Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6534/2021/1
Works approval holder	Shire of Coolgardie
Registered business address	Sylvester Street COOLGARDIE WA 6429
DWER file number	DER2021/000058
Duration	02/09/2021 to 01/09/2026
Date of issue	02/09/2021
Date of amendment	08/11/2021
Premises details	Coolgardie Waste Facility Coolgardie Tip Road COOLGARDIE WA 6492 Legal description - Crown Reserve 3497 Lot 501 on Deposited Plan 255090 As defined by the map and coordinates in Schedule 1 and 2

Prescribed premises category description (Schedule 1, ***Environmental Protection Regulations 1987***)	**Assessed design capacity**
Category 64: Class II or III putrescible landfill site	*30,000 tonnes per annual period*
Assessed activities directly related to the above categories	
Clearing of 25.7 hectares of native vegetation (CPS 9080/1)	

This works approval is granted to the works approval holder, subject to the attached conditions, on 08 November 2021

Jarrod Abrahams

Digitally signed by Jarrod Abrahams
Date: 2021.11.08 09:23:48 +08'00'

MANAGER WASTE INDUSTRIES REGULATORY SERVICES

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
02/09/2021	W6534/2021/1	Works approval granted.
08/11/2021	W6534/2021/1	Works approval amended to remove 'DRAFT' watermark (clerical error)

Interpretation

In this works approval:

(a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

  (i) if dated, refers to that particular version; and

  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

This works approval does not provide any implied authorisation for the clearing of native vegetation in order to meet the conditions or activities specified in this works approval. The clearing of native vegetation requires a separate Native Vegetation Clearing Permit issued under the EP Act.

Works approval conditions

Construction phase

General infrastructure and equipment

1. The works approval holder must:

(a) construct and/or install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction requirements;

(c) at the corresponding infrastructure location,

as set out in Table 1 below.

Table 1: Infrastructure and equipment design, construction, and installation requirements

Infrastructure	Design and construction requirements	Infrastructure location
Weighbridge	• 14 loadcell above ground multideck electronic weighbridge (42 m x 3.5 m). • Able to be calibrated as required in accordance with legislative requirements. • Capable of determining the mass of a vehicle, including prime movers, rubbish trucks and connected trailers.	As depicted in Schedule 1, Figure 2
Perimeter screening berm	• 730 m in length. • Accommodate an 8 m wide access track. • Constructed in accordance with the plans provided in Schedule 3.	As depicted in Schedule 1, Figure 2

Critical containment infrastructure

2. The works approval holder must:

(a) construct the critical containment infrastructure;

(b) in accordance with the corresponding design and construction requirements; and

(c) at the corresponding infrastructure location.

as set out in Table 2.

Table 2: Critical Containment Infrastructure design, construction, and installation requirements

Infrastructure	Design and construction requirements	Infrastructure location
Stage 1 Class III landfill cell - Basal liner	Permeability of less than $1x10^{-9}$ metres per second or equivalent. Constructed to the requirements specified within Schedule 3 comprising (top to bottom): a) Sacrificial geotextile (as required). b) Separation geotextile. c) 300 mm drainage aggregate comprising high-strength, non-calcareous rock. d) Cushion geotextile. e) 2 mm HDPE geomembrane(smooth) f) Geocomposite clay liner. g) 600mm compacted clay liner. h) Prepared subgrade. The works approval holder must undertake a leak detection survey following installation of the leachate drainage layer (item (c) as listed above) and before the separation geotextile installation. A dipole survey over the surface area of the completed leachate drainage aggregate shall be undertaken in accordance with ASTM D7007 to detect any defects within the geomembrane. All anomalies shall be investigated and repaired where required. Protection material shall be placed carefully around any pipework to ensure the pipework has sufficient and uniform support.	As depicted in Schedule 1, Figure 2
Stage 1 Class III landfill cell - Sidewall liner	Permeability of less than $1x10^{-9}$ metres per second or equivalent. Constructed to the requirements specified within Schedule 3, comprising (top to bottom): a) Soil protection layer b) Cushion geotextile c) 2 mm HDPE geomembrane (single sided textured, textured side down) d) Geocomposite clay liner e) 600mm compacted clay liner f) Prepared subgrade The works approval holder must undertake a leak detection survey following installation of the cushion (protection) geotextile (item (b) as listed above). The methodology utilised for the required leak detection survey may be either: arc testing (undertaken in accordance with ASTM D 7953 - 20); or, the water lance method (undertaken in accordance with ASTM D 7703 - 16).	As depicted in Schedule 1, Figure 2.

Infrastructure	Design and construction requirements	Infrastructure location
Internal dividing bund wall	1m (width) x 1m (height) compacted clay intermediate bund wall constructed at the stage 1 and 2 interface to prevent leachate discharging from an active landfilling area into inactive areas of the cell, and the flow of stormwater runoff into active tipping areas.	As depicted in Schedule 1, Figure 2.
Leachate collection sump, pump, and vertical sump riser pipe	Constructed to the requirements specified within Schedule 3.	As depicted in Schedule 1, Figure 2.
Leachate collection pipework within drainage aggregate layer	Constructed to the requirements specified within Schedule 3.	As depicted in Schedule 1, Figure 2.
Leachate conveyance system (pumps and pipework)	Minimum leachate pump capacity of 3 x 10^{-4} m^3/s (0.3 L/s) with a minimum head height of 20 m. Pump fitted with 50 mm pipe outlet. Flexible HDPES PE100 pipework suitable for high-demand applications in accordance with ISO 4427.	As depicted in Schedule 1, Figure 2.
Leachate evaporation pond	Permeability of less than 1x10^{-9} metres per second or equivalent. Leachate storage capacity of 4,249 m^3. Waterline dimensions of 50m x 50 m. Internal slope of 1 in 3. Leachate storage depth of 3 m (including 0.5 m freeboard). Constructed to the requirements specified within Schedule 3, comprising (top to bottom): • Ballast aggregate • HDPE geomembrane (smooth) • Gas dissipation system • 600 mm thick compacted clay liner • Prepared subgrade Leachate bund wall raised 1 m above ground to prevent stormwater inflows.	As depicted in Schedule 1, Figure 2.
Stormwater retention basins and associated infrastructure	Permeability of less than 1x10^{-9} metres per second or equivalent. Constructed to the requirements specified within Schedule 3. 0.5 m high perimeter diversion bund constructed on the crest of the cell walls.	As depicted in Schedule 1, Figure 2.

Construction quality assurance

3. The works approval holder must undertake construction quality assurance, including visual inspection and materials testing for the cushion and separation geotextiles, geocomposite clay liner and HDPE membrane specified in condition 2 in accordance the requirements set out in Schedule 4.

Baseline groundwater monitoring requirements

4. The works approval holder must undertake baseline groundwater monitoring in accordance with the requirements specified in Table 3.

Table 3: Groundwater monitoring requirements

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
BH01, BH02 and BH03 (as depicted in Schedule 1, Figure 3)	pH[1]	pH units	Spot sample	At least one sampling event prior to commencement of time limited operations.	AS/NZS 5667.1 and AS/NZS 5667.11
	Electrical conductivity	µS/cm			
	Standing water level (SWL)[2]	m AHD (and mbgl)			
	Biochemical oxygen demand	mg/L			
	Reactive phosphorus				
	Total phosphorus				
	Chloride				
	Total recoverable hydrocarbons				
	Total Nitrogen				
	Nitrate- nitrogen				
	Ammonia-nitrogen				
	Hexavalent chromium				
	Total chromium				
	Cadmium				
	Cobalt				

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
	Copper				
	Mercury				
	Molybdenum				
	Nickel				
	Lead				
	Zinc				
	Perflurooctane sulfonate (PFOS)	µg/L	Spot sample		Samples to be taken in accordance with the requirements specified in the PFAS NEMP, and AS/NZS 5667.11.1998.
	Perfluorooctanoic acid (PFOA)				
	6:2 Fluorotelomer sulfonate (6:2 FtS)				
	8:2 Fluorotelomer sulfonate (8:2 FtS)				
	Perfluoroheptanoic acid (PFHpA)				
	Perfluorobutane sulfonate (PFBS)				
	Perfluorobutanoic acid (PFBA)				
	Perfluorohexanoic acid (PFHxA)				
	Perfluorohexane sulfonate (PFHxs)				
	Perfluoropentanoic acid (PFPeA)				

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: SWL shall be determined prior to collection of other water samples.

Compliance reporting

5. The works approval holder must within 30 days of an item of infrastructure or equipment required by condition 1 being constructed and/or installed:

(a) Undertake an audit of their compliance with the requirements of condition 1; and

(b) Prepare and submit to the CEO an Environmental Compliance Report on that compliance.

6. The Environmental Compliance Report required by condition 5 must include as a minimum the following:

(a) Certification that that the items of infrastructure or component(s) thereof, as specified in condition 1 have been constructed in accordance with the relevant requirements specified in condition 1;

(b) Installation survey data and a detailed site location for each item of infrastructure or component of infrastructure specified in condition 1;

(c) Summary of groundwater monitoring required by condition 4. The summary/report should include as a minimum:

(i) a clear statement of the scope of work carried out;
(ii) a description of the field methodologies employed;
(iii) a diagram with aerial image overlay showing all monitoring locations and depicting groundwater level contours and flow direction. Relevant site features and other potential sources of contamination must also be shown;
(iv) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the Assessment and management of contaminated sites guideline;
(v) an interpretive summary and assessment of results against previous monitoring results; and
(vi) trend graphs to provide a graphical representation of historical results and to support the interpretive summary.

(d) Be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

7. The works approval holder must within 30 calendar days of the Critical Containment Infrastructure identified by condition 2 being constructed:

(a) undertake an audit of their compliance with the requirements of condition 2; and

(b) prepare and submit to the CEO a Critical Containment Infrastructure Report on that compliance.

8. The Critical Containment Infrastructure Report required by condition 7 must include as a minimum the following:

(a) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person;

(b) certification by a suitably Qualified Engineer that each item of critical containment infrastructure or component thereof, as specified in condition 2, has been built and installed in accordance with the requirements specified in condition 2;

(c) certification that the sub-grade and liner components are free of fault or defect, built to the design specification and fit for the intended purpose;

(d) an assessment of construction quality assurance test results as required by condition 3, including a summary of failures, corrective measures, and retest results;

(e) as constructed plans and a detailed site plan showing the location and dimensions for each item of critical containment infrastructure or component thereof, as specified in condition 2;

(f) photographic evidence of the installation of the infrastructure; and

(g) a Quality Control / Quality Assurance Certificate from an independent third party which demonstrates that specific component/s of critical containment infrastructure meets specification/s as detailed in condition 2 and condition 3.

Dust and windblown waste

9. The works approval holder shall ensure that any dust emitted from the premises does not unreasonably interfere with the health, welfare, convenience, comfort, or amenity of any person who is not on the premises.

10. The works approval holder must ensure that:

(a) all reasonable and practicable measures are taken to ensure that no windblown waste escapes from the premises; and

(b) any windblown waste is collected on at least a weekly basis and returned to the active landfilling area or otherwise appropriately contained.

Time limited operations

Commencement and duration

11. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 2:

(a) where the CEO has notified the works approval holder that the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 2 meets the requirements of that condition (and related conditions 7 and 8).

12. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 13 (as applicable):

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 11 for that item of infrastructure; or

(b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 12(a).

13. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 4 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirement set out in Table 4.

Table 4: Infrastructure and equipment requirements during time limited operations

Site infrastructure and equipment	Operational requirement	Infrastructure location
Class III cell – Stage 1	Dust emissions managed in accordance with the requirements in condition 9. Windblown waste managed in accordance with the requirements in condition 10. Deposited waste material to be covered in accordance with requirements set out in condition 17, Table 7: Cover requirements.	As depicted in Figure 2

Site infrastructure and equipment	Operational requirement	Infrastructure location
Leachate evaporation pond	• Maintain a minimum storage volume of 4,249 m^3 • Maintain a minimum freeboard of 0.5 m • Liner modified to incorporate a gas dissipation system, comprising vents installed above the required freeboard level.	As depicted in Figure 2
Stormwater retention basin	Contains surface water runoff produced as a result of a 1 in 20-year storm event.	
Weighbridge	Calibrated and operated in accordance with the requirements of the *National Measurement Act 1960.*	

Waste acceptance

14. The works approval holder must only accept onto the premises waste of a waste type, which does not exceed the corresponding rate at which waste is received, and which meets the corresponding acceptance specification set out in Table 5;

Table 5: Types of waste authorised to be accepted onto the premises

Waste type	Rate at which waste is received	Acceptance specification
Clean fill	Combined total of 30,000 tonnes per annum	None specified
Uncontaminated fill		
Inert waste type 1		
Inert waste type 2		
Putrescible waste		
Neutralised acid sulfate soil		Must meet the acceptance criteria for Class III landfills as specified in the Landfill Definitions.
Special waste type 1		Wrapped or otherwise contained in a manner that prevents asbestos fibres entering the atmosphere.
Special waste type 2		Biomedical and clinical wastes excluding wastes which require incineration as specified in Department of Health Code of Practice for Clinical and Related Waste Management, *Public Health Act 2016 (*February 2021).

Waste type	Rate at which waste is received	Acceptance specification
Special waste type 3		Soils and other solid wastes impacted by Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) which meet the acceptance criteria for Class III landfills as specified in Schedule 5 and the acceptance criteria for Class III landfills as specified in the Landfill Definitions for contaminants other than PFAS.
Contaminated solid waste		Must meet the acceptance criteria for Class III landfills as specified in the Landfill Definitions.

15. The works approval holder must ensure that where waste does not meet the waste acceptance criteria set out in condition 14, it is removed from the premises by the delivery vehicle or, where that is not possible, stored in a quarantined storage area or container and removed to an appropriately authorised facility as soon as practicable.

Waste processing

16. The works approval holder shall ensure that wastes accepted onto the premises are only subjected to the process(es) set out in Table 6 and in accordance with any process limits or specifications described in that table.

Table 6: Waste processing

Waste type	Process(es)	Process limits or specifications [1, 2]
Clean fill	Disposal of waste by landfilling	None specified
Uncontaminated fill		
Inert waste type 1		
Inert waste type 2		
Neutralised acid sulfate soil		
Putrescible waste		
Special waste type 1		• Special Waste Type 1 must be disposed of in a manner that prevents asbestos fibres entering the atmosphere. • A representative of the works approval holder is available to witness the burial of the asbestos waste as soon as practical after placement in the landfill and sign a bound, numbered register, a numbered file register or record keeping equivalent within 2 hours of the burial to attest that it has been buried in accordance with the

Waste type	Process(es)	Process limits or specifications [1, 2]
		specifications set out in this table and the cover requirements provided in Table 7. • The disposal area(s) for any more than one cubic metre of Special Waste Type 1 is defined by use of a satellite geographical positioning system or grid references on the premises plan. • A copy of the premises plan marked with the locations used for asbestos disposal as described above, should be kept as a permanent record.
Special waste type 2		None specified
Special waste type 3		
Contaminated solid waste		

Note 1: Requirements for landfilling tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.

Note 2: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004.*

17. During time limited operations the works approval holder must ensure that cover is applied to waste in accordance with Table 7 and that sufficient stockpiles of cover material are maintained onsite at all times.

Table 7: Cover requirements

Waste type	Material[1]	Depth[1]	Timescales
Inert Waste Type 1	No cover required		
Uncontaminated fill			
Clean fill			
Inert Waste Type 2[1]	Inert waste type 1, clean fill, soil, or clay	100 mm	As soon as practicable after deposit.
Putrescible Wastes	Inert waste type 1, clean fill, soil, or clay	150 mm	As soon as practicable after deposit.
Special Waste Type 1 – wrapped in heavy plastic	Inert waste type 1, clean fill, soil, or clay	150 mm	As soon as practicable after deposit.

Waste type	Material[1]	Depth[1]	Timescales
Special Waste Type 1 – ACM and/or asbestos contaminated soil that is not wrapped in heady duty plastic	Inert waste type 1[2] or clean fill, soil, or clay	300 mm	Immediately after deposit and prior to compaction.
Special Waste Type 2	Inert Waste type 1 or Clean Fill, soil, or clay	300 mm	As soon as practicable after deposit.
Special Waste Type 3	Inert waste type 1, clean fill, soil, or clay	100 mm	As soon as practicable after deposit.
Contaminated solid waste Neutralised acid sulfate soils	Inert waste type 1, clean fill, soil, or clay	150 mm	By the end of the working day.

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987.*
Note 2: Inert waste type 1 materials used for the cover of unwrapped/uncontained asbestos contaminated soils must be equal to or less than 10 mm fraction size and uniform in profile to eliminate void spaces in the cover layer.

Monitoring of waste inputs and outputs

18. The works approval holder must record the total amount of waste accepted onto the premises, for each waste type listed in Table 8, in the corresponding unit, and for each corresponding time period, as set out in Table 8.

Table 8: Monitoring of inputs and outputs

Waste type	Parameter	Units	Frequency
All waste types as defined in the Landfill Definitions	Waste inputs	Tonnes	Each load arriving at the premises.
	Waste outputs		Each load rejected from or removed from the premises.

Environmental Monitoring

19. The works approval holder must monitor the groundwater during time limited operations for concentrations of the identified parameters in accordance with Table 9.

Table 9: Monitoring of groundwater quality

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
BH01, BH02 and	pH[1]	pH units	Spot sample	Quarterly	AS/NZS 5667.1 and

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
BH03 (as depicted in Schedule 1, Figure 3)	Electrical conductivity	µS/cm			AS/NZS 5667.11
	Standing water level (SWL)[2]	m AHD (and mbgl)			
	Biochemical oxygen demand	mg/L			
	Reactive phosphorus				
	Total phosphorus				
	Chloride				
	Total recoverable hydrocarbons				
	Total Nitrogen				
	Nitrate- nitrogen				
	Ammonia-nitrogen				
	Hexavalent chromium				
	Total chromium				
	Cadmium				
	Cobalt				
	Copper				
	Mercury				
	Molybdenum				
	Nickel				
	Lead				
	Zinc				
BH01, BH02 and BH03 (as depicted in Schedule	Perflurooctane sulfonate (PFOS)	µg/L	Spot sample	Quarterly	Samples to be taken in accordance with the requirements specified in the
	Perfluorooctanoic acid (PFOA)				
	6:2 Fluorotelomer sulfonate (6:2 FtS)				

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
1, Figure 3)	8:2 Fluorotelomer sulfonate (8:2 FtS)				PFAS NEMP, and AS/NZS 5667.11.1998.
	Perfluoroheptanoic acid (PFHpA)				
	Perfluorobutane sulfonate (PFBS)				
	Perfluorobutanoic acid (PFBA)				
	Perfluorohexanoic acid (PFHxA)				
	Perfluorohexane sulfonate (PFHxs)				
	Perfluoropentanoic acid (PFPeA)				

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: SWL shall be determined prior to collection of other water samples.

20. The works approval holder must monitor leachate and surface water during time limited operations for concentrations of the identified parameters in accordance with Table 10.

Table 10: monitoring of surface water and leachate quality

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
Ll01, SW01 and SW02 (as depicted in Schedule 1, Figure 3)	pH[1]	pH units	Spot sample	Quarterly	AS/NZS 5667.1 and AS/NZS 5667.11
	Electrical conductivity	µS/cm			
	Water depth	cm			
	Biochemical oxygen demand	mg/L			
	Reactive phosphorus				
	Total phosphorus				
	Chloride				
	Total recoverable hydrocarbons				
	Total Nitrogen				
	Nitrate- nitrogen				
	Ammonia-nitrogen				

Monitoring location	Parameter	Unit	Averaging period	Frequency	Sampling methodology
	Hexavalent chromium				
	Total chromium				
	Cadmium				
	Cobalt				
	Copper				
	Mercury				
	Molybdenum				
	Nickel				
	Lead				
	Zinc				
Ll01, SW01 and SW02	Perflurooctane sulfonate (PFOS)	µg/L	Spot sample	Quarterly	Samples to be taken in accordance with the requirements specified in the PFAS NEMP, and AS/NZS 5667.11.1998.
	Perfluorooctanoic acid (PFOA)				
	6:2 Fluorotelomer sulfonate (6:2 FtS)				
	8:2 Fluorotelomer sulfonate (8:2 FtS)				
	Perfluoroheptanoic acid (PFHpA)				
	Perfluorobutane sulfonate (PFBS)				
	Perfluorobutanoic acid (PFBA)				
	Perfluorohexanoic acid (PFHxA)				
	Perfluorohexane sulfonate (PFHxs)				
	Perfluoropentanoic acid (PFPeA)				

Note 1: In-field non-NATA accredited analysis permitted.

Compliance reporting

21. The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations or 60 calendar days before the expiration date of the works approval, whichever is the sooner.

22. The works approval holder must ensure the report required by condition 21 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of waste processed;

(b) a summary of waste acceptance as monitored in accordance with condition 18.

(c) A summary of groundwater, surface water and leachate monitoring results obtained in accordance with condition 18 and condition19. The summary/report should include as a minimum:

(i) a clear statement of the scope of work carried out;
(ii) a description of the field methodologies employed;
(iii) a diagram with aerial image overlay showing all monitoring locations and depicting groundwater level contours and flow direction. Relevant site features and other potential sources of contamination must also be shown;
(iv) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the Assessment and management of contaminated sites guideline;
(v) an interpretive summary and assessment of results against previous monitoring results; and
(vi) trend graphs to provide a graphical representation of historical results and to support the interpretive summary.

(d) a summary of the environmental performance of all infrastructure as constructed or installed (as applicable), which includes records detailing the:

(i) Performance of the leachate collection system;
(ii) Performance of the stormwater management infrastructure.

(e) a review of performance and compliance against the conditions of the works approval for time limited operations.

(f) where the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting (general)

23. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.

24. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1 and condition 2;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 13;

(c) monitoring programmes undertaken in accordance with condition 18 and condition 19; and

(d) complaints received under condition 23.

25. The books specified under condition 24 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 11 have the meanings defined.

Table 11: Definitions

Term	Definition
ACM	Means asbestos-containing material
annual period	a 12-month period commencing from 1 July until 30 June of the immediately following year.
asbestos	as defined in the Asbestos Guidelines
Assessment and management of contaminated sites guideline	Means the Department of Environment Regulation's *Assessment and management of contaminated sites Contaminated sites guidelines* December 2014
AS 1289	means the Australian Standard 1289 Methods of testing soils for engineering purposes
AS 1289.3.6.2	means the Australian Standard 1289.3.6.2 Soil classification tests Determination of the particle size distribution of a soil Analysis by sieving in combination with hydrometer analysis (subsidiary method)
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 Water quality - Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 Water quality - sampling - guidance on sampling groundwater.
AS 2001.2.3	means the Australian Standard AS 2001.2.3 Methods of test for textiles - Physical tests - Determination of breaking force and extension of textile fabrics
AS 3704	means the Australian Standard AS 3704 Geosynthetics-Glossary of Terms
AS 3705	means the Australian Standard AS 3705 Geotextiles-Identification, marking and general data
AS 3706.1	means the Australian Standard AS 3706.1 Geotextiles - Methods of test - General requirements, sampling, conditioning, basic physical properties and statistical analysis
AS 3706.3	means the Australian Standard AS 3706.3 Determination of tearing strength - Trapezoidal method.
AS 3706.4	means the Australian Standard AS 3706.4 Determination of burst strength - California bearing ratio (CBR) - Plunger method
AS 3706.7	means the Australian Standard AS 3706.7 Determination of pore-size distribution - Dry-sieving method.
AS 3706.9	means the Australian Standard AS 3706.9 Determination of permittivity, permeability and flow rate
ASTM D4354	means the American Society for Testing and Material (ASTM) Standard Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing
ASTM D4355	means the American Society for Testing and Material (ASTM) Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water

Term	Definition
ASTM D4491	means the American Society for Testing and Material (ASTM) Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4533	means the American Society for Testing and Material (ASTM) Standard Test Method for Trapezoid Tearing Strength of Geotextiles
ASTM D4632	means the American Society for Testing and Material (ASTM) Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D4751	means the American Society for Testing and Material (ASTM) Standard Test Method for Determining Apparent Opening Size of a Geotextile
ASTM D4833	means the American Society for Testing and Material (ASTM) Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D4873	means the American Society for Testing and Material (ASTM) Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D5199	means the American Society for Testing and Material (ASTM) Standard Test Method for Measuring the Nominal Thickness of Geosynthetics
ASTM D5514	means the American Society for Testing and Material (ASTM) Standard Test Method for Large Scale Hydrostatic Puncture Testing of Geosynthetics
ASTM D5888	means the American Society for Testing and Material (ASTM) Standard Guide for Storage and Handling of Geosynthetic Clay Liners
ASTM D5889	means the American Society for Testing and Material (ASTM) Standard Practice for Quality Control of Geosynthetic Clay Liners
ASTM D6072	means the American Society for Testing and Material (ASTM) Standard Practice for Obtaining Samples of Geosynthetic Clay Liners
ASTM D6102	means the American Society for Testing and Material (ASTM) Standard Guide for Installation of Geosynthetic Clay Liners
ASTM D6495	means the American Society for Testing and Material (ASTM) Guide for Acceptance Testing Requirements for Geosynthetic Clay Liners
ASTM D7007	means the ASTM International Standard ASTM D7007 Standard Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earth Materials
ASTM D 7703 –16	means the ASTM International Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Lance Method
ASTM D 7953 – 20	means the ASTM International Standard Practice for Electrical Leak Location on Exposed Geomembranes Using the Arc Testing Method
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
clean fill	as defined in the Landfill Definitions.
condition	a condition to which this works approval is subject under section 62 of the EP Act.

Term	Definition
construction and demolition waste (C&D waste)	as defined in the Landfill Definitions.
Controlled Waste Regulations	*Environmental Protection (Controlled Waste) Regulations 2004* (WA).
critical containment infrastructure	means the items of infrastructure listed in condition 2
Critical Containment Infrastructure Report	means a report to satisfy the CEO that works of critical containment infrastructure have been constructed in accordance with the works approval.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V Division 3 of the EP Act.
damp	means moist to the touch.
delivery vehicle	means the vehicle in which the waste material was delivered.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
excessive wrinkles	Wrinkles in HDPE liners which, at the time of backfilling: • Are nominally >100 mm in height • May fold during placement of the overlying layer • May adversely impede of flow along the surface of the geomembrane
GCL3	Means the Geosynthetic Research Institute (GRI) standard Specification for Test Methods, Required Properties, and Testing Frequencies of Geosynthetic Clay Liners
Inert Waste Type 1	as defined in the Landfill Definitions.
Inert Waste Type 2	as defined in the Landfill Definitions.
Inert Waste Type 3	as defined in the Landfill Definitions.
PFAS NEMP	means the PFAS National Environmental Management Plan Version 2.0- January 2020, published by the Australian Government: Department of Water and Environment

Term	Definition
Landfill Definitions	*Landfill Waste Classification and Waste Definitions 1996*, as amended from time to time.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
Special Waste Type 1	as defined in the Landfill Definitions.
strong wind conditions	means wind speeds of 22 knots or greater, or a Beaufort Scale rating of 6 or greater.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
Qualified Engineer	means a person who: a) holds a Bachelor of Engineering recognised by the Institute of Engineers; and b) has a minimum of five years of experience working in a supervisory area of geotechnical engineering; and c) is employed by an independent third party external to the Works Approval Holder's business.
Quarterly	means where monitoring events are undertaken within each three-month fiscal quarter, specifically: • Quarter 1 (July–September) • Quarter 2 (October–December) • Quarter 3 (January–March) • Quarter 4 (April - June), And in which monitoring for each quarter is undertaken such that there are at least 45 days in between each quarterly sampling event.
waste	has the same meaning given to that term under the EP Act.
Rayment & Lyons 2011 15A1	Means method 15A1 as described in Rayment GE, Lyons DJ (2011) *'Soil chemical methods – Australasia'*. (CSIRO Publishing: Collingwood)
waste type	means waste types identified in the Landfill Definitions and/or in Schedule 1 of the Controlled Waste Regulations (as applicable).
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (**Figure 1**).

Figure 1: Premises boundary

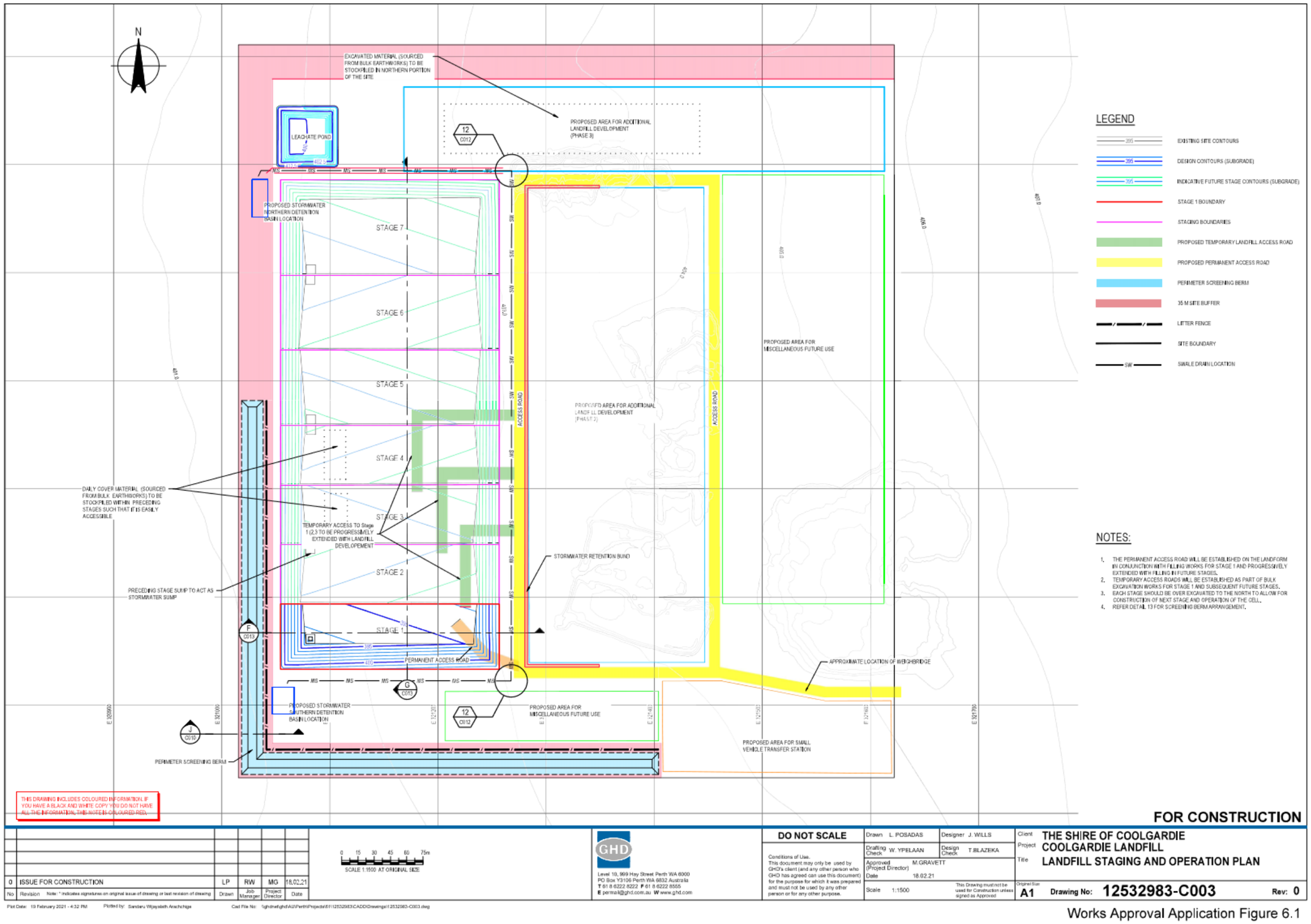

Figure 2: Landfill staging and operation plan

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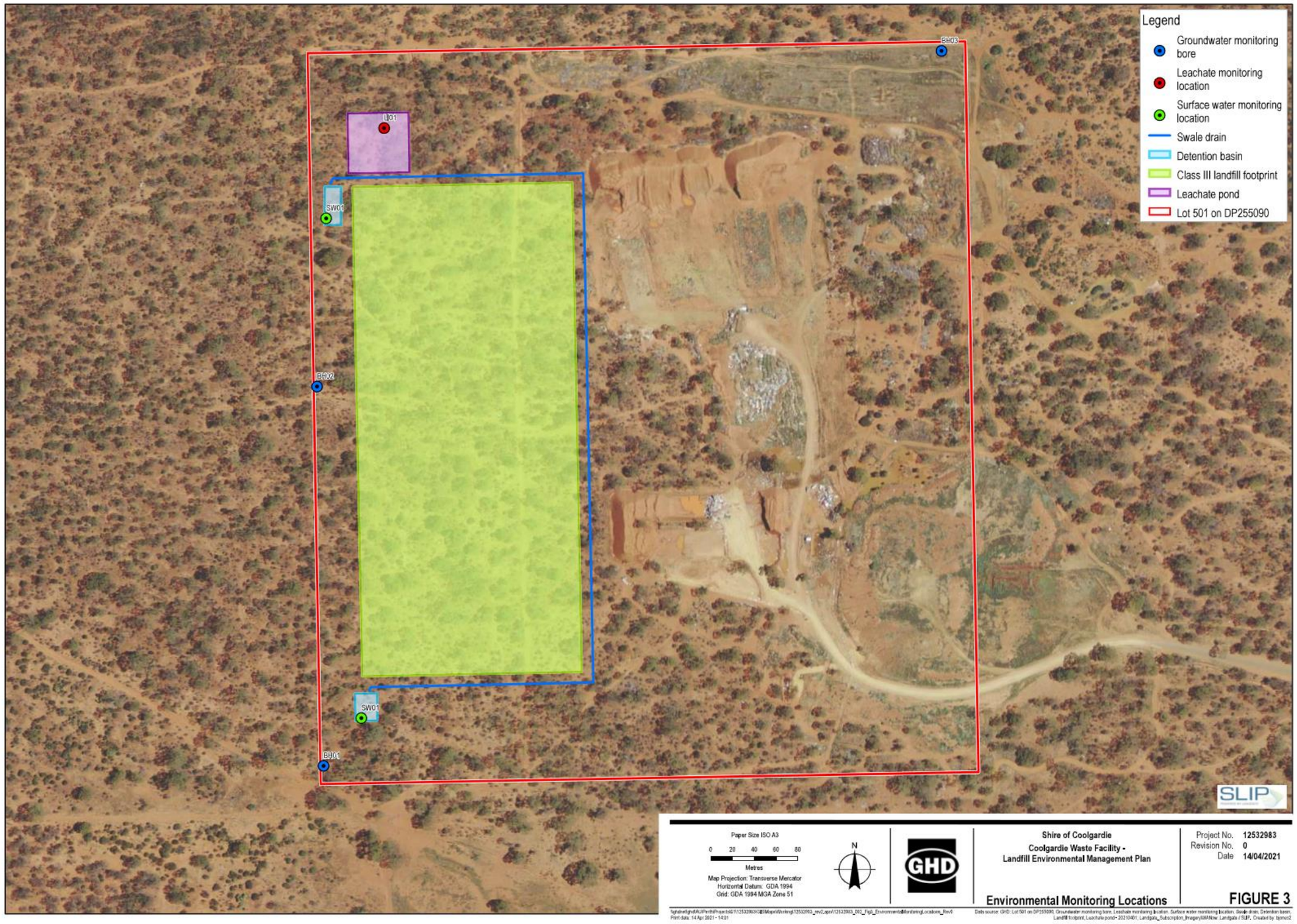

Figure 3: Environmental monitoring locations

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Schedule 2: Premises boundary

The premises boundary is defined by the coordinates in Table 12.

Table 12: Premises boundary coordinates

Easting	Northing
321008	6574801
321612	6574812
321624	6574141
321020	6574130

Table 13: Groundwater monitoring bore locations

Bore ID	Easting (m)	Northing (m)	Screen depth (mbgl)	Purpose
BH01	321023	6574147	23.0 – 34.5	Hydraulically down gradient
BH02	321017	6574495	29.0 – 35.0	Hydraulically down gradient
BH03	321590	6574803	23.0 – 35.0	Hydraulically up gradient

Schedule 3: Landfill Cell and Leachate Pond Construction and Installation Requirements

The works approval holder rmust construct the infrastructure detailed in Column 1 in accordance with the requirements listed in Column 2 and the design drawings as specified in Column 3 of Table 14.

Table 14: Cell construction and installation requirements

Infrastructure	Specifications/requirements	Site Plan/drawing reference
Class III cell - Stage 1	• Stage 1 is the only stage authorised to be constructed under this works approval.	Figure 2: Landfill staging and operation plan.
Stage 1 - Anchor trench	• 500 mm deep by 500 mm wide. • Following installation of HDPE membrane, anchor trenches shall be temporarily anchored with sandbags prior to installation of cushion geotextile. • The trenches shall be backfilled with engineered fill while liner materials are in the relaxed state, in full contact with subgrade and without wrinkles or folds.	Figure 4: Stage 1 sections and details (1)
Stage 1 – Separation geotextile	Separation geotextile shall: • Be a needle-punched, non-woven geotextile. • Be certified by the manufacturer as needle free. • Be composed of polyester or polypropylene polymers. • Be specified to meet grab tensile strength of 900 N, trapezoidal tear strength of 350 kN/m and CBR burst strength of 2,000 N.	Figure 4: Stage 1 sections and details (1)
Stage 1 – 300 mm drainage aggregate layer	• Comprise 50/20 mm aggregate high-strength, non-calcareous rock. • Minimum thickness of 300 mm. • Hydraulic conductivity not less than $1x10^{-3}$ m/s. • Placement of the drainage layer shall only be conducted following the installation of the cushion geotextile.	Figure 6: Stage 1 sections and details (3) Figure 8: Stage 1 top of drainage layer
Stage 1 – Cushion geotextile	Cushion geotextile shall: • Be a needle-punched, non-woven geotextile specifically designed for protection applications. • Be certified by the manufacturer as needle free. • Be composed of polyester or polypropylene polymers.	Figure 4: Stage 1 sections and details (1)

Infrastructure	Specifications/requirements	Site Plan/drawing reference
	• Meet or exceed the acceptance criteria in Table 20: Cushion geotextile CQA requirements.	
Stage 1 – HDPE geomembrane	Each roll or panel shall carry a label which identifies, as a minimum: • Product name, grade, and name of manufacturer • Date of manufacture, batch number • Material thickness • Roll number • Roll length • Roll weight • Roll width • Handling guidelines • Reference numbers to raw material batch and laboratory certified reports • Manufacturers approved quality assurance stamp and the technician's signature All geomembrane rolls and samples shall be identified in accordance with ASTM D4873. 2 mm HDPE geomembrane. Sandbags or equivalent ballast shall be used as necessary to temporarily hold the geomembrane in position and prevent uplift by wind (Sandbag material shall be sufficiently close-knit to prevent soil fines from working through the bags and discharging on the geomembrane). Only those geomembrane rolls which can be seamed or permanently anchored on at least two sides on the same day shall be placed on a daily basis. All other sides shall be temporarily anchored. **Side walls** • HDPE geomembrane (single sided textured, textured side down). • Free of irregular stressing, folds, and excessive wrinkles. • No damages left without repair. • All seams are continuous. • The surface is clean prior to placement of overlying material. **Cell base** • HDPE geomembrane (smooth). • Free of irregular stressing, folds, and excessive wrinkles.	Figure 4: Stage 1 sections and details (1)

Infrastructure	Specifications/requirements	Site Plan/drawing reference
	• No damages left without repair. • All seams are continuous. • The surface is clean prior to placement of overlying material. **<u>Weld locations</u>** The geomembrane panel placement shall take into consideration the site geometry including: • Field seams shall be orientated parallel to the line of maximum slope. • No cross-seams (transverse seams) shall be permitted on batters or within 1.5 m of the toe of the batter. • In corners and odd shaped geometric locations, the number and total length of field seams shall be minimised. • All primary welds used to connect panel ends to sheets shall form T-joins (tees). These T-connections shall have a distance of at least 0.5 m, and be patched, tested, and recorded by the CQA Engineer on the welding logs and cross referenced to the as-built drawings. The welding seams of the geomembrane cannot cross (no cruciform connections).	
Stage 1 – Geocomposite clay liner (GCL)	The GCL shall: • Be new, first quality products manufactured for the works. • Be a proprietary product comprising a layer of natural sodium bentonite powder (6) of uniform thickness and consistency, reinforced by stitch-bonding or needle-punching to fully integrate the cover and carrier geotextile/s and constrained by thermally locking. • Comply with the acceptance criteria set out in Table 18: Geocomposite clay liner CQA requirements.	Figure 4: Stage 1 sections and details (1)
Stage 1 – Compacted clay liner	• Constructed in three 200 mm lifts and compacted to minimum density ratio of 95% standard. • Clay will be moisture conditioned to achieve a moisture content of +1% to +3% of the optimum moisture content. • The surface will be conditioned until covered by Geocomposite liners to reduce cracking and other impacts of deformation.	Figure 4: Stage 1 sections and details (1) Figure 7: Stage 1 top of clay
Stage 1 – Subgrade	• Constructed in conjunction with bulk excavation works from in-situ sandy clays. • If the in-situ material does not constitute a 'clayey subgrade' or contains large particles / rocks, 200 mm of in-situ material shall be removed and reworked/replaced to provide a suitable base for the clay liner installation.	Figure 4: Stage 1 sections and details (1)

Table 15: Leachate and stormwater management system construction and installation requirements

Infrastructure	Specifications/requirements	Site Plan/drawing reference
Stage 1 - Leachate collection sump, pump, and vertical riser pipe	• Sump specifications and dimensions detailed in Figure 6. • Riser foundation slab thickness of 400 mm. • Riser foundation slab constructed using concrete of exposure classification U, concrete grade S40, and reinforced using SL72 mesh. • Vertical riser pipe constructed and vertically extended with 2 m sections of DN1200 HDPE pipe. • Pump minimum flow rate of 2 m^3/hr at a minimum dynamic head of 40 m. (Note: this pump performance is expected to allow for at least 50% excess capacity above the likely requirements established as part of the design). • Pump motor to meet IP68 ingress protection requirements. (Note: explosion protection ratings to be determined as part of the detailed design). • Pump fitted with an extraction pipe system and suitable reflux valves. • Pump affixed to a stainless-steel chain of suitable strength and sufficient in length to exceed the maximum height of the sump riser cover at the maximum vertical extension of the final landform in the sump location by no less than 1 m. • Vertical extraction system comprises a lay-flat hose of suitable strength connected to a suitably sized HDPE pipe at surface level. • Surface level HDPE pipe connected into the main transfer pipe via suitable reflux valves and joints. • Pump controlled by suitably specified and selected pressure transducers, or alternative, with settings for pump start, pump stop and high-level alarms.	Figure 6: Stage 1 sections and details (3)
Stage 1 - Leachate collection system pipework	• 160 mm diameter PE100 PN16 HDPE pipework for high demand piping applications in accordance with ISO 4427 spaced at 25m to maintain the liquid head below 300 mm. • The connection points of the pipe work along the cell base invert must be 'through-flow' connections facilitating both the flow of leachate and access for camera and pipe flushing • The internal pipe diameter shall be maintained in all joins. • End caps are to be fitted to the three north-south aligned leachate collection pipes.	Figure 6: Stage 1 sections and details (3) Figure 8: Stage 1 top of drainage layer.
Leachate evaporation pond	• Composite lining system to achieve a permeability of less than $1x10^{-9}$ metres per second or equivalent (refer to Table 2 and Figures 10 and 11 for the liner configuration). • 200 mm thick layer of ballast aggregate overlaying the composite lining system comprising high-strength, non-calcareous rock. • Designed to contain leachate and stormwater produced as a result of a 1 in 20-year storm event. • Designed to maintain a freeboard of no less than 500 mm.	Figure 10: Leachate pond details and sections Figure 11: Leachate pond cross section

Infrastructure	Specifications/requirements	Site Plan/drawing reference
	• Full circle cuts will be cut into the geomembrane above the freeboard for gas dissipation. Cuts will then be covered with circular geomembrane flaps of a larger diameter than the aperture. The flaps will be extrusion welded to the main geomembrane in the upper 240° of the flaps to prevent rainwater ingress from above.	Figure 12: Leachate pond top of clay Figure 13: Leachate pond top of subgrade
Stormwater management system (southern detention basin, associated bunds and contour banks)	• A 0.5 m high perimeter bund to be constructed on the crest of the cell walls, so that stormwater will not run into the landfill cell • Stormwater management infrastructure shall be constructed to divert uncontaminated stormwater around Leachate ponds 3 and 4, and shall be constructed to the following specifications: • All drains, pipes, culverts and other stormwater drainage infrastructure shall be designed to convey peak flow rate corresponding to a 1 in 20-year storm event, with available freeboard to contain discharge corresponding to a 1 in 20-year storm event.	Figure 9: Stormwater retention basins

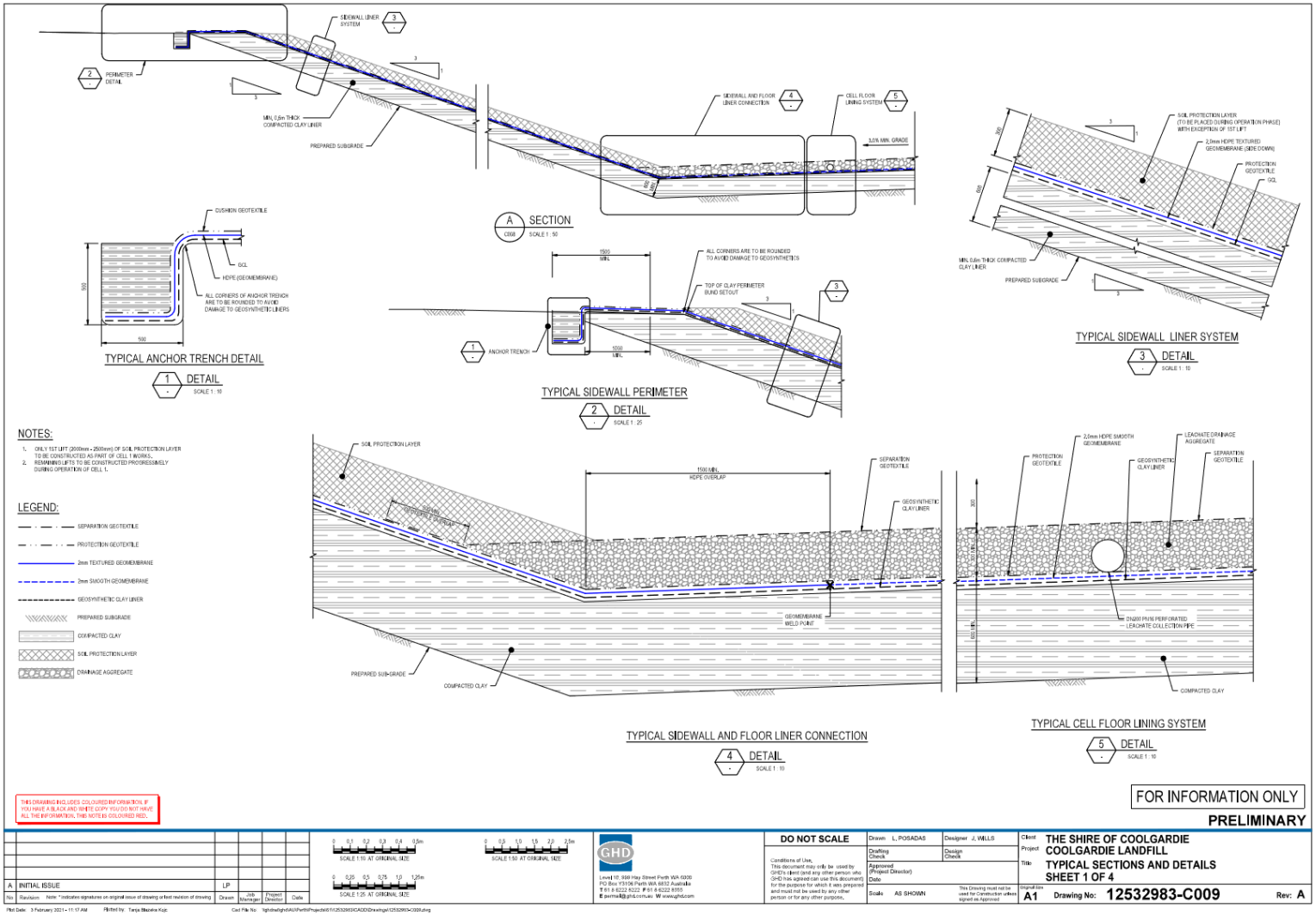

Figure 4: Stage 1 sections and details (1)

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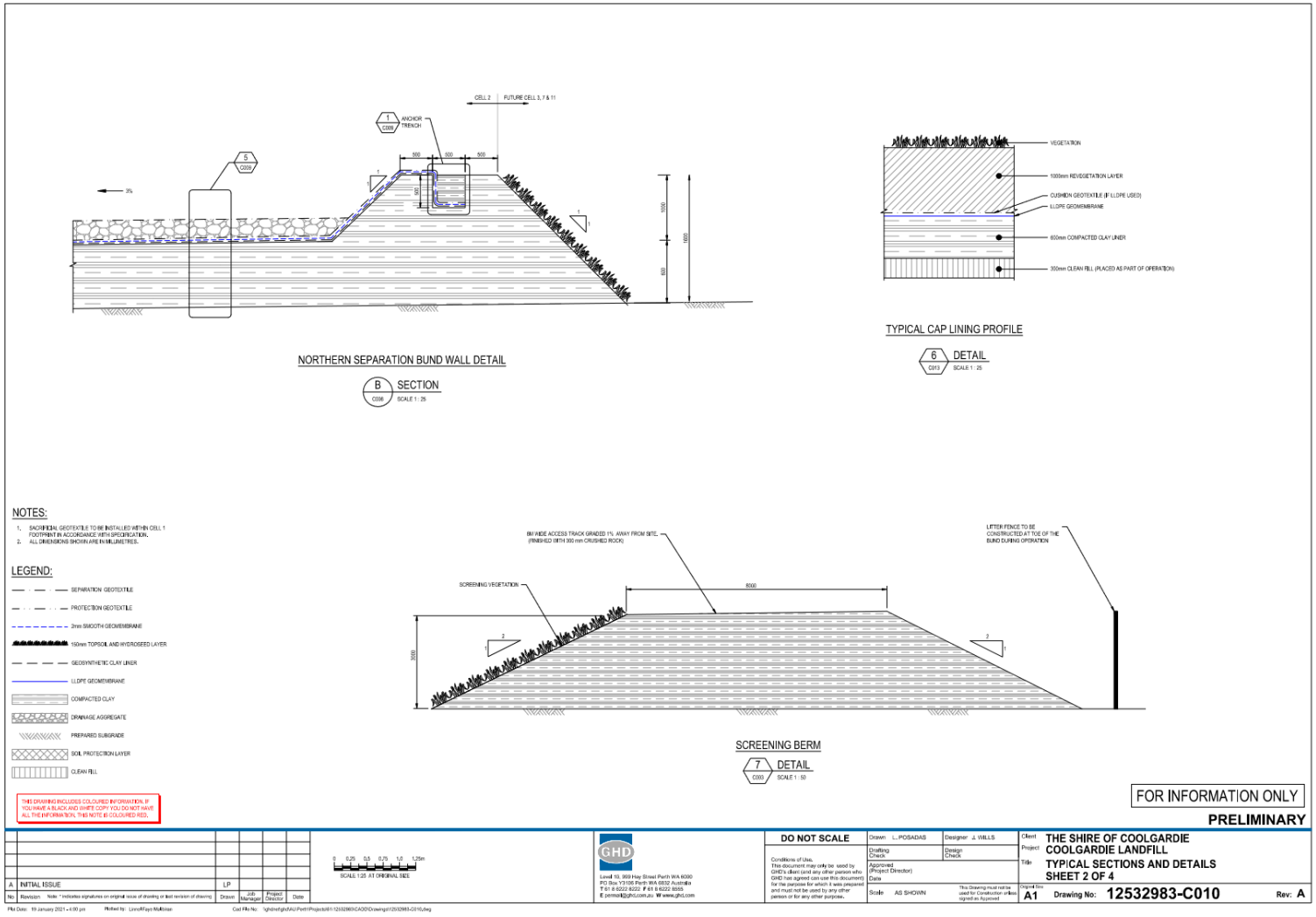

Figure 5: Stage 1 sections and details (2)

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File number: DER2021/000058

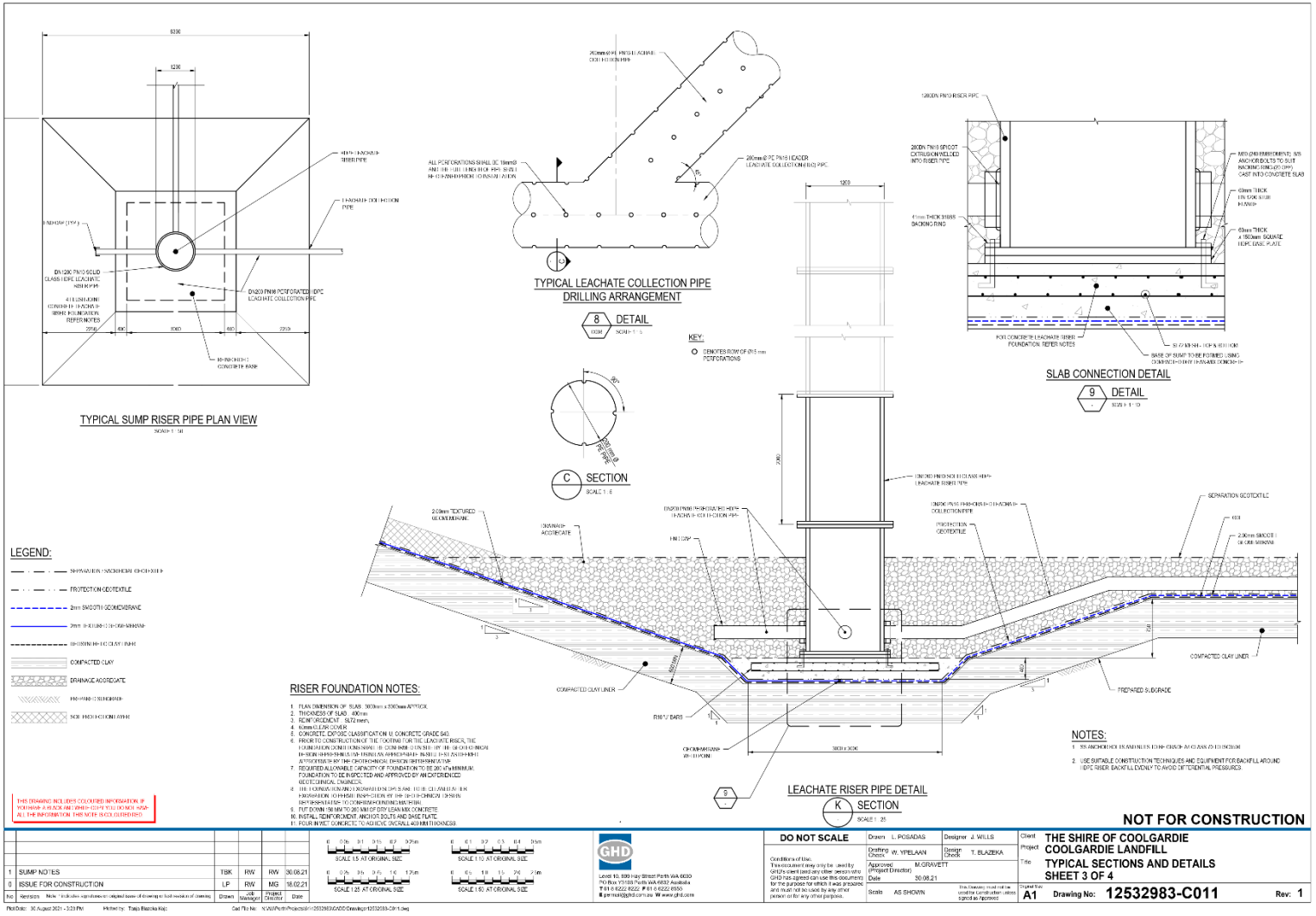

Figure 6: Stage 1 sections and details (3)

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File number: DER2021/000058

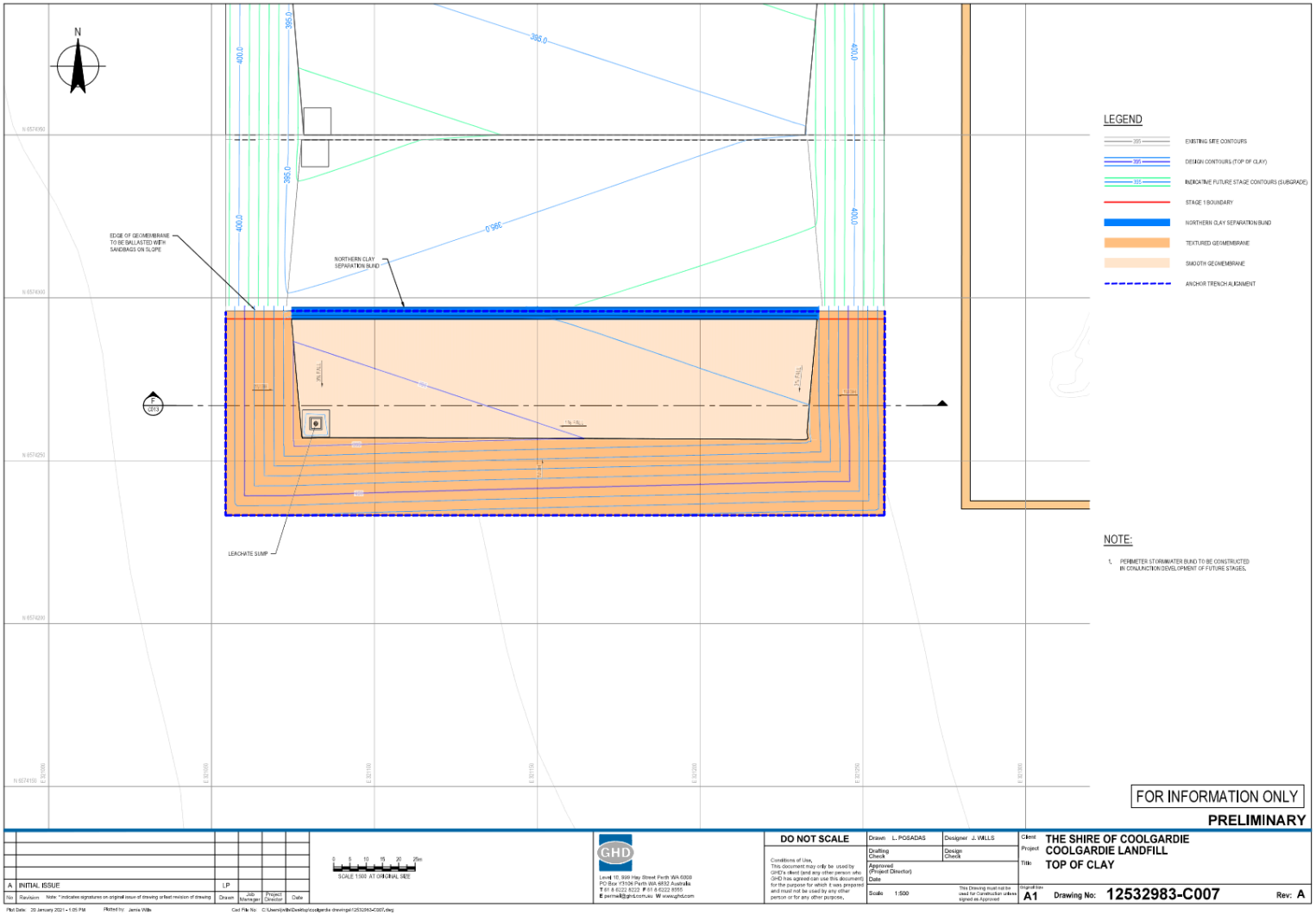

Figure 7: Stage 1 top of clay

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File number: DER2021/000058

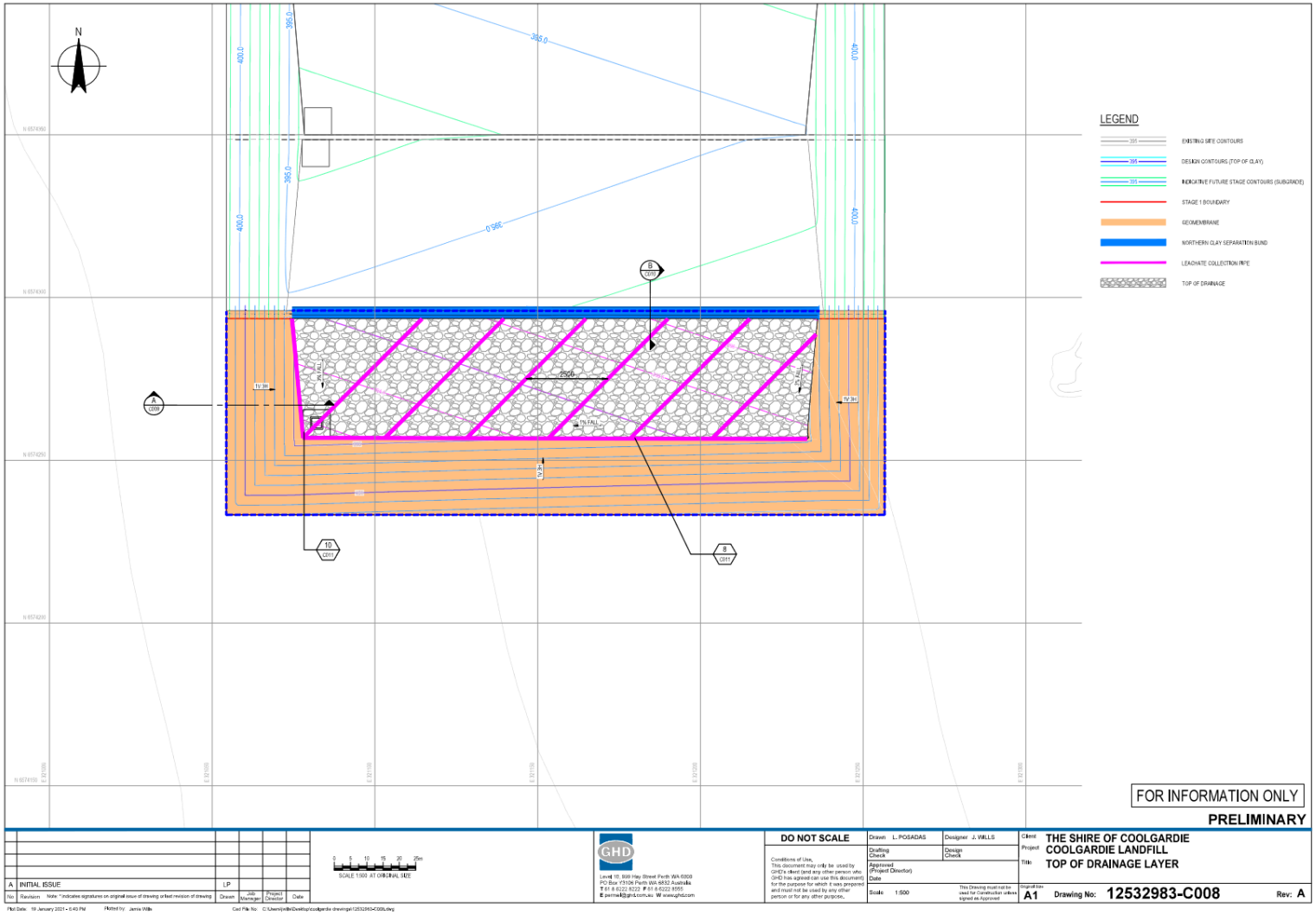

Figure 8: Stage 1 top of drainage layer

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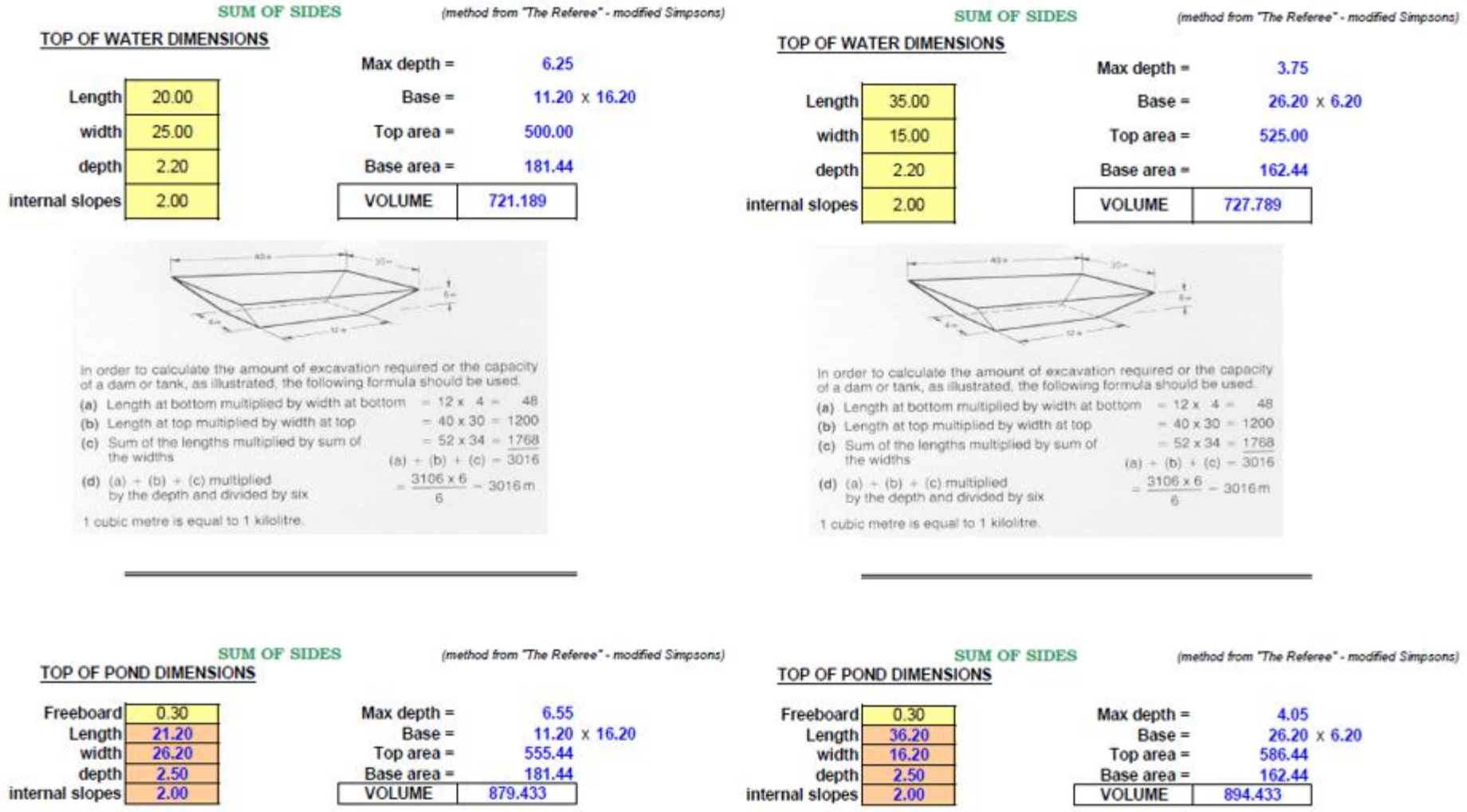

Figure 9: Stormwater retention basins

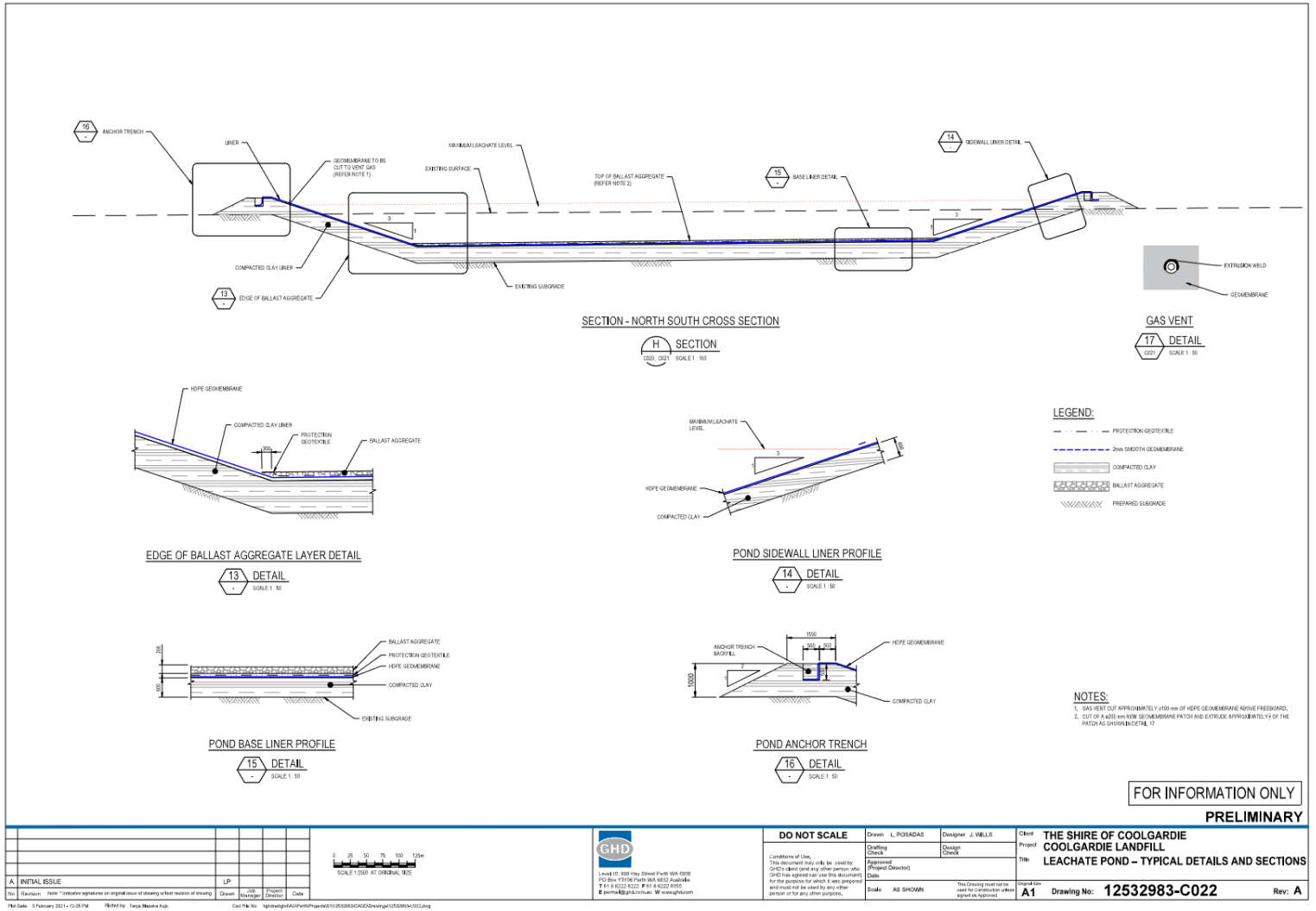

Figure 10: Leachate pond details and sections

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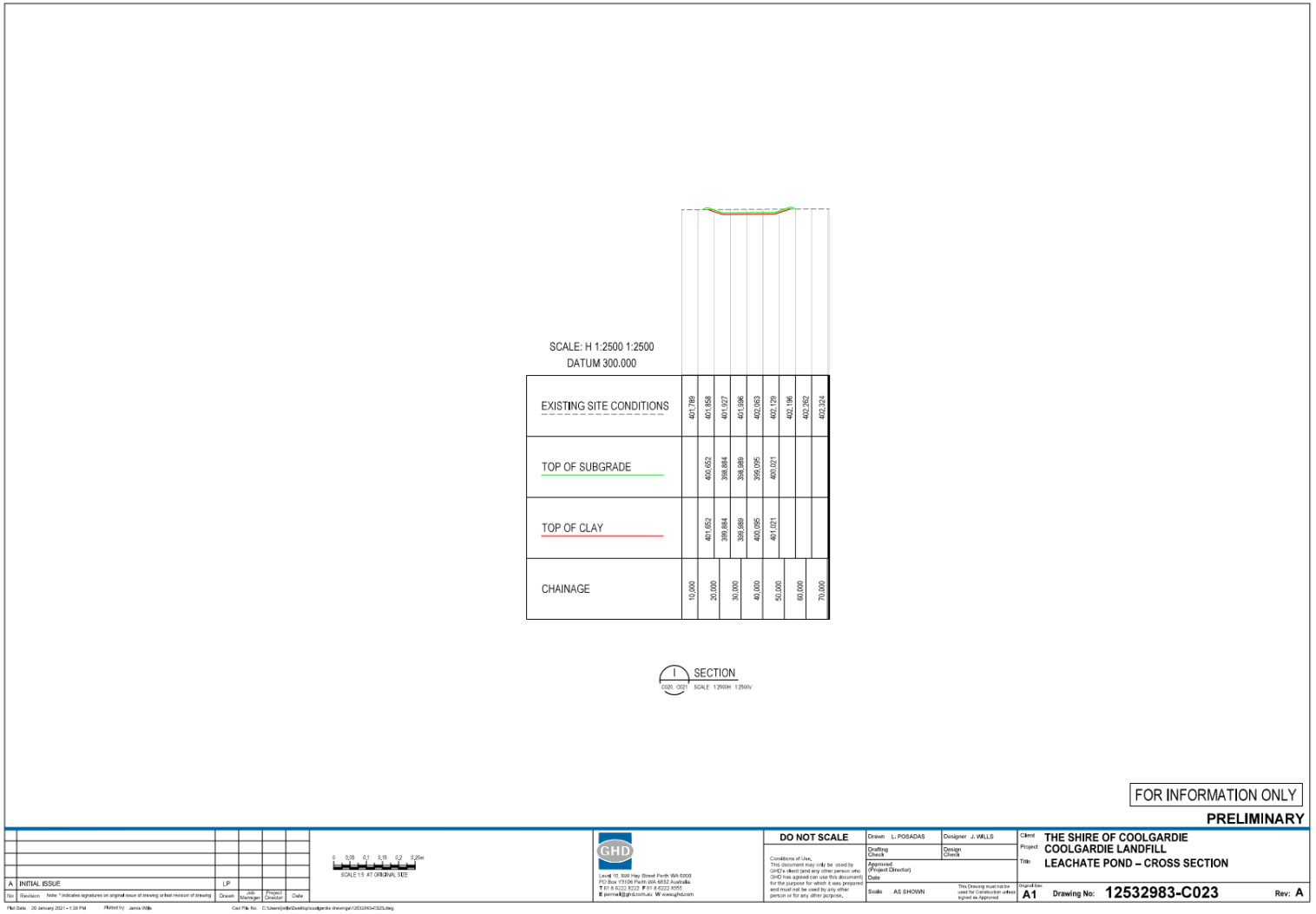

Figure 11: Leachate pond cross section

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File number: DER2021/000058

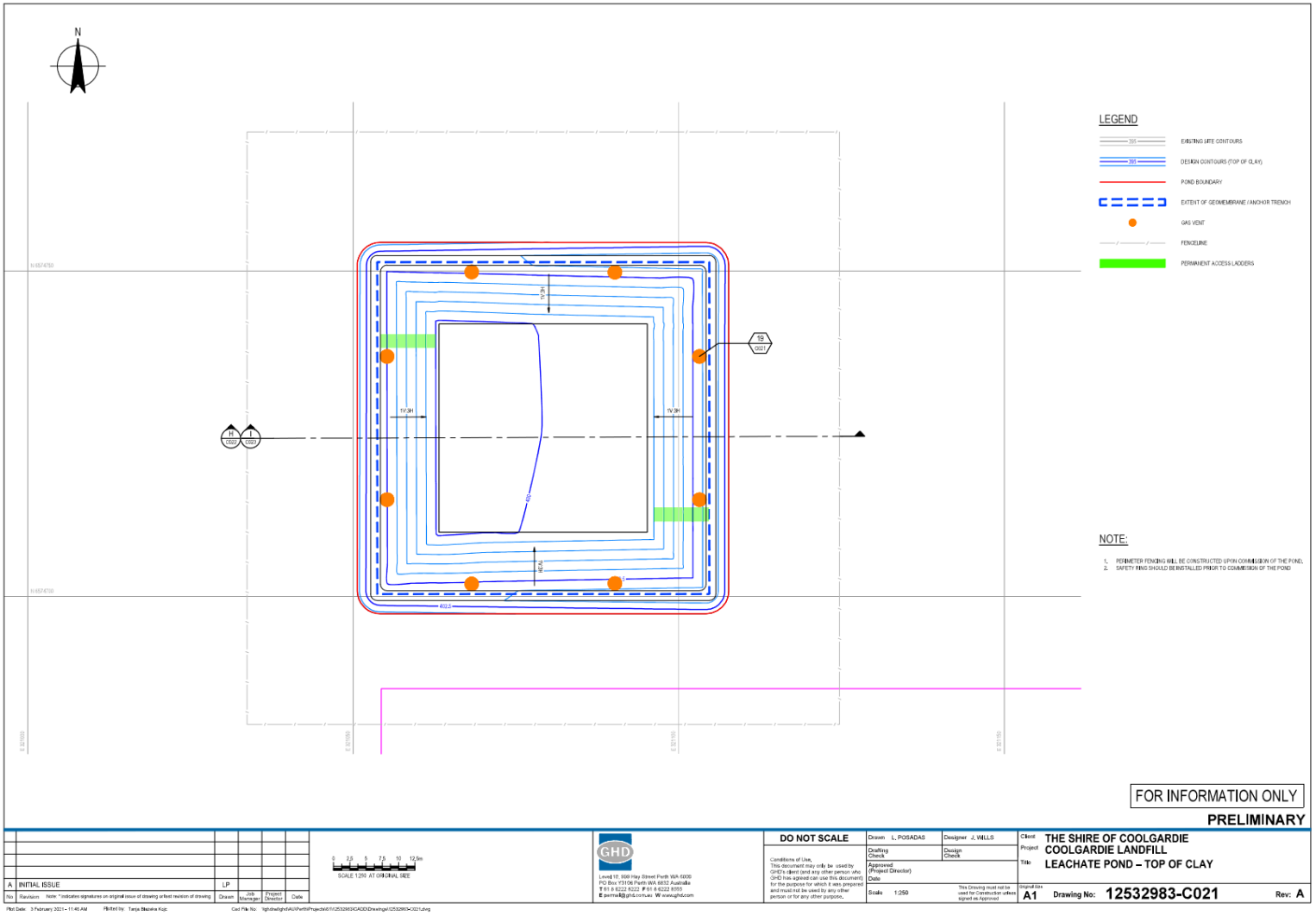

Figure 12: Leachate pond top of clay

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File number: DER2021/000058

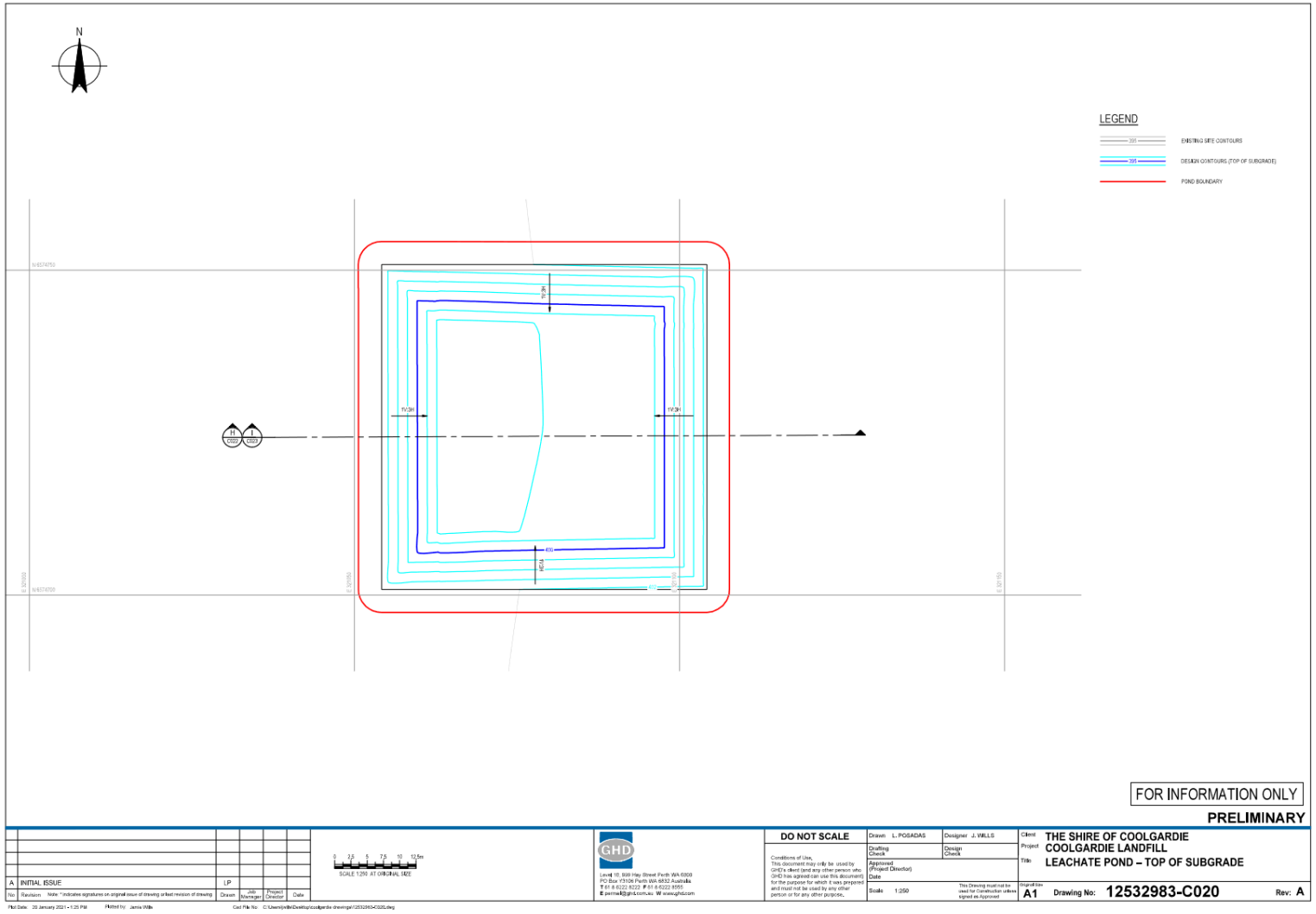

Figure 13: Leachate pond top of subgrade

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Schedule 4: Construction Quality Assurance Testing

Subgrade

The Construction Quality Assurance Requirements for the subgrade of Stage 1 are outlined in Table 16.

Table 16: Subgrade CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]
Subgrade (fill material)	Particle size distribution: - Passing 75 mm - Passing 0.075 mm	AS1141.11,12,13 or AS1289.3.6.1, 3.6.3	3 tests per source	100% > 20%
	Ratio of monovalent to divalent cations (RMD) (determined from Cation Exchange Capacity)	ASTM 6141 and Rayment & Lyons 2011 15A1	1 test per source	> 0.15 $M^{0.5}$
	Dispersibility or Emmerson class	AS 4419 or AS1289.3.8.1	1 test per source (Material used on leachate pond only)	1 or 2 or ≥ 4

Compacted clay liner

The Construction Quality Assurance Requirements for the installation of the compacted clay liner in Stage 1 are outlined in Table 17.

Table 17: Compacted clay liner CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]
Compacted clay liner	Saturated hydraulic conductivity (triaxial) tested in fresh water and NaCl solution	AS1289.6.7.3	Greater of: • 1 per 5,000 m^3 of material, or • 3 per source	≤10^{-9} m/s
	Atterberg limits: - Plasticity index - Liquid limit	AS1289.3.1.1, 3.2.1 & 3.3.1		>10 ≤50

	Particle size distribution: - Passing 37.5 mm - Passing 19 mm - Passing 0.075 mm - Passing 0.002 mm	AS1141.11,12,13 or AS1289.3.6.1, 3.6.3	Greater of: • 1 per 5,000 m^3 of material, or • 3 per source	100% > 70% > 30% > 15%
	Cation Exchange Capacity (CEC)	Rayment & Lyons 2011 15A1		> 10 mEq/ 100 mL

Notes 1: MARV = Minimum or Maximum Average Roll Value representing a confidence level of 97.5% of test results meet the required value.

Geocomposite clay liner

The Construction Quality Assurance Requirements for the installation of the Geocomposite clay liner in Stage 1 are outlined in Table 18.

Table 18: Geocomposite clay liner CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]
Conformance testing upon transport to site – Bentonite clay	Bentonite clay particle size (min.)	AS 1289.3.6.2	every 50 tonnes	80% passing 75 micron sieve (powdered)
	Bentonite clay free swell index (min.)	ASTM D5890		24 mL/2g or cm^3/2g
	Bentonite clay fluid loss (max.)	ASTM D5891		18 mL
	Bentonite clay montmorillonite content (min.)	CSIRO x-ray diffraction		70%
	Bentonite clay carbonate content (max.)	CSIRO x-ray diffraction		2 wt%
	Bentonite clay cation exchange capacity (min.)	Methylene blue method		70 meq/100g or cmol/kg
Conformance testing upon	Cover geotextile - mass (MARV) Non-woven	AS 3706.1	every 20,000 m^2	200 g/m^2

transport to site – Geotextile	Carrier geotextile - mass (MARV) Non-woven		every 20,000 m^2	200/100 g/m^2
	Durability of geotextile and reinforcing yarns (min.)	Section 5.6.2 of GRI-GCL3	Yearly	65%
	California bearing ratio (CBR) burst strength (MARV)	AS 3706.4	Every 25,000 m^2	1,500 N
Conformance testing upon transport to site – Geosynthetic clay liner	GCL thickness (dry) (min.)	ASTM D1777	every 4,000 m^2	Nominal value provided by manufacturer
	GCL mass per unit area @ 0% moisture (MARV)	ASTM D5993		4,000 g/m^2
	Bentonite clay mass per unit area @ 0% moisture (MARV)			3,700 g/m^2
	Bentonite clay moisture content (max.)			15%
	Strip tensile strength (MARV) Machine direction	ASTM D6768	every 20,000 m^2	10 kN/m
	Peel strength (MARV)	ASTM D6496	every 5,000 m^2	600 N/m
	Puncture resistance (min.)	AS 3706.5		17 mm
	Hydraulic conductivity (max.)	ASTM D5887	every 25,000 m^2	5 x 10^{-11} m/s

Note 1: MARV = Minimum or Maximum Average Roll Value representing a confidence level of 97.5% of test results meet the required value.

HDPE membrane

The Construction Quality Assurance Requirements for the installation of the HDPE membrane in Stage 1 and the leachate evaporation pond are outlined in Table 19.

Table 19: HDPE membrane CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)])	
				2 mm HDPE (textured one side)	**2 mm HDPE (Smooth both sides)**
Conformance testing upon transport to site – Resin	Density (min)	ASTM D1505 or D792 (method B)	Every 90,000 kg	0.932 g/cm^3	0.932 g/cm^3
	Melt index (maximum)			1.0 g/10 min	1.0 g/10 min
Conformance testing upon transport to site – Sheet	Thickness (min. average)	ASTM D5994	Every roll	2 mm	2 mm
	Thickness (min.) - Lowest individual of 8 of 10 readings - Lowest individual of 10 readings	ASTM D5119 ASTM D5994		1.8 mm 1.7 mm	1.8 mm 1.7 mm
	Asperity height (min. average)	ASTM D7466	Every second roll	0.40 mm	-
	Density (min)	ASTM D1505 or D792 (method B)	Every 90,000 kg	0.94 g/cm^3	0.94 g/cm^3
	Tensile properties (min. average) - break strength - break elongation - yield strength	ASTM D6693		21 N/mm 100% 29 N/mm 12%	53 N/mm 700% 29 N/mm 12%

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]	
				2 mm HDPE (textured one side)	**2 mm HDPE (Smooth both sides)**
	- yield elongation				
	2% modulus	ASTM D5323	Per each formulation	-	-
	Tear resistance (min. average)	ASTM D1004	20,000 kg	249 N	249 N
	Puncture resistance (min. average)	ASTM D4833	20,000 kg	534 N	640 N
	Axisymmetric break resistance (min.)	ASTM D5617	Per each formulation	-	-
	Dimensional stability	ASTM D1204	Every 90,000 kg	+2%	+2%
	Carbon black content (range)	ASTM D4218		2 to 3%	2 to 3%
	Carbon black dispersion	ASTM D5596	Every 20,000 kg	Cat 1 or 2 only	Cat 1 or 2 only
	Stress crack resistance	ASTM D5397	Per each formulation	600 hours	600 hours
	Oxidative induction time (OIT) - standard OIT (min. average) AND - high pressure OIT (min. average)	ASTM D3895 ASTM D5885	Every 90,000 kg	100 min 400 min	100 min 400 min
	Oven aging at 85°C - standard OIT (min. average)	ASTM D5721 ASTM D3895 ASTM D5885	Per each formulation	55% retained at 90 days 80% retained at	55% retained at 90 days 80% retained at

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]	
				2 mm HDPE (textured one side)	2 mm HDPE (Smooth both sides)
	AND - high pressure OIT (min. average)			90 days	90 days
	UV resistance - high pressure OIT (min. average)	ASTM D5885		50% retained after 1600 hours	50% retained after 1600 hours

Note 1: MARV = Minimum or Maximum Average Roll Value representing a confidence level of 97.5% of test results meet the required value.

Cushion geotextile

The Construction Quality Assurance Requirements for the installation of the cushion geotextile in Stage 1 are outlined in Table 20.

Table 20: Cushion geotextile CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]
Conformance testing upon transport to site	Thickness	AS 2001- 2.15	1 test per 10, 000 m^2	≥1.5 mm
	Mass per unit area	AS 2001- 2.13		≥ 560 g/m^2
	Grab tensile strength	AS 3706.2		≥2, 610 N
	Grab elongation			50%
	Trapezoidal tear strength	AS 3706.3		≥640 N
	California Bearing Ratio (CBR) burst strength	AS 3706.4		>4, 000 N
	Puncture resistance (h50)	AS 3706.5		≥ 750 mm
	UV stability (typical)	ASTM D4355	1 test per formulation	>70%

Note 1: MARV = Minimum or Maximum Average Roll Value representing a confidence level of 97.5% of test results meet the required value.

Separation geotextile

The Construction Quality Assurance Requirements for the installation of the separation geotextile in Stage 1 are outlined in Table 21.

Table 21: Separation geotextile CQA requirements

Item	Property	Standards	Frequency	Minimum Value (MARV[1)]
Conformance testing upon transport to site	Thickness	AS 2001-2.15	1 test every 10,000 m^2	≥1 mm
	Mass per unit area	AS 2001- 2.13		≥ 270 g/m^2
	Grab tensile strength	AS 3706.2		≥900 N
	Trapezoidal tear	AS 3706.3		>350 kN/m
	California Bearing Ratio (CBR) burst strength (MARV)	AS 3706.4		>2,000 N
	Flow rate @ 100 mm	AS 3706.9-12		>220 $L/m^2/s$
	Permittivity			2.2 s^{-1}

Note 1: MARV = Minimum or Maximum Average Roll Value representing a confidence level of 97.5% of test results meet the required value.

Schedule 5: Landfill acceptance criteria for Special Waste Type 3

PFAS contaminated material must contain a lower concentration limit than the Class III Landfill acceptance criteria as outlined in Table 22.

Table 22: Class III landfill acceptance criteria for Special Waste Type 3

Landfill class		**Landfill Acceptance Criteria**[1]	
		PFOS + PFHxS	PFOA
Class III landfill	ASLP leachable concentration (µg/L) (ASLP 3)	0.7 µg/L	5.6 µg/L
	Concentration Limit (CL3) (mg/kg)	50 mg/kg	50 mg/kg

Note 1: Concentrations must be less than both the relevant leachable concentration and the concentration limit.