD DEVICES AND ENCLOSURES.

CONDUITS

GENERAL - CONDUITS ARE NOT REQUIRED WHERE CABLES CAN BE CONCEALED SATISFACTORILY IN CEILING SPACES, AND WALL CAVITIES. WHERE CONDUITS ARE NECESSARY, THE FOLLOWING SHALL APPLY:

- CONDUITS SHALL BE OF MINIMUM SIZE 20MM DIAMETER AND SHALL BE RUN SO AS TO ENABLE CABLES TO BE DRAWN-IN AFTER ERECTION, SUFFICIENT ACCESSIBLE JUNCTION BOXES SHALL BE USED FOR THIS PURPOSE;
- INSPECTION FITTINGS SHALL NOT BE USED FOR DRAWING IN ANY CABLES;
- WHERE CONDUITS ARE RUN ON THE SURFACE ON OUTSIDE WALLS OR EXPOSED TO THE WEATHER OR ARE AT RISK OF PHYSICAL DAMAGE, THE CONDUIT SHALL BE CLASS 'B' GALVANISED STEEL SCREWED;
- EXPOSED CONDUITS SHALL BE PAINTED TO MATCH THE SURROUNDING SURFACE;
- CONDUITS SHALL BE NEATLY RUN AND SECURELY FASTENED BY MEANS OF APPROVED SADDLES. SADDLES SHALL BE PROVIDED WITHIN 150MM OF ALL FITTINGS OR TERMINATIONS;
- THE DIRECTION OF CONDUIT RUNS SHALL BE PARALLEL TO THE WALLS, FLOORS AND CEILINGS, WHEREVER PRACTICABLE;
- SURFACE CONDUITS SHALL BE RUN SO AS TO BE AS INCONSPICUOUS AS POSSIBLE BY RUNNING IN CORNERS, ETC.;
- THE ROUTE OF ALL SURFACE CONDUITS SHALL BE APPROVED BY THE SUPERINTENDENT BEFORE INSTALLATION IS COMMENCED;
- RIGID OR FLEXIBLE CONDUIT DROPS SHALL BE PROVIDED AS REQUIRED TO PROVIDE CONNECTION TO EQUIPMENT;

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRUE HORIZONTAL OR VERTICAL INSTALLATION OF ALL JUNCTION BOXES AND FITTINGS;

WHERE JUNCTION BOXES ARE EXPOSED TO THE WEATHER, THE LIDS SHALL BE SEALED WITH AN APPROVED GASKET, AND

JUNCTION BOXES AND FITTINGS SHALL BE OF AMPLE SIZE AND TYPE TO ENABLE THE CABLES TO BE NEATLY DIVERTED FROM ONE CONDUIT TO ANOTHER WITHOUT UNDOE CRAMPING.

STEEL CONDUIT - STEEL CONDUIT IS REQUIRED IN THE RISER FOR THE RETICULATION OF VERTICAL CABLEING WHERE STEEL CONDUITS ARE NECESSARY, THE FOLLOWING SHALL APPLY:

- STEEL CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH AS/NZS 2053 OR EQUIVALENT;
 - ALL BURRS SHALL BE REMOVED FROM ENDS AND SCREWED BUSHES SHALL BE FITTED TO THE ENDS OF CONDUIT RUNS;
 - ALL CONDUITS SHALL BE STRAIGHT, FREE FROM RUST AND SCALE AND ANY SETS SHALL BE MADE GOOD IN SUCH A MANNER AS NOT TO DISTORT THE WALLS OF THE CONDUITS;
 - NO THREADS SHALL BE VISIBLE AFTER ERECTION OTHER THAN RUNNING JOINTS. RUNNING THREADS SHALL BE THOROUGHLY PAINTED WITH CORROSION INHIBITING PAINT PRIOR TO ASSEMBLY; AND
 - PRESSED METAL BOXES SHALL BE USED FOR FLUSH WALL MOUNTING EQUIPMENT. BOXES SHALL HAVE ADJUSTABLE THREADED FIXING DEVICES TO PERMIT FLUSH MOUNTING OF THE COVER PLATE.
- RIGID uPVC CONDUIT - THE USE OF RIGID uPVC CONDUIT, THE FOLLOWING SHALL APPLY:
- RIGID uPVC CONDUIT AND FITTINGS SHALL BE IN ACCORDANCE WITH AS/NZS 2053 OR EQUIVALENT;
 - ALL JOINTS SHALL BE CEMENTED WITH AN APPROVED CEMENT AND FITTINGS SHALL BE OF RIGID uPVC;
 - CONDUITS AND FITTINGS DAMAGED DURING INSTALLATION OR DELIVERY WILL BE CONDEMNED AND SHALL BE REMOVED FROM SITE.

- RIGID uPVC CONDUIT SHALL BE SECURELY FASTENED WITH APPROVED uPVC SADDLES SPACED TO PREVENT SAGGING. WHERE RIGID uPVC CONDUIT IS INSTALLED ACROSS RAFTERS OR JOISTS IN ROOF SPACES, IT SHALL BE FASTENED TO THE SIDE OF A TIMBER BATTEN TO APPROVAL;
- WHERE ANY STRAIGHT SECTION OF RIGID uPVC CONDUIT EXCEEDS 4M IN LENGTH AN APPROVED EXPANSION JOINT SHALL BE PROVIDED FOR EACH 4M OR PART THEREOF ALONG THE ENTIRE LENGTH OF THE STRAIGHT SECTION; AND
- ALL SETS AND BENDS IN RIGID uPVC CONDUIT SHALL BE MADE USING INTERNAL SPRINGS OF CORRECT SIZE TO PREVENT WALL COLLAPSE, CONDUITS IN WHICH ANY COLLAPSE OF WALLS IS EVIDENT WILL BE CONDEMNED.

POWER SUPPLIES

THE PROVISION OF ALL DC POWER TO ALL CABINETS, PANELS AND CONTROLLERS IS THE RESPONSIBILITY OF THE CONTRACTOR. THIS INCLUDES ALL CABLEING, CONDUIT, PITS, POLE CONNECTION POINTS, WIRING, TERMINAL BLOCKS, FUSES ETC. AND ANY OTHER ITEMS THAT MAY BE NECESSARY FOR THE OPERATION OF THE EQUIPMENT.

TESTING AND COMMISSIONING

THE CONTRACTOR SHALL SUPPLY ALL LABOUR, MATERIALS AND EQUIPMENT REQUIRED TO FULLY COMMISSION AND TEST THE INSTALLATION AT THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE SUPERINTENDENT. ON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SATISFY THE SUPERINTENDENT AND PRINCIPAL THAT THE ASSOCIATED SYSTEMS OPERATE IN ACCORDANCE WITH THE SPECIFICATION.

CARRY OUT ALL TESTS AS REQUIRED ENSURING THAT THE SYSTEM AND OTHER WORK COMPLY WITH THE SPECIFICATION.

THE TESTS SHALL BE CARRIED OUT IN THE PRESENCE OF THE SUPERINTENDENT OR THEIR NOMINATED REPRESENTATIVE.

A WRITTEN NOTICE OF INTENTION TO TEST SHALL BE PROVIDED TO THE SUPERINTENDENT NOT LESS THAN 7 DAYS PRIOR TO THE CARRYING OUT OF SUCH TESTS.

INSTALLATION AND/OR EQUIPMENT WILL BE ACCEPTED ONLY AFTER SATISFACTORY COMPLETION OF THE FOLLOWING TESTS. IF A TEST IS UNSUCCESSFUL THE EQUIPMENT SHALL BE REPAIRED AND RE-ERECTED AS APPROPRIATE AND SUBJECT TO RETEST UNTIL SUCCESSFUL. IF A TEST IS UNSUCCESSFUL THE EQUIPMENT SHALL BE REPAIRED AND RE-ERECTED AS APPROPRIATE AT THE CONTRACTORS COST AND SUBJECT TO RETEST UNTIL SUCCESSFUL. CARRY OUT THE FOLLOWING TESTS:

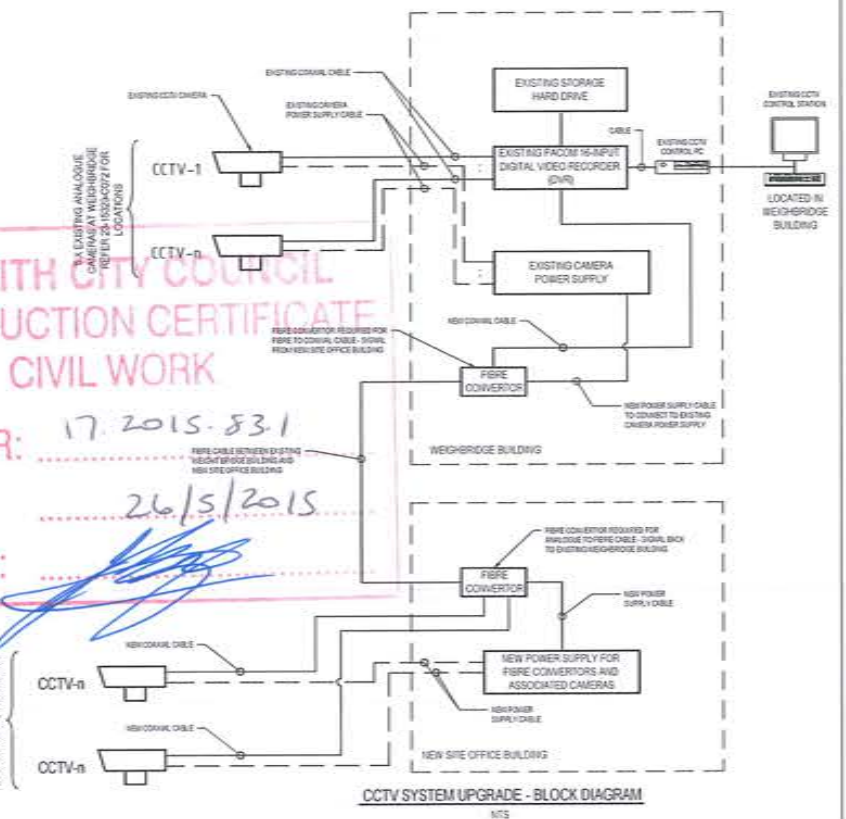
- SYSTEM POWER SUPPLIES
 - CHECK THAT THE POWER SUPPLIES ARE CONNECTED ON A DEDICATED ELECTRICAL MAINS SUPPLY CIRCUIT ELECTRICAL DISTRIBUTION BOARD AND THAT THE BREAKERS ARE LABELLED ACCORDINGLY;
- CLOSED CIRCUIT TELEVISION SYSTEM (CCTV)
 - TEST THE OPERATION OF THE DIGITAL VIDEO RECORDER (DVR) WITH THE NEW CAMERAS;
 - TEST THE OPERATION OF EACH CCTV CAMERA (BOTH NEW AND EXISTING) UNDER ALL PRACTICAL LIGHT CONDITIONS;
 - TEST THE OPERATION OF ALL ENCODERS;
 - ENSURE THAT THE PICTURE IS OF GOOD QUALITY AND CAMERA CORRECTLY FOCUSED (BOTH NEW AND EXISTING);
 - ENSURE CAMERA LENS IS CORRECT SIZE AND ADJUSTED FOR THE CONDITIONS;
 - CHECK BACK FOCUS SETTINGS;
 - ENSURE THAT THERE IS NO PICTURE ROLL, JITTER OR OBVIOUS ELECTRICAL INTERFERENCE;
 - CHECK DVR FOR CORRECT OPERATION;
 - REVIEW RECORDED IMAGE QUALITY; AND
 - REVIEW QUALITY OF IMAGE SAVED TO DISK.

AS INSTALLED DRAWINGS AND MANUALS

THE CONTRACTOR SHALL SUPPLY TO THE PRINCIPAL COMPLETE SETS OF DOCUMENTS INCLUDING DETAILED OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTION, 'AS INSTALLED' DRAWINGS, DIAGRAMS AND SCHEDULES. MANUALS SHALL FULLY DESCRIBE THE EQUIPMENT INSTALLED AND FULLY DESCRIBE ITS OPERATION.

CONCISE NON-TECHNICAL OPERATORS INSTRUCTIONS

THE CONTRACTOR SHALL SUPPLY CONCISE NON-TECHNICAL OPERATORS INSTRUCTIONS FOR THE CCTV SYSTEM. CONCISE NON-TECHNICAL OPERATORS INSTRUCTIONS ARE REQUIRED FOR ISSUE TO OPERATORS NOT NECESSARILY TECHNICALLY SKILLED. AND SHALL BE SUBMITTED TO THE SUPERINTENDENT AND PRINCIPAL FOR APPROVAL AT LEAST TWO (2) WEEKS BEFORE THE INTENDED COMMISSIONING DATE FOR THE WORKS. COMMISSIONING TESTS WILL NOT COMMENCE UNTIL AFTER APPROVAL OF SUCH INSTRUCTIONS HAS BEEN GRANTED.



									DO NOT SCALE		Drawn K. PALARCA	Designer R. SONEJA	Client	GRIFFITH CITY COUNCIL			
3	RESPONSIBILITIES REVISED	RGM	CJ*	JW*	21.04.15	<p>Level 7, 16 Marcus Clarke Street Canberra ACT 2601 Australia GPO Box 1877 Canberra ACT 2601 T 61 2 6113 3000 F 61 2 6115 3299 www.griffithcitycouncil.nsw.gov.au</p>		<p>Conditions of Use. This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.</p>		Drafting Check G. DOUGHERTY*	Design Check G. DOUGHERTY*	Project	THARBOGANG WASTE TRANSFER STATION				
2	FURTHER REVISIONS FOLLOWING GOC COMMENTS	LDS	CJ*	JW*	01.04.15					Approved (Project Director) J. WEARNE*	Date 25.02.15	Title	CCTV AND SECURITY LIGHTING -				
1	REVISION FOLLOWING CLIENT'S COMMENTS	RDP	CJ*	JW*	19.03.15							Scale NTS	This Drawing must not be used for Construction unless signed as Approved		Original Size	GENERAL NOTES AND SPECIFICATIONS - SHEET 1 OF 2	
0	FOR CONSTRUCTION	RDP	CJ*	JW*	25.02.15											A1	Drawing No: 23-15329-C073
No Revision					Note: * indicates signatures on original issue of drawing or last revision of drawing			Drawn	Job	Project	Date	Rev: 3					

SPECIFICATION FOR ELECTRICAL WORKS

GENERAL CONDITIONS

CO-ORDINATE THE LOCATION OF THE SERVICES UNDER CONTRACTOR'S WORK SCOPE WITH OTHER TRADES. ALL WORK IS TO COMPLY WITH ALL RELEVANT BRIEFS & REQUIREMENTS.

INFORMATION

THE CONTRACTOR IS TO FULLY INFORM THEMSELVES OF ALL ASPECTS OF THIS EXISTING INSTALLATION PRIOR TO TENDER & COMMENCEMENT OF CONSTRUCTION. UNDERTAKE A MANDATORY SITE INSPECTION TO ASSESS THE SCOPE OF NEW WORKS.

CODES, RULES, PERMITS, FEES

ALL MATERIALS, SUPPLIES, AND ALL WORK INSTALLED SHALL COMPLY WITH THE CODES, STANDARDS, RULES AND REGULATIONS OF RELEVANT STATUTORY AUTHORITIES INCLUDING, BUT NOT NECESSARILY LIMITED TO:

- BUILDING CODE OF AUSTRALIA (2013)
- AS 3000 2007 ELECTRICAL INSTALLATIONS (WIRING RULES)
- AS/NZS 3439 (SWITCHBOARDS)
- AS/NZS 3008 ELECTRICAL INSTALLATIONS - SELECTION OF CABLES
- AS/NZS 3009 TELECOMMUNICATIONS INSTALLATIONS - GENERIC CABLEING FOR COMMERCIAL PREMISES
- AS3017 ELECTRICAL INSTALLATIONS - TESTING GUIDELINES
- SUPPLY AUTHORITY REGULATIONS
- LOCAL GOVERNMENT REGULATIONS

MAKE ALL APPLICATIONS AND PAY ALL FEES REQUIRED TO COMPLY WITH RELEVANT AUTHORITY REQUIREMENTS, INCLUDING SELF-CERTIFICATION COSTS FOR ELECTRICAL INSPECTION, EMERGENCY LIGHTING AND COMMUNICATIONS.

DEFECTS/LIABILITY

GUARANTEE ALL WORK AND MATERIALS AS TO QUALITY, WORKMANSHIP AND AGAINST DEFECTS, FOR A PERIOD OF 52 WEEKS FROM THE DATE OF ISSUE OF THE CERTIFICATE OF PRACTICAL COMPLETION. DURING THIS PERIOD, PROMPTLY REPLACE ALL DEFECTIVE EQUIPMENT, FIXTURES AND MATERIALS AT NO ADDITIONAL COST.

LOCATION OF SERVICES

THE LOCATION AND MOUNTING HEIGHTS OF THE SERVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. FINAL LOCATIONS, MOUNTING HEIGHTS AND SET-OUTS AS NOMINATED ON DRAWINGS 23-15329-C081 TO C083, AND SHALL BE CONFIRMED ON SITE PRIOR TO INSTALLATION.

WORKSHOP DRAWINGS AND SAMPLES

SUBMIT THE FOLLOWING DETAILED SHOP DRAWINGS TO THE SUPERINTENDENT FOR REVIEW PRIOR TO COMMENCING INSTALLATION WORKS:

- LIGHTING CONTROL SCHEMATICS AND TECHNICAL DATA

ALLOW A MINIMUM OF 10 WORKING DAYS FOR RECEIPT OF COMMENTS

PROVIDE THE FOLLOWING SAMPLES TO THE SUPERINTENDENT FOR REVIEW PRIOR TO COMMENCING INSTALLATION WORKS:

- LUMINAIRES COMPETE WITH LAMPS AND CONTROL GEAR

WORKMANSHIP

ALL WORKMANSHIP AND MATERIALS SHALL BE TO THE SATISFACTION OF THE SUPERINTENDENT. ALL MATERIALS SHALL BE NEW UNLESS OTHERWISE NOTED. ANY MATERIALS OR WORKMANSHIP, WHICH ARE CONSIDERED INFERIOR OR NON-COMPLYING BY THE SUPERINTENDENT SHALL BE REPLACED AT THE CONTRACTOR'S COST.

LICENSED ELECTRICAL CONTRACTOR

ALL WORKS SHALL BE UNDERTAKEN BY LICENSED ELECTRICAL CONTRACTORS, QUALIFIED AND EXPERIENCED IN THE TYPE OF WORK REQUIRED FOR THIS PROJECT.

RELATED ELECTRICAL WORKS

CO-ORDINATE AND CO-OPERATE WITH THE BUILDER AND OTHER TRADES (MECHANICAL, HYDRAULIC, ETC) AS REQUIRED.

SCOPE OF WORK

THE SCOPE OF WORK INCLUDES THE SUPPLY, DELIVERY, INSTALLATION, TESTING AND SETTING TO WORK OF THE SYSTEMS AND EQUIPMENT AS SHOWN ON THE DRAWINGS AND NOMINATED IN THE SPECIFICATION. SUPPLY ALL REQUIRED MATERIALS UNLESS OTHERWISE SPECIFIED. REFER DRAWINGS 23-15329-C071, C081, C082 AND C083 FOR FINAL SETOUT.

THE SCOPE OF WORK INCLUDES BUT IS NOT NECESSARILY LIMITED TO THE FOLLOWING:

LIGHTING

- PROVIDE NEW LIGHTING AS SPECIFIED ON THE DRAWINGS.
- ALTERNATE LIGHT FITTINGS WILL NOT BE ACCEPTED WITHOUT APPROVAL FROM SUPERINTENDENT OR ELECTRICAL ENGINEER. PROVIDE PRODUCT SHEETS FOR ALL ALTERNATIVE FIXTURES.
- ALL FLUORESCENT LUMINAIRES SHALL BE SUPPLIED WITH HIGH EFFICIENCY 4000 KELVIN TROPHICOR LAMPS (COLOUR 84).
- ALL LIGHTING CIRCUITS MODIFIED AS PART OF THESE WORKS SHALL BE PROVIDED WITH NEW RCD PROTECTION, MAXIMUM OF 30 BALLASTS / CIRCUIT.
- ALL NEW LIGHTING SHALL BE ON A NEW CIRCUIT, WHICH IS TO BE RCD PROTECTED.
- MAXIMUM EARTH LEAKAGE CURRENT PER BALLAST SHALL BE LESS THAN 0.3mA.
- COORDINATE FINAL SET-OUTS FOR LIGHT FIXTURES FROM ON-SITE DIMENSIONED SETOUTS. COORDINATE ALL LUMINAIRE INSTALLATIONS WITH SECURITY LAYOUTS AND STRUCTURAL DESIGNS.

EARTHING

- THE INSTALLATION BY THE CONTRACTOR SHALL BE EARTHED.
- EARTHING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT SUPPLY AUTHORITY REQUIREMENTS AND AS/NZS 3000:2007 AND AS/NZS 3008.

SPECIFICATION FOR SECURITY WORKS (PART 2)

CCTV SYSTEM AND CONFIGURATION

SUPPLY, INSTALL, TEST AND COMMISSION A FULLY FUNCTIONING CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM AS SPECIFIED HEREIN. THE CCTV SYSTEM SHALL INCLUDE:

- FIXED COLOUR ANALOGUE CCTV CAMERAS;
- FIBRE OPTIC CONVERTORS
- POWER SUPPLIES/SUPPLIES;
- SYSTEM SOFTWARE;
- SYSTEM PROGRAMMING (AS REQUIRED); AND
- SIGAGE.

ON COMPLETION OF THE PROJECT, THE SECURITY CONTRACTOR SHALL CONFIGURE, PROGRAM AND DOCUMENT THE SYSTEM PARAMETERS TO SUIT THE ACTUAL PROJECT REQUIREMENTS. THE CCTV SYSTEM UPGRADE SHALL BE FULLY COMPATIBLE WITH THE EXISTING CCTV SYSTEM INFRASTRUCTURE. ALL PROGRAMMING AND RECORDING RATES SHALL BE COMPATIBLE WITH THE EXISTING SITE RECORDING ARRANGEMENTS. THE PICTURE FROM EACH CAMERA SHALL BE CONTINUOUSLY RECORDED AT 3 FRAMES PER SECOND PER CAMERA AND SET FOR VIDEO MOTION DETECTION (VMD) WHICH UNDER ACTIVATION SHALL RECORD AT 12 FRAMES PER SECOND PER CAMERA WITH ACTIVATION.

ANALOGUE CAMERA REQUIREMENTS

SUPPLY, INSTALL, TEST AND COMMISSION EIGHT (8) NEW FIXED COLOUR ANALOGUE CCTV CAMERAS IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. THESE CAMERAS ARE TO REPLACE AS PER THE LAYOUT SHOWN ON DRAWING 23-15329-C072. CCD CAMERAS SHALL FEATURE AN INFRARED FILTER OVER THE CCD ELEMENT. ANALOGUE COLOUR CAMERAS SHALL COMPLY WITH THE FOLLOWING MINIMUM SPECIFICATIONS:

ITEM	SPECIFICATION
IMAGE SENSOR	1/3" INCH
IMAGER TYPE	CCD
SCANNING MODE	2:1 INTERLACED
MINIMUM EFFECTIVE PIXELS	650TVL (PAL) OR BETTER
SIGNAL-TO-NOISE RATIO	>50DB
LENS TYPE	VARI-FOCAL 3 - 8mm
OPERATING TEMPERATURE	-10°C - 50°C
ELECTRONIC SHUTTER RANGE	1/50 - 1/120,000 SEC
WIDE DYNAMIC RANGE	54 DB
MINIMUM ILLUMINATION	0.3LUX (COLOUR), 0.005LUX (B&W)
POWER SOURCE	24VAC OR 12VDC
FUNCTION/FEATURES	AUTO WHITE BALANCE, AUTO EXPOSED, AUTO IRIS CONTROL, BLACK LEVEL CORRECTION, DISPLAY TITLE, DAY/NIGHT, MOTION DETECTION AND DIGITAL NOISE REDUCTION
MOUNTINGS	POLE MOUNTABLE AND BUILDING MOUNTABLE
HOUSING/CAMERA IP RATING	IP66

GENERAL CAMERA REQUIREMENTS

ALL EXTERNAL CAMERAS SHALL BE INSTALLED IN SUITABLE VANDAL RESISTANT HOUSINGS. ALL CAMERAS SHALL BE MOUNTED IN LINE WITH THE EXISTING BUILDING MOUNTED CAMERAS OR TO POLES AS OUTLINED.

EACH CAMERA SHALL BE FITTED WITH A STANDARD "C" OR "CS" MOUNT LENS. WHERE CAMERAS ARE INSTALLED FACING OR NEAR LIGHT SOURCES, CARE SHALL BE EXERCISED IN MOUNTING THE CAMERAS THAT DIRECT LIGHT DOES NOT ENTER THE LENS.

CAMERA LENSES

SUPPLY, INSTALL, TEST AND COMMISSION CAMERA LENSES ON EACH CAMERA IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS TO SUIT THE CAMERA ZONE AND REQUIRED FIELD OF VIEW TO THE SATISFACTION OF THE SUPERINTENDENT. CAMERA LENSES SHALL BE AUTOMATIC IRIS LENSES WITH AN APERTURE OF F1.4 AND SELECTED TO SUIT THE CAMERA IN ACCORDANCE WITH THE CAMERA MANUFACTURERS RECOMMENDATIONS. THE FOCAL LENGTH ADJUSTMENT OF THE INDIVIDUAL LENSES SHALL BE DETERMINED BY SITE TEST TO ENSURE SUFFICIENT COVERAGE OF THE AREAS TO BE VIEWED.

CAMERA FOCUSING AND ADJUSTMENT

A NEUTRAL DENSITY FILTER SHALL BE USED FOR THE FOCUSING AND BACK FOCUSING OF CAMERAS. THIS IS TO ASSIST IN ENSURING THAT THE CAMERAS WILL OPERATE SATISFACTORILY IN LOWER LIGHTING CONDITIONS. ADJUST AND CONFIGURE THE CAMERAS TO THE MANUFACTURER'S REQUIREMENTS.

DEMONSTRATION OF CAMERAS

THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EACH CAMERA AND FIELD OF VIEW BY SITE DEMONSTRATION BEFORE ANY INSTALLATION WORK IS CARRIED OUT. THE CONTRACTOR SHALL SELECT THE FOCAL LENGTH AND ANGLE OF VIEW OF LENSES, FOR THE IDENTIFIED PURPOSE OF THE CAMERA, AND DEMONSTRATE THAT THIS HAS BEEN ACHIEVED. THE FINAL TYPE OF ALL CAMERAS SHALL BE DECIDED ON SITE BASED ON A SITE DEMONSTRATION BY THE CONTRACTOR BEFORE INSTALLATION OF CAMERAS IS CARRIED OUT. THE CONTRACTOR SHALL ALLOW FOR ALL DEMONSTRATION EQUIPMENT INCLUDING PORTABLE CAMERAS, MONITORS, POWER SUPPLIES, A RANGE OF LENSES AND ALL NECESSARY EQUIPMENT TO REACH PROPOSED LOCATIONS. THE FINAL TYPE OF ANY CAMERA FOR EACH LOCATION SHALL BE APPROVED BY THE PRINCIPAL BY A SITE DEMONSTRATION BY THE CONTRACTOR BEFORE ANY INSTALLATION OF CAMERAS IS CARRIED OUT.

CCTV SYSTEM OBJECTIVES

TABLE BELOW OUTLINES THE NEW CAMERAS OBJECTIVES. THE CCTV CAMERA FIELD OF VIEWS (FOVS) OUTLINED IN TABLE BELOW ARE RELATED TO THE FOLLOWING CAMERA PURPOSES:

- OBSERVATION - ALLOWS THE DETECTION OF AN OBJECT IN THE FOV. FOR EXAMPLE, "WE CAN SEE A MAN WEARING A RED JUMPER"
- RECOGNITION - ALLOWS THE RECOGNITION OF A KNOWN STAFF MEMBER OR SIGNIFICANT FEATURES OF AN UNKNOWN INDIVIDUAL IN THE FOV. FOR EXAMPLE "WE CAN SEE A MAN WITH BROWN HAIR WEARING GREY OVERALLS AND A CAP"
- IDENTIFICATION - ALLOWS THE POSITIVE IDENTIFICATION OF A KNOWN PERSON IN THE FOV. FOR EXAMPLE, "WE CAN IDENTIFY THE PERSON AS JOHN SMITH BASED ON FACIAL FEATURES".

EXTERNAL CAMERA HOUSINGS AND MOUNTS

SUPPLY AND INSTALL SUITABLE WALL MOUNTED OR POLE MOUNTABLE COME CAMERA HOUSINGS TO HOUSE ALL EXTERNAL CAMERAS TO THE APPROVAL OF SUPERINTENDENT. CAMERA HOUSINGS SHALL BE CLEARLY VISIBLE TO STAFF AND VISITORS. CAMERAS SHALL BE COMPLETELY CONTAINED WITHIN THE HOUSINGS AND SHALL MEET AND MAINTAIN AN IP66 RATING. CAMERA HOUSINGS SHALL BE CONSTRUCTED TO PREVENT DUST ENTERING THE HOUSING.

THE HOUSINGS SHALL BE MOUNTED FROM THE TOP AND THE CAMERA SHALL BE ATTACHED BY STANDARD CAMERA MOUNTING FIXTURES. WHERE CAMERAS ARE INSTALLED ON A CORNER OF A BUILDING, A SUITABLE AND COMPATIBLE CORNER MOUNT ADAPTOR SHALL BE ALSO USED. ALL FININGS OF EQUIPMENT TO WALLS, CEILINGS, ETC. SHALL BE INTO BRICK OR CONCRETE, BY MEANS OF APPROVED CORROSION RESISTANT EXPANDING THREADED METAL FININGS, AND INTO OTHER SURFACES, BY MEANS APPROVED BY THE SUPERINTENDENT TO SUIT THE PARTICULAR INSTANCE.

THE HOUSING SHALL FEATURE CAMERA ACCESS THAT PROVIDES SECURITY AND PROTECTION FROM TAMPERING.

CARE SHOULD BE TAKEN WHEN POSITIONING CAMERAS, TO MINIMISE OBSTRUCTIONS FROM IMPEDING THE CAMERA'S VIEW.

CAMERA BRACKETS FOR EXTERNAL HOUSINGS SHALL HAVE ADJUSTABLE MULTI-DIRECTIONAL MOUNTING HEADS AND SHALL HAVE A MINIMUM LOAD WEIGHT EXCEEDING THE COMBINED WEIGHT OF THE CAMERA, LENS, HOUSING AND ASSOCIATED COMPONENTS.

FIBRE CONVERTORS

SUPPLY, INSTALL, TEST AND COMMISSION FIBRE CONVERTORS AND A POWER SUPPLY FOR ALL NEW ANALOGUE CAMERAS. THE FIBRE CABLE RUN WILL BE USED FOR TO STREAM VIDEO SIGNALS BETWEEN THE CAMERAS ASSOCIATED WITH THE NEW SITE OFFICE BUILDING AND THE EXISTING DVR AT THE EXISTING MECHEROODE BUILDING. FIBRE CONVERTORS SHALL BE COMPATIBLE WITH THE EXISTING CCTV SYSTEM INFRASTRUCTURE. FIBRE ENCODERS SHALL USE A STANDARD BASED COMPRESSION ALGORITHM AND SHALL BE CAPABLE OF STREAMING 25FPS AT 4CIF FOR EACH NEW CAMERA.

ANCILLARY EQUIPMENT

THE CONTRACTOR SHALL ENSURE THAT PROBLEMS ASSOCIATED WITH GROUND LOOPS, REFLECTIONS AND OTHER VIDEO SIGNAL DISTURBANCES ARE AVOIDED OR NEGATED. THE SECURITY CONTRACTOR SHALL ENSURE THAT ALL CCTV EQUIPMENT IS PROPERLY SYNCHRONIZED TO PROVIDE CLEAR, CLEAN, ROLL-FREE SWITCHING AND JITTER FREE PICTURES. SUPPLY AND INSTALL ADDITIONAL EQUIPMENT AS REQUIRED, TO MAINTAIN QUALITY VIDEO SIGNAL IMAGES.

SUPPLY AND INSTALL ADDITIONAL EQUIPMENT AS REQUIRED, TO ELIMINATE THE EFFECTS OF POWER LINE AND SPURIOUS NOISE POTENTIALS BETWEEN GROUND POINTS ON TRANSMITTED SIGNALS.

SUPPLY AND INSTALL LIGHTING ARRESTERS (SURGE ARRESTORS) ON ALL EXTERNAL CAMERA SIGNAL AND POWER CABLE.

CCTV CAMERA POLE

SUPPLY, INSTALL, TEST AND COMMISSION CCTV CAMERA POLES, AS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS.

THE COLUMN SHALL SUPPORT SECURITY LIGHTING AND CCTV CAMERA MOUNTED AT A MINIMUM HEIGHT OF 3 METERS (9FT) AND SHALL BE OF TYPE WCOL 895 CAT NO. FCTVWP, AS SIZED (PROVIDED DESIGN OR APPROVED EQUIVALENT, TO MINIMISE FLEX, AND CONSTRUCTED TO ENABLE THE FOLLOWING:

- UNINTERRUPTED OPERATION OF THE CCTV MECHANISM AFFIXED TO THE PINNACLE OR SIDE OF THE POLE;
- FULLY ENVIRONMENTALLY PROTECTED;
- FITTED WITH ANTI-Climb SPIKES;
- CONSTRUCTED AND FIXED INTO THE GROUND TO ENSURE THAT NO LATERAL OR VERTICAL MOVEMENTS OCCURS DUE TO MINOR GROUND MOVEMENTS, OR UNDERGROUND WATER MOVEMENTS, SOIL SUBSIDENCE;
- ALL OPENINGS SHALL BE ENVIRONMENTALLY AND PHYSICALLY SECURE TO THE MINIMUM AGREED STANDARDS;
- THE CCTV POLES SHALL BE FITTED WITH SIDE ACCESS HATCH AT SUITABLE LEVEL, COMPLETE WITH HATCH COVER SECURED USING SECURITY SCREWS;

POLE DESIGN

THE COLUMN SHALL BE DESIGNED TO BE STRUCTURALLY SOUND IN ACCORDANCE WITH AS 4100 AND WITH WIND LOADING TAKEN BY AS/NZS 1170.2.

IN DEFAULT OF APPLICABLE CLAUSES IN THE AUSTRALIAN STANDARDS, THE BRITISH STANDARD 5649 SHALL BE USED.

THE STRUCTURAL DESIGN OF THE COLUMN AND BASE (FOOTING) SHALL BE VERIFIED BY DOCUMENTATION SHOWING INPUT/OUTPUT PARAMETERS, DETAILS OF CONSTRUCTION INCLUDING RELEVANT DIMENSIONS. THIS DATA SHALL BE CHECKED AND SIGNED BY THE CONTRACTOR'S CHARTERED PROFESSIONAL ENGINEER.

PARTICULAR ATTENTION IN DESIGN AND MANUFACTURE SHALL BE GIVEN TO STRUCTURAL DETAILS, WHICH ARE FATIGUE SENSITIVE.

HOLD POINTS

PRIOR TO ORDERING ANY EQUIPMENT THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION TO THE SUPERINTENDENT FOR ENDORSEMENT OF SHOP DRAWINGS:

- CCTV CAMERA POLES
- CCTV CAMERAS AND MOUNTING BRACKET
- SECURITY LIGHTING AND MOUNTING BRACKET

Griffith City Council

20 MAY 2015

RECEIVED

Received by:

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK
 NUMBER: 17.2015.83.1
 DATE: 26/5/2015
 SIGNED: [Signature]

LIGHTING LEGEND

SYMBOL	DESCRIPTION	LAMP				MOUNTING ARRANGEMENT	LOUVER / DIFFUSER / REFLECTOR	BALLAST	EQUAL TO MANUFACTURER / MODEL No.	NOTES
		TYPE	QTY.	WATTAGE	COLOUR TEMP.					
	NEW SURFACE MOUNTED LUMINAIRE	T5	2	28	4000	SURFACE MOUNTED TO UNDERSIDE OF DROP OFF BAY STRUCTURE	POLYCARBONATE WRAP AROUND DIFFUSER	ELECTRONIC BALLAST	PERLITE BNP T5	POLYCARBONATE BODY IP65 RATED.
	EXISTING EXTERIOR FLOODLIGHT	-	-	-	-	-	-	-	-	EXISTING TO BE RETAINED
	NEW EXTERIOR FLOODLIGHT	LED	1	150	4000	POLE MOUNTED	POLYCARBONATE LENS	ELECTRONIC DRIVER	SYLVANIA THOR LED	IP65 RATED ASA BODY
	NEW EXTERIOR FLOODLIGHT	LED	1	150	4000	SURFACE MOUNTED TO UNDERSIDE OF DROP OFF BAY STRUCTURE	POLYCARBONATE LENS	ELECTRONIC DRIVER	SYLVANIA THOR LED	IP65 RATED ASA BODY

CCTV OBJECTIVES TABLE

NO	CAMERA TYPE	CAMERA LOCATION	COVERAGE AREA	PURPOSE	TYPE / MOUNT	BACKGROUND RECORDING	VIDEO MOTION DETECTION (VMD)	RECORDING RESOLUTION
1	ANALOGUE	ADJACENT ACCESS ROAD (ROAD 1)	PROBLEM WASTE BUILDING	OBSERVATION	EXTERNAL POLE	3PS	12FPS	4CIF
2	ANALOGUE	NORTH CORNER OF NEW SITE OFFICE BUILDING	VEHICLE ENTERING THE DROP OFF AREA VIA ACCESS ROAD, VEHICLE PARKED IN WAITING BAYS (NOTE: LENS TO ALLOW FOR CLEAR NUMBER PLATE RECORDING)	RECOGNITION	EXTERNAL / ROOF OR BUILDING CORNER MOUNT	3PS	12FPS	4CIF
3	ANALOGUE	EAST CORNER OF NEW SITE OFFICE BUILDING	VIEW OF ROLLER DOORS TO THE STORAGE SHED (SOUTH EAST SIDE)	OBSERVATION	EXTERNAL / ROOF OR BUILDING CORNER MOUNT	3PS	12FPS	4CIF
4	ANALOGUE	ADJACENT ACCESS ROAD (ROAD 1) AND STORAGE SHED	VIEW OF BACK OF THE STORAGE SHED (NORTH WEST SIDE)	OBSERVATION	EXTERNAL POLE	3PS	12FPS	4CIF
5	ANALOGUE	CEILING OF DROP OFF BAY	DROP OFF BAY (NOTE: FOV TO CAPTURE VEHICLE AND TRAILER IN BAY)	RECOGNITION	EXTERNAL / MOUNTED TO UNDERSIDE OF WASTE DROP OFF STRUCTURE	3PS	12FPS	4CIF
6	ANALOGUE	CEILING OF DROP OFF BAY	DROP OFF BAY (NOTE: FOV TO CAPTURE VEHICLE AND TRAILER IN BAY)	RECOGNITION	EXTERNAL / MOUNTED TO UNDERSIDE OF WASTE DROP OFF STRUCTURE	3PS	12FPS	4CIF
7	ANALOGUE	CEILING OF DROP OFF BAY	DROP OFF BAY (NOTE: FOV TO CAPTURE VEHICLE AND TRAILER IN BAY)	RECOGNITION	EXTERNAL / MOUNTED TO UNDERSIDE OF WASTE DROP OFF STRUCTURE	3PS	12FPS	4CIF
8	ANALOGUE	CEILING OF DROP OFF BAY	DROP OFF BAY (NOTE: FOV TO CAPTURE VEHICLE AND TRAILER IN BAY)	RECOGNITION	EXTERNAL / MOUNTED TO UNDERSIDE OF WASTE DROP OFF STRUCTURE	3PS	12FPS	4CIF



DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

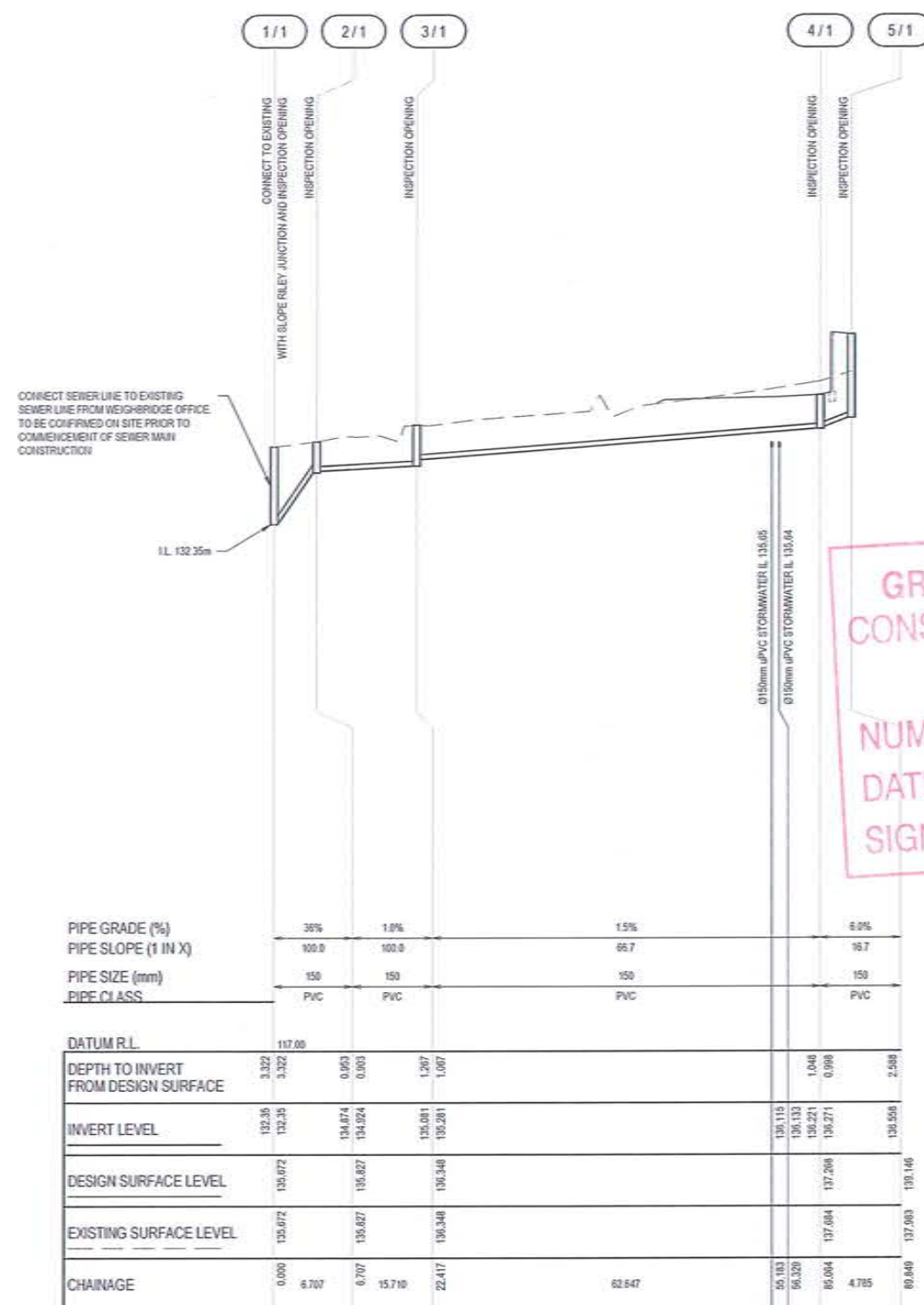
Drawn	K. PALARCA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*		
Date	25.02.15		
Scale	NTS		

Client Project Title	GRIFFITH CITY COUNCIL THARBOGANG WASTE TRANSFER STATION CCTV AND SECURITY LIGHTING - GENERAL NOTES AND SPECIFICATIONS - SHEET 2 OF 2
Drawing No:	23-15329-C074
Rev:	2

20 MAY 2015

RECEIVED

Received by: _____



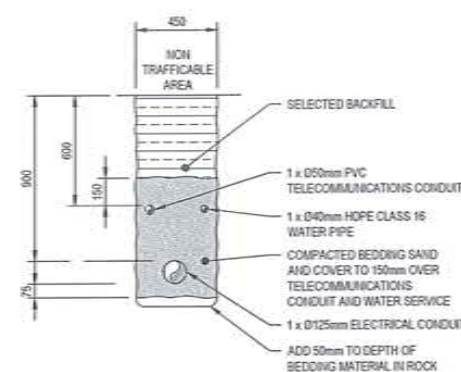
SEWER LONG SECTION

SCALE 1:500H, 1:100V

VERTICAL 1:100
AT ORIGINAL SIZE
HORIZONTAL 1:500
AT ORIGINAL SIZE

Griffith City Council
CONSTRUCTION CERTIFICATE
CIVIL WORK

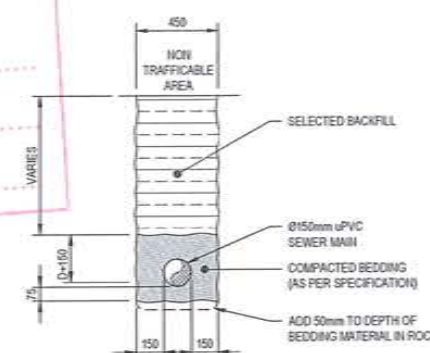
NUMBER: 17-2015-83.1
DATE: 26/5/2015
SIGNED: _____



NON TRAFFICABLE COMBINED SERVICES

TRENCH DETAILS

SCALE 1:20

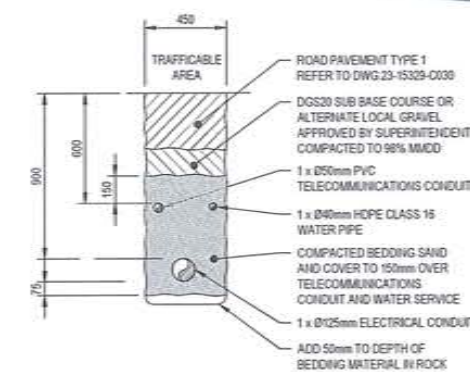


NON TRAFFICABLE SEWER

TRENCH DETAILS

SCALE 1:20

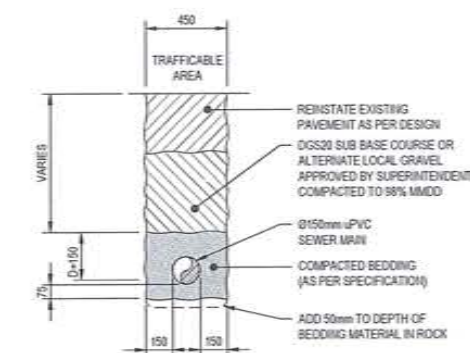
* TRENCH DETAIL DIMENSIONS IN MILLIMETRES



TRAFFICABLE COMBINED SERVICES

TRENCH DETAILS

SCALE 1:20



TRAFFICABLE SEWER

TRENCH DETAILS

SCALE 1:20

SEWER PIT SCHEDULE									
PIT				INLET		OUTLET		PIT	
NAME	TYPE	EASTING	NORTHING	DIA	INV LEV	DIA	INV LEV	SETOUT RL	DEPTH
5/1	INSPECTION OPENING	406194.022	6211039.856	150	136.558	150	136.558	133.146	2.588
4/1	INSPECTION OPENING	406197.958	6211037.134	150	136.271	150	136.271	137.268	1.048
3/1	INSPECTION OPENING	406251.540	6211069.593	150	135.281	150	135.281	136.348	1.267
2/1	INSPECTION SEWER	406266.721	6211065.551	150	134.924	150	134.924	135.827	0.953
1/1	INSPECTION OPENING	406265.750	6211058.915	150	132.35			135.672	3.322

2	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job	Project
					Date

0 200 400 600 800 1000mm
SCALE 1:20 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn K. PALARCA

Drafting G. DOUGHERTY*

Approved J. WEARNE*

Date 25.02.15

Scale AS SHOWN

Designer R. SONEJA

Design G. DOUGHERTY*

Check

This Drawing must not be
used for Construction unless
signed as Approved

Client

Project

Title

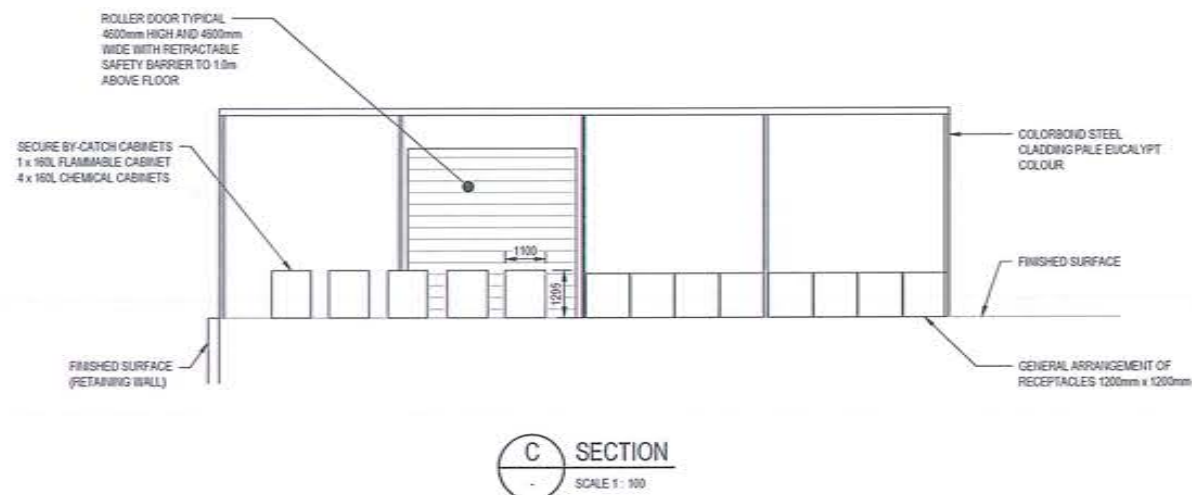
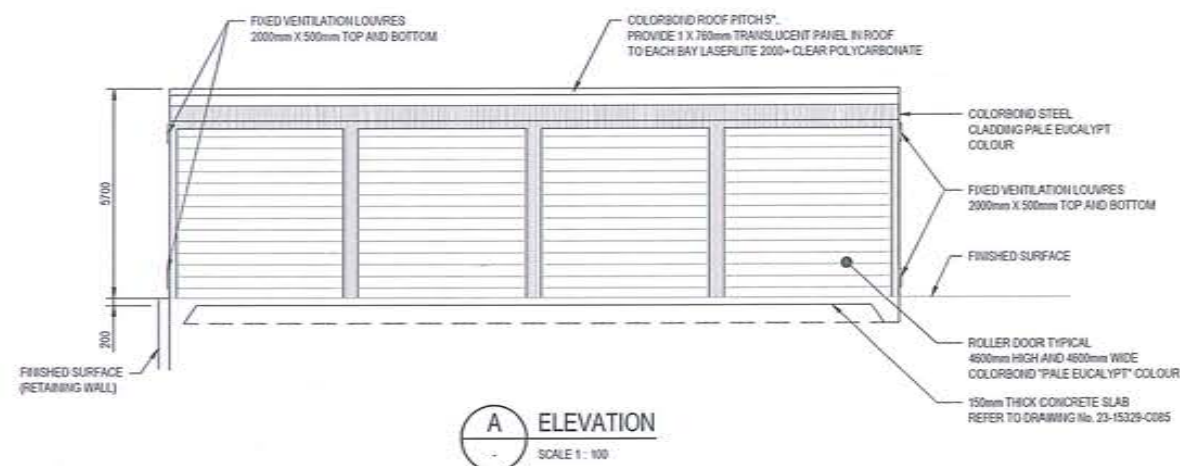
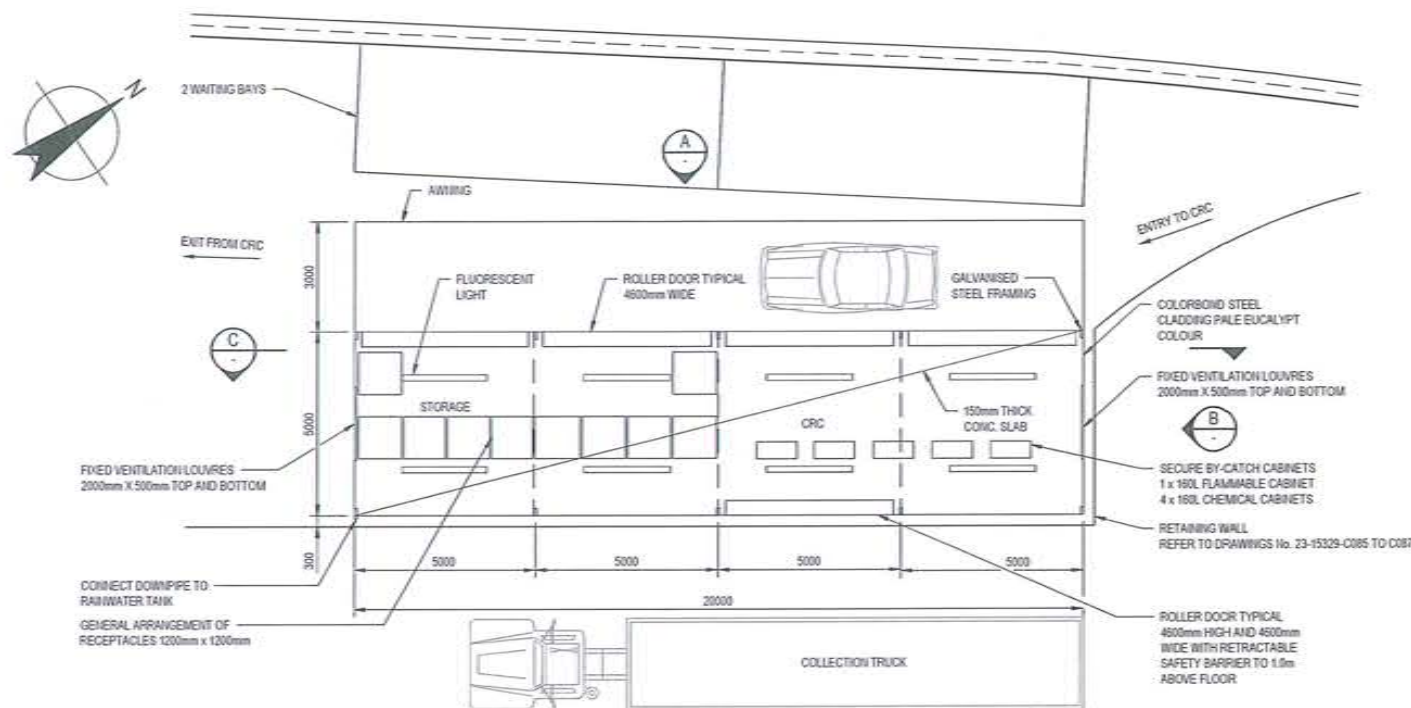
Original Size

A1

Griffith City Council
THARBOGANG WASTE TRANSFER STATION
SERVICES DETAILS, SEWER LONG SECTION
AND PIT SCHEDULE

Drawing No: 23-15329-C075

Rev: 2

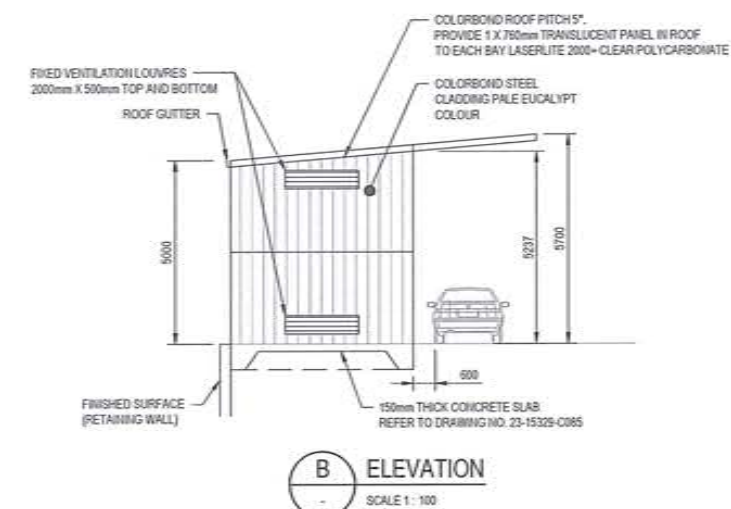


LIST OF CRC BUILDING REQUIREMENTS:

- BUILDING TO CONFORM TO ALL RELEVANT BCA REQUIREMENTS.
- 200mm THICK CONCRETE SLAB
- GALVANISED STEEL FRAMING
- COLORBOND STEEL CLADDING "PALE EUCALYPT" COLOUR
- PROVIDE 4 X ROLLER DOORS 4600mm HIGH X 4600mm WIDE WITH COLORBOND STEEL CLADDING "PALE EUCALYPT" COLOUR
- 8 X 2 X 36W FLUORESCENT BATTON, IP66 RATED WITH POLYCARBONATE DIFFUSER.
- PROVIDE 4 X IP66 RATED GPOs AT LOCATIONS TO BE DETERMINED BY GDC
- CONTRACTOR TO PROVIDE DETAIL DRAWINGS TO GRIFFITH CITY COUNCIL OR CERTIFIER FOR CONSTRUCTION CERTIFICATE
- SPECIFIED PRODUCTS "COLORBOND" AND "LASERLITE 2000+" SHALL NOT BE SUBSTITUTED WITH ALTERNATIVE PRODUCTS WITHOUT PRIOR APPROVAL FROM GRIFFITH CITY COUNCIL.

NOTES:

- FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
- FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C010.
- FOR FOOTINGS, REFER TO DRAWING No. 23-15329-C085 TO C088.
- FOR SECURITY LIGHTING, REFER TO DRAWING No. 23-15329-C071.
- POWER AND LIGHTING SUPPLY FED FROM DISTRIBUTION BOARD SITE OFFICE. ELECTRICAL SUPPLY TO ARRIVE TO BUILDING VIA UNDERGROUND CONDUIT. BRING CONDUIT UP INSIDE OF BUILDING AND RETICULATE ALONG BUILDING STRUCTURE IN CONDUIT.



GRIFFITH CITY COUNCIL CONSTRUCTION CERTIFICATE CIVIL WORK

NUMBER: 17.2015.83.1

DATE: 26/5/2015

SIGNED: [Signature]

* DIMENSIONS IN MILLIMETRES

2	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15
1	FURTHER REVISIONS FOLLOWING GCC COMMENTS	LDS	CJ*	JW*	01.04.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director
					Date

0 1000 2000 3000 4000 5000mm
SCALE 1:100 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

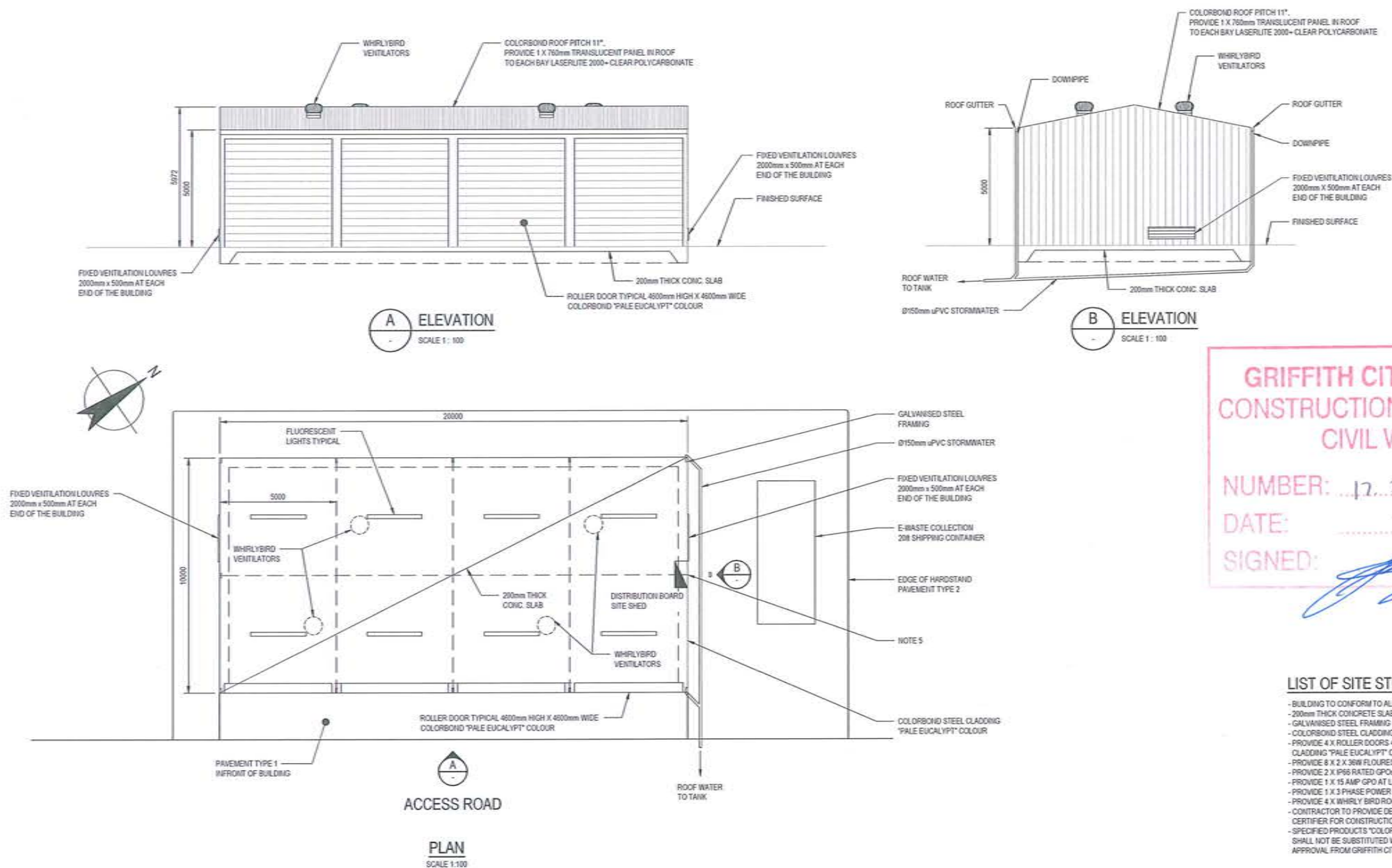
DO NOT SCALE

Conditions of Use.
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:100	This Drawing must not be used for Construction unless signed as Approved	

Client	GRIFFITH CITY COUNCIL
Project	THARBOGANG WASTE TRANSFER STATION
Title	COMMUNITY RECYCLING CENTRE BUILDING
Original Size	A1
Drawing No:	23-15329-C081

Rev: 2



**GRIFFITH CITY COUNCIL
 CONSTRUCTION CERTIFICATE
 CIVIL WORK**

NUMBER: 17.2015.83.1
 DATE: 26/5/2015
 SIGNED: _____

LIST OF SITE STORAGE SHED REQUIREMENTS:

- BUILDING TO CONFORM TO ALL RELEVANT SCA REQUIREMENTS.
- 200mm THICK CONCRETE SLAB
- GALVANISED STEEL FRAMING
- COLORBOND STEEL CLADDING "PALE EUCALYPT" COLOUR
- PROVIDE 4 X ROLLER DOORS 4600mm HIGH X 4600mm WIDE WITH COLORBOND STEEL CLADDING "PALE EUCALYPT" COLOUR
- PROVIDE 8 X 2 X 36W FLUORESCENT BATTON, IP66 RATED WITH WIRE CAGE
- PROVIDE 2 X IP66 RATED GPOs AT LOCATION DETERMINED BY GOC
- PROVIDE 1 X 15 AMP GPO AT LOCATION DETERMINED BY GOC
- PROVIDE 1 X 3 PHASE POWER OUTLET AT LOCATION DETERMINED BY GOC
- PROVIDE 4 X WHIRLY BIRD ROOF VENTILATORS
- CONTRACTOR TO PROVIDE DETAIL DRAWINGS TO GRIFFITH CITY COUNCIL OR CERTIFIER FOR CONSTRUCTION CERTIFICATE.
- SPECIFIED PRODUCTS "COLORBOND" AND "LASERLITE 2000"
- SHALL NOT BE SUBSTITUTED WITH ALTERNATIVE PRODUCTS WITHOUT PRIOR APPROVAL FROM GRIFFITH CITY COUNCIL.

NOTES:

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C010.
3. FOR FOOTINGS, REFER TO DRAWINGS No. 23-15329-C005 TO C008.
4. FOR SECURITY LIGHTING, REFER TO DRAWING No. 23-15329-C011.
5. ALLOW FOR 12 POLE, FORM 1 LOAD CENTRE MOUNTED INSIDE WALL OF STORAGE SHED. ELECTRICAL SUPPLY TO ARRIVE TO BUILDING VIA UNDERGROUND CONDUIT. BRING CONDUIT UP INSIDE OF BUILDING AND RETICULATE ALONG BUILDING STRUCTURE IN CONDUIT.

* DIMENSIONS IN MILLIMETRES

3	STRUCTURAL DRAWING REFERENCE	RGM	CJ*	JW*	21.04.15
2	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	16.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
No.	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



DO NOT SCALE

Conditions of Use:
 This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:100	This Drawing must not be used for Construction unless signed as Approved	

Client: **GRIFFITH CITY COUNCIL**
 Project: **THARBOGANG WASTE TRANSFER STATION**

SITE STORAGE SHED

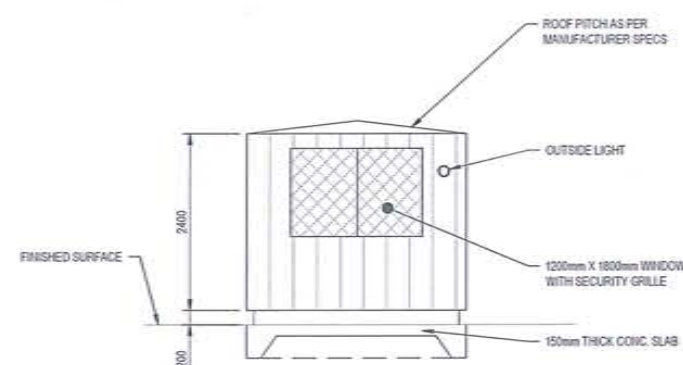
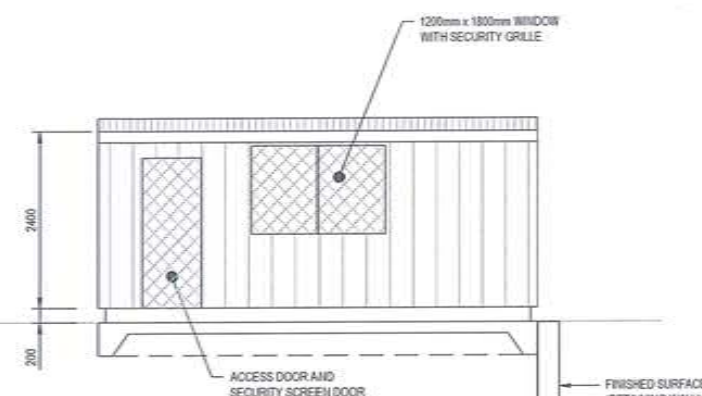
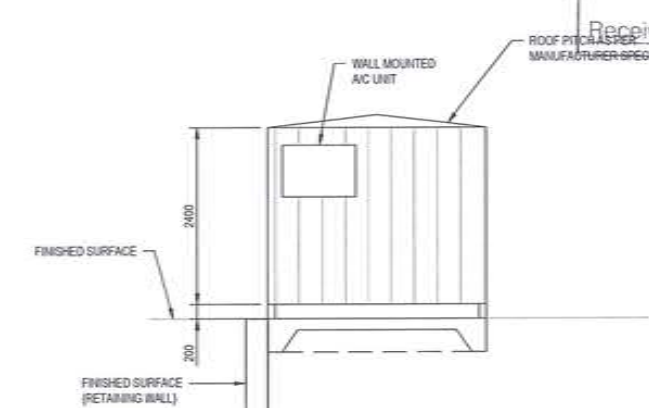
Drawing No: **23-15329-C082**

Rev: 3

20 MAY 2015

RECEIVED

Received by:

A ELEVATION
SCALE 1:50B ELEVATION
SCALE 1:50C ELEVATION
SCALE 1:50

**GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK**

NUMBER: 17-2015-83.1

DATE: 26/5/2015

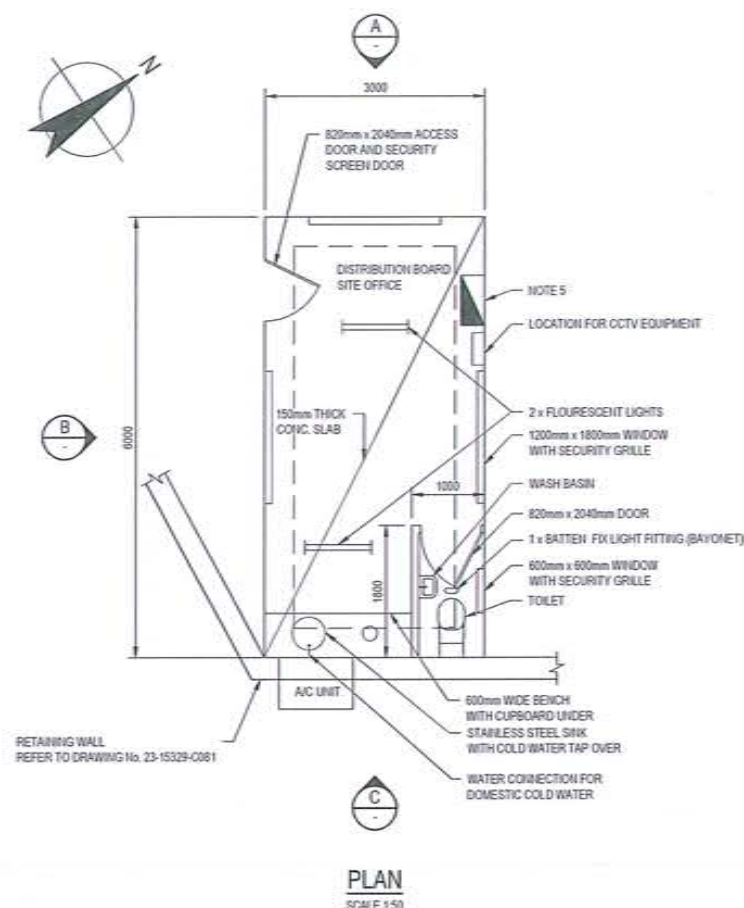
SIGNED:

LIST OF SITE OFFICE REQUIREMENTS:

- BUILDING IS TRANSPORTABLE SITE OFFICE AS SUPPLIED TO ORDER FROM SPECIALIST MANUFACTURER
- BUILDING TO CONFORM TO ALL RELEVANT SCA REQUIREMENTS
- 150mm THICK CONCRETE SLAB
- 2 X 2 X 36W FLUORESCENT BATTON IP68 RATED WITH WIRE CAGE
- PROVIDE REVERSE CYCLE AIR CONDITIONER WALL MOUNTED
- CONTRACTOR TO PROVIDE DETAIL DRAWINGS TO GRIFFITH CITY COUNCIL OR CERTIFIER FOR CONSTRUCTION CERTIFICATE
- FULLY SELF SUPPORTING SKID BEARERS
- ALL STEEL SUB-FLOOR FRAMES
- 19mm OR 22mm THICK T & G AQUA BAR FLOOR OR EQUIVALENT
- QUALITY VINYL FLOOR COVERING TO ENTIRE BUILDING
- WALLS 50mm THICK COLORBOND FULLY INSULATED SANDWICH PANEL
- CURVED ZINCALUME ROOF WITH COLORBOND GUTTERS TO LONG SIDES
- PROFILED COLORBOND FLASHING AND POWDER COATED ALUMINIUM EXTERNALLY AND INTERNALLY
- EXTERNAL SLIDING GLASS DOOR WITH SECURITY GRILLE
- ALUMINIUM WINDOWS WITH LOCKS AND FLYSCREEN WITH SECURITY GRILLE
- 4 GPO AT LOCATIONS DETERMINED BY GCC
- 2 X GPO FOR SECURITY EQUIPMENT AT LOCATIONS DETERMINED BY GCC
- FULLY LAMINATED CUPBOARDS
- ROLL TOP BENCHES
- STAINLESS STEEL SINK AND DRAIN BOARD
- QUALITY CHROME TAP WARE
- SECURE TIE-DOWN CHAINS TO BASE SLAB
- SEPARATE TOILET CUBICLE
- BATTEN FIX LIGHT FITTING TO TOILET CUBICLE

NOTES:

1. FOR GENERAL NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C082
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING No. 23-15329-C010
3. FOR FOOTINGS, REFER TO DRAWING No. 23-15329-C085 TO C088
4. FOR SECURITY LIGHTING, REFER TO DRAWING No. 23-15329-C071
5. DISTRIBUTION BOARD SITE OFFICE LOCATION DETERMINED BY GCC. ELECTRICAL SUPPLY TO ARRIVE TO BUILDING VIA UNDERGROUND CONDUIT. BRING CONDUIT UP INSIDE OF BUILDING AND RETICULATE ALONG BUILDING STRUCTURE IN CONDUIT.

PLAN
SCALE 1:50

* DIMENSIONS IN MILLIMETRES

3	DIMENSIONS FOR MILLIMETRES	RGM	CJ*	JW*	21.04.15
2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	CJ*	JW*	01.04.15
1	REVISION FOLLOWING CLIENT'S COMMENTS	ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION	ROP	CJ*	JW*	25.02.15
<small>No. Revision</small> <small>Note: * indicates signatures on original issue of drawing or last revision of drawing</small> <small>Drawn</small> <small>Job Manager</small> <small>Project Director</small> <small>Date</small>					

0 500 1000 1500 2000 2500mm
SCALE 1:50 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cdmall@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

Drawn	L. SOBREVILLA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:50	This Drawing must not be used for construction unless signed as Approved	

Client **GRIFFITH CITY COUNCIL**
Project **THARBOGANG WASTE TRANSFER STATION**

SITE OFFICE

Original Size
Drawing No: **23-15329-C083**

Rev: 3



Griffith City Council



20 MAY 2015

RECEIVED

Received by:

NOTES

1. REFER TO DRAWING No. 23-15329-C003 FOR GENERAL STRUCTURAL NOTES.
2. ALL CONCRETE TO BE GRADE 40.
3. ALL CONCRETE SLABS TO HAVE SURFACE HARDENER.
4. FOR SITE PREPARATION NOTES REFER AITKEN ROWE, REG. No. 6514-01 DATED 17th OCTOBER 2014.
5. PROVIDE STEEL ANGLE GUIDE RAILS FOR BINS AFFIXED TO CONCRETE SLAB AT ALIGNMENT TO SUIT BINS AS DIRECTED BY GRIFFITH CITY COUNCIL. GUIDE RAILS TO BE 50 x 50 x 6 ROLLED STEEL ANGLES PAINTED SAFETY YELLOW AND AFFIXED TO CONCRETE SURFACE WITH 12mm MASONRY ANCHORS AT 1.0m CENTRES. COUNTERSINK THE TOPS OF THE BOLTS TO BE FLUSH WITH THE FLANGE OF THE STEEL ANGLE.

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17 2015-831

DATE: 26/5/2015

SIGNED: [Signature]

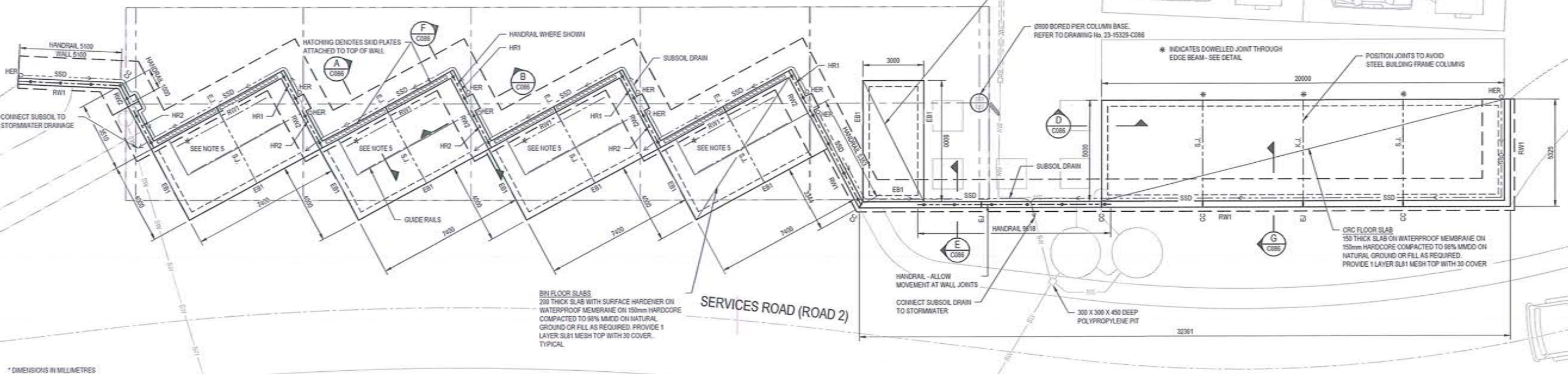
ACCESS ROAD (ROAD 1)

STORAGE SHED FLOOR SLAB
200 THICK SLAB ON WATERPROOF MEMBRANE ON
150mm HARDWARE COMPACTED TO 98% MMD ON
NATURAL GROUND OR FILL AS REQUIRED.
PROVIDE 1 LAYER SL81 MESH TOP WITH 30 COVERSITE OFFICE FLOOR SLAB
150 THICK SLAB ON WATERPROOF MEMBRANE ON
150mm HARDWARE COMPACTED TO 98% MMD ON
NATURAL GROUND OR FILL AS REQUIRED.
PROVIDE 1 LAYER SL81 MESH TOP WITH 30 COVERØ900 BORED PIER COLUMN BASE
REFER TO DRAWING No. 23-15329-C086* INDICATES DOWNELLED JOINT THROUGH
EDGE BEAM - SEE DETAILPOSITION JOINTS TO AVOID
STEEL BUILDING FRAME COLUMNSCRC FLOOR SLAB
150 THICK SLAB ON WATERPROOF MEMBRANE ON
150mm HARDWARE COMPACTED TO 98% MMD ON
NATURAL GROUND OR FILL AS REQUIRED.
PROVIDE 1 LAYER SL81 MESH TOP WITH 30 COVERBIN FLOOR SLABS
200 THICK SLAB WITH SURFACE HARDENER ON
WATERPROOF MEMBRANE ON 150mm HARDWARE
COMPACTED TO 98% MMD ON NATURAL
GROUND OR FILL AS REQUIRED. PROVIDE 1
LAYER SL81 MESH TOP WITH 30 COVER.
TYPICAL

SERVICES ROAD (ROAD 2)

HANDRAIL - ALLOW
MOVEMENT AT WALL JOINTSCONNECT SUBSOIL DRAIN
TO STORMWATER300 X 300 X 450 DEEP
POLYPROPYLENE PIT

32361



* DIMENSIONS IN MILLIMETRES

3	DIMENSIONS IN MILLIMETRES	RGM	CJ*	JW*	21.04.15	
2	FURTHER REVISIONS FOLLOWING GCC COMMENTS	LDS	CJ*	JW*	01.04.15	
1	REVISION FOLLOWING CLIENT'S COMMENTS	RDP	CJ*	JW*	19.03.15	
0	FOR CONSTRUCTION	DJW	CJ*	JW*	20.02.15	
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

0 1000 2000 3000 4000 5000mm
SCALE 1:100 AT ORIGINAL SIZELevel 7, 15 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1877 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn D.WILKINSON

Drafting Check B. REMEDIOS

Approved (Project Director)

Date 20.02.15

Scale AS SHOWN

Designer B. REMEDIOS

Design Check R. THOMPSON

This Drawing must not be
used for Construction unless
signed as Approved

Client

Project

Title

Original Size

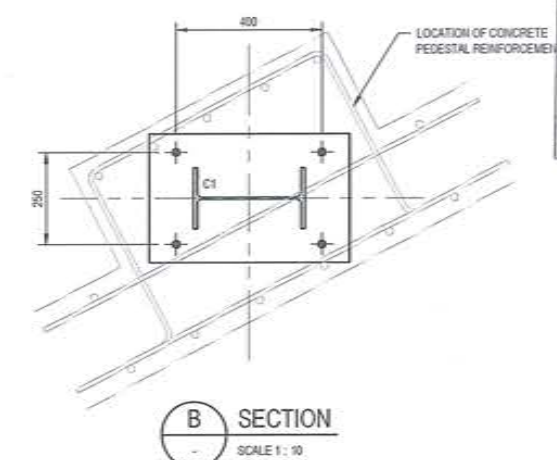
GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION
WTS AND ASSOCIATED RETAINING WALLS
LAYOUT PLAN

Drawing No: 23-15329-C085

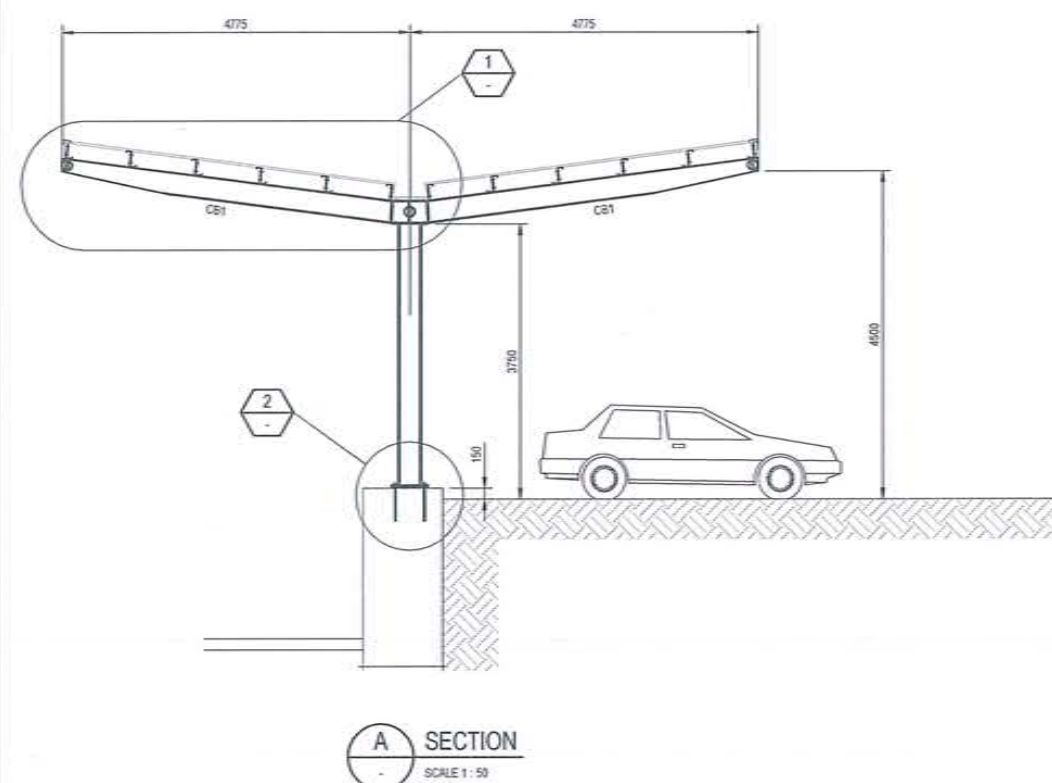
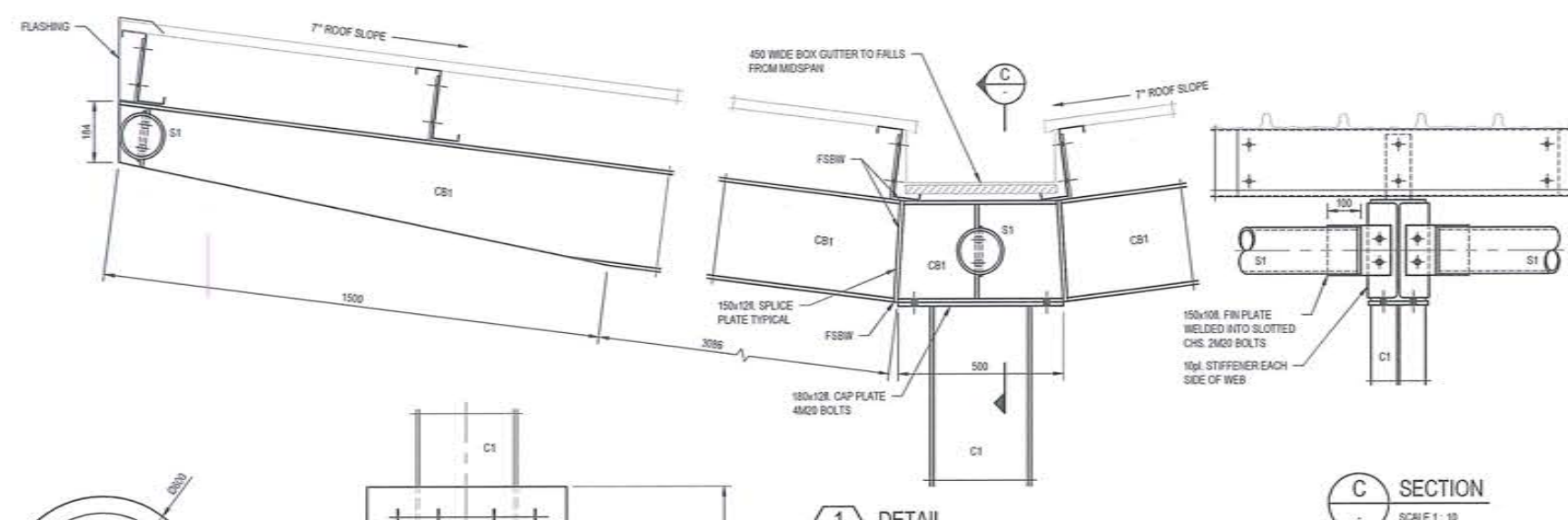
Rev: 3

RECEIVED

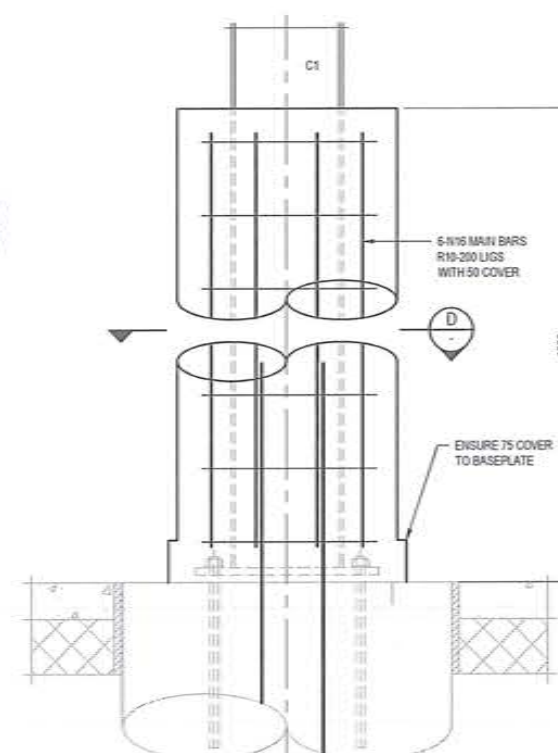
Received by:



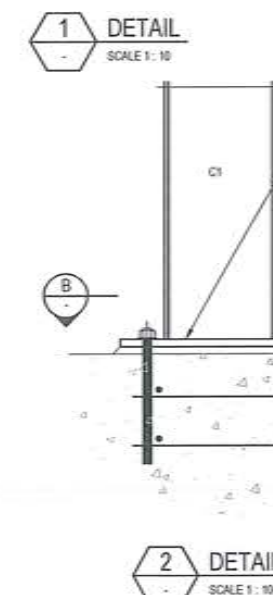
STEELWORK SCHEDULE		
MARK	SIZE	REMARKS
C21	310 UB 40	CANOPY ROOF BEAM
C1	310 UB 40	COLUMN
D4	300 x 300 x 10	STEEL



D SECTION
SCALE 1 : 10



CONCRETE ENCASEING TO COLUMN DETAIL



FIFTH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17.2015.83.1

DATE: 26/3/2015

NOTES:

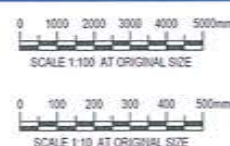
1. REFER TO DRAWING No. 23-15329-C003 FOR GENERAL NOTES.
2. ALL STEEL TO BE HOT DIP GALVANISED.

* DIMENSIONS IN MILLIMETRES

3	RETAINING WALL HEIGHT	RGM	C.J*	JW*	29.04.15
2	DIMENSIONS IN MILLIMETRES	RGM	C.J*	JW*	21.04.15
1	FURTHER REVISIONS FOLLOWING GCC COMMENTS	ROP	C.J*	JW*	01.04.15
0	FOR CONSTRUCTION	JT	C.J*	JW*	20.02.15
No.	Revision	Note: * indicates signatures on original/issue of drawing or last revision of drawing			Date

Plot Date: 28 April 2015, 9:35 AM Plotted by: Rhodain Madigan

Cad File No: Imdra-2014M5, Project/C3-15309-CADD/Crawins/C3-15309-C087.dwg



11/F Alphaland Southgate Tower 2258 Chino Roces Ave corner EDSA
Makati City 1232 Philippines
T 63 2 479 5600 F 63 2 479 5601
E enr@mail@ghd.com W www.ghd.com

DO NOT SCALE

GHD Pty Ltd
Conditions of Use.
This document may only be used by
GHD's client (and any other person
GHD has agreed can use this docu-
ment for the purpose for which it was pre-
pared and must not be used by any other
person or for any other purpose.

Drawn D. WILKINSON

Drafting a REMEDIOS®

Check	11/15/2000
Approved	J. W. C. & P. W. C.

Approved: J. NEAPPE
(Project Director)
Date: 30.02.15

Use	20.02.19
-----	----------

Designer: B. REMEDIOS

Design	R. THOMPSON
--------	-------------

	Check	Amount	Date

This Drawing must not

Client **GRIFF**

Project	THAR
---------	------

Tide	CANO
------	------

0.000

Original Size	
---------------	--

GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION
CANOPY STEELWORK DETAILS

Original Size: **A1** Drawing No: **23-15329-C087**

Rev: 3



Griffith City Council



20 MAY 2015

RECEIVED

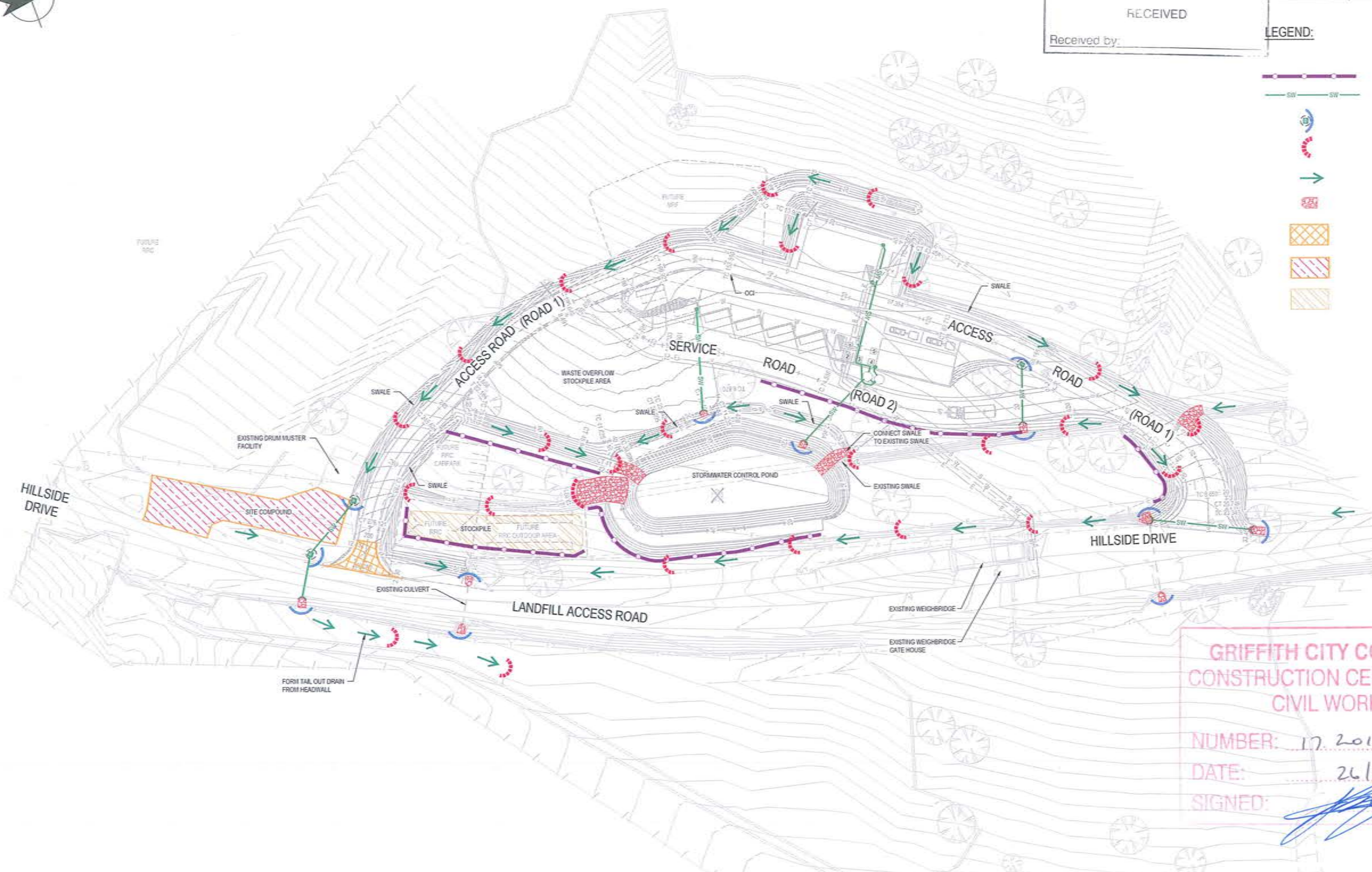
Received by:

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DRAWING No. 23-15329-C002.
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012.
3. FOR STORMWATER PLAN, REFER TO DRAWING No. 23-15329-C009.

LEGEND:

- SILT FENCE
- STORMWATER PIPE
- INLET PROTECTION AT PITS
- STRAIN BALES
- FLOW
- ROCK SCOUR PROTECTION
- STABILISED CONSTRUCTION ACCESS
- SITE COMPOUND
- STOCK PILE



GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17.2015.83.1

DATE: 26/5/2015

SIGNED:

No	Revision	Note	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS		ROP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION		ROP	CJ*	JW*	25.02.15

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street
Canberra ACT 2601 Australia
GPO Box 1677 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn E. CASILE

Designer R. SONEJA

Drafting Check G. DOUGHERTY*

Design Check G. DOUGHERTY*

Approved (Project Director)

J. WEARNE*

Date

25.02.15

Scale 1:500

This Drawing must not be
used for Construction unless
signed as Approved

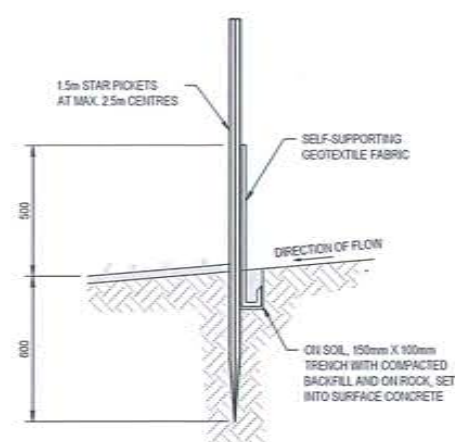
Client
Project
Title
Original Size
A1
Drawing No: 23-15329-C090

Rev: 1

20 MAY 2015

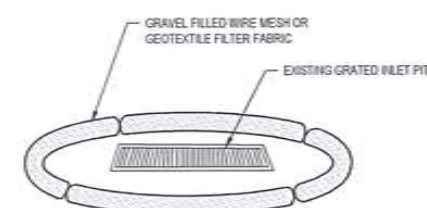
RECEIVED

Received by: _____



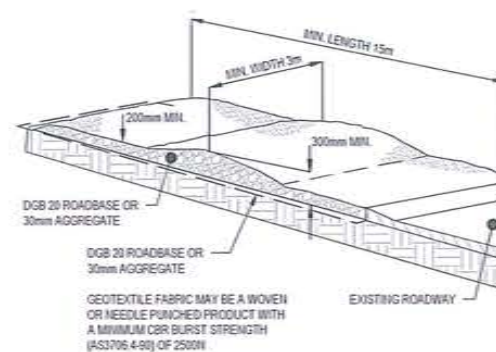
SILT FENCE DETAILS

NTS



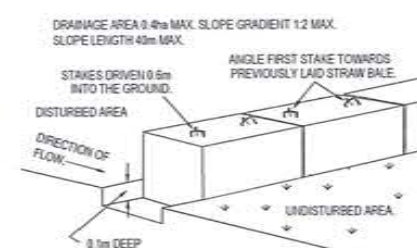
GRATED INLET FILTER

NTS



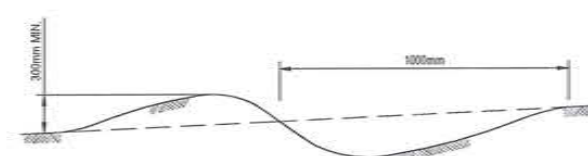
STABILISED SITE ACCESS

NTS



STRAW BALE SEDIMENT FILTER

NTS



DIVERSION BANK

NTS

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17-2015-83.1

DATE: 26/5/2015

SIGNED: _____

* DIMENSIONS IN MILLIMETRES

1	DIMENSIONS IN MILLIMETRES	REM	CJ	JW	21.04.15
0	FOR CONSTRUCTION	ROP	CJ	JW	25.02.15
No	Revision	Note	Job Manager	Project Director	Date

Plot Date: 7 May 2015 - 2:04 PM

Plotted by: Rhodilyn Martinez

Cad File No: \\mri-na-001\mri_projects\23-15329\CADD\Drawings\23-15329-C091.dwg



Level 7, 18 Marcus Clarke Street
 Canberra ACT 2601 Australia
 GPO Box 1877 Canberra ACT 2601
 T 61 2 6113 3200 F 61 2 6113 3299
 E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
 This document may only be used by
 GHD's client (and any other person who
 GHD has agreed can use this document)
 for the purpose for which it was prepared
 and must not be used by any other
 person or for any other purpose.

Drawn: D. WILKINSON

Designer: B. REMEDIOS

Drafting Check: B. REMEDIOS

Design Check: C. MACDONALD

Approved (Project Director): J. WEARNE

Date: 25.02.15

Scale: AS SHOWN

This Drawing must not be used for Construction unless signed as Approved

Client: GRIFFITH CITY COUNCIL
 Project: THARBOGANG WASTE TRANSFER STATION
 Title: EROSION AND SEDIMENT CONTROL DETAILS

Original Size: A1
 Drawing No: 23-15329-C091

Rev: 1



NOTES:

1. FOR NOTES AND LEGENDS, REFER TO DRAWING Nos. 23-15329-C002
2. FOR GENERAL ARRANGEMENT PLAN, REFER TO DRAWING Nos. 23-15329-C011 TO 23-15329-C012

LEGEND:

RE-GRASS ALL DISTURBED AREAS WITH DRY LAND GRASS

PLANT NEW TREE SPECIES SIZE

Griffith City Council



20 MAY 2015

RECEIVED

Received by: _____

GRIFFITH CITY COUNCIL
CONSTRUCTION CERTIFICATE
CIVIL WORK

NUMBER: 17/2015.83.1

DATE: 26/5/2015

SIGNED: _____

THARBOGANG WASTE TRANSFER STATION - TREE SCHEDULE							
TREE PLANTING							
QTY	CODE	PLANT SPECIES	COMMON NAME	CENTRES (mm)	CALLIPER	MATURE SIZE (ftm x Wm)	POT SIZE
8	Em	EUCALYPTUS dayeri	Dayer's Red Gum	AS SHOWN	10-20mm	20x8	200SR

THARBOGANG WASTE TRANSFER STATION - GRASS REINSTATEMENT				
GRASSING				
% OF MIX	SPECIES	COMMON NAME	RATE	QUANTITY
60	AUSTRODANTHOMA SETACEA	SMALL FLOWER WALLABY GRASS	6t/ha	2.775t
20	AMPHIPOGON CARICINUS	LONG GREYBEARD GRASS	2t/ha	0.926t
10	THYRIDOLEPIS MITCHELLIANA	MULGA MITCHELL GRASS	1t/ha	0.463t
10	AUSTROSTIPA SCABRA	SPEAR GRASS	1t/ha	0.463t

No	Revision	Note	Drawn	Job Manager	Project Director	Date
1	REVISION FOLLOWING CLIENT'S COMMENTS		RDP	CJ*	JW*	19.03.15
0	FOR CONSTRUCTION		RDP	CJ*	JW*	25.02.15

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE



Level 7, 16 Marcus Clarke Street,
Canberra ACT 2601 Australia
GPO Box 1577 Canberra ACT 2601
T 61 2 6113 3200 F 61 2 6113 3299
E cbrmail@ghd.com W www.ghd.com

DO NOT SCALE

Conditions of Use:
This document may only be used by
GHD's client (and any other person who
GHD has agreed can use this document)
for the purpose for which it was prepared
and must not be used by any other
person or for any other purpose.

Drawn	K. PALARCA	Designer	R. SONEJA
Drafting Check	G. DOUGHERTY*	Design Check	G. DOUGHERTY*
Approved (Project Director)	J. WEARNE*	Date	25.02.15
Scale	1:500	This Drawing must not be used for construction unless signed as Approved	

Client
Project
Title

GRIFFITH CITY COUNCIL
THARBOGANG WASTE TRANSFER STATION
LANDSCAPE PLAN

Original Size
Drawing No: 23-15329-C100

Rev: 1