Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6837/2023/1
Works approval holder	Town of Port Hedland
Registered business address	13 McGregor Street Port Hedland WA 6721
DWER file number	DER2023/000523
Duration	18/01/2024 to 18/01/2029
Date of issue	18 January 2024
Premises details	South Hedland Landfill Facility Reserve 41342 North Circular Road SOUTH HEDLAND WA 6721 Being Lot 5813 on Diagram 89435

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed design capacity**
Category 61: Liquid waste facility	32,850 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 18 January 2024, by:

Abbie Crawford

Digitally signed by Abbie Crawford
Date: 2024.01.18 11:45:12 +08'00'

Abbie Crawford

A/Manager, Waste Industries

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

Works approval history

Date	Reference number	Summary of changes
18/01/2024	W6837/2023/1	Works approval granted.

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.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) construct and install the infrastructure and equipment;

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

(c) at the corresponding infrastructure location,

as set out in Table 1.

Table 1: Design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Evaporation Pond 4	The evaporation pond 4 must be designed and constructed to meet the following specifications: (a). 58 m by 58 m footprint, 48 m wide 48 m base footprint with a 4m crest area; (b). 1 in 2 internal batter slope gradients with 1 in 40, 4m wide crest; (c). Maximum operating volume must be 5.42 ML; (d). Site preparation and subgrade construction as specified in Schedule 2, Table 6; (e). Lined with a single layer geotextile (BDIM a 34 or equivalent) and 1.5 mm HDPE to achieve <1 x 10-9 m/sec, as specified in Schedule 2, Table 7; (f). Evaporation pond and associated pipework to be free of leaks and defects; and (g). Be able to connect to the existing wastewater treatment plant.	Schedule 1 Figure 2
2.	Septage Screen	The septage screen must be installed to meet the following specifications: (a). Screen must be located within a concrete bund that drains to a concrete lined grated pit; (b). DN80 Camlock fitting to connect to trucks; (c). DN200 HDPE pipe connecting screen to pond 4; and (d). Septage screen outlet must be piped to discharge below the usual wastewater level.	Schedule 1 Figure 2
3.	Septage unloading bays	The septage unloading bays must be designed and constructed to meet the following specifications. (a). Two 31.4 m long unloading bays fitted with truck wheel stops	Schedule 1 Figure 2

	Infrastructure	Design and construction / installation requirements	Infrastructure location
		(b). Each bay separated by 300 mm high concrete bund wall; and (c). Loading bays to drain directly into ponds through a constructed drain.	
4.	Existing Evaporation Pond (Pond 3)	(a). Pond 3 must be drained to Pond 4 and desludged using mechanical pumps and cleaned via excavation; (b). Sludge spread and dried in appropriate region of existing premises and dried sludge and existing liner removed to landfill; (c). Site preparation and subgrade construction as specified in Schedule 2, Table 6; (d). Lined with a single layer geotextile (BDIM a 34 OR equivalent) and 1.5 mm HDPE to achieve <1 x 10-9 m/sec, as specified in Schedule 2, Table 7; (e). Evaporation pond and associated pipework to be free of leaks and defects.	Schedule 1 Figure 2
5.	New groundwater bores (PBH1, PBH2 and PBH3)	The Work Approval holder must construct three new groundwater monitoring bores in accordance with condition 2.	Schedule 1 Figure 3

2. The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 2.

Table 2:Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)
Groundwater monitoring well(s) PBH1, PBH2 and PBH3	<u>Well design and construction:</u> Designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores.* Well screens must target the part, or parts, of the aquifer most likely to be affected by contamination[1]. Where temporary/seasonal perched features are present, wells must be nested, and the perched features individually screened.	As depicted in Schedule 1, Figure 3:
	<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of contamination must be included in the	

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)
	bore log.	
	Well construction log: Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16.* The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations.	
	Well development: All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log.	
	Installation survey: the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.	
	Well network map: a well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network and their respective identification numbers.	

Note 1: refer to Section 8 of Schedule B2 of the Assessment of Site Contamination NEPM for guidance on well screen depth and length.

Compliance reporting

3. The works approval holder must within 30 calendar days of the infrastructure identified by condition 1 being constructed and installed:

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

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

4. The Critical Containment Infrastructure Report required by condition 3, must include as a minimum the following:

(a) certification by a suitably qualified person that each item of critical containment infrastructure or component thereof, as specified in condition 1, have been built and installed in accordance with the requirements specified in condition 1;

(b). 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 1;

(c). photographic evidence of the installation of the infrastructure;

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

5. The Critical Containment Infrastructure Report required by Condition 3 must be accompanied by a Construction Quality Assurance Validation Report that:

(a). is written and certified by an independent GITA accredited engineer;

(b). assesses test results against the relevant minimum values;

(c). documents all repairs to subgrade and resulting from non-destructive weld testing;

(d). certifies that the constructed infrastructure is free of fault of defect, built to the design specification and fit for the intended purpose; and

(e). includes copies of drawings, inspections, monitoring, and testing results required by the corresponding Specifications referenced in Schedule 2.

Time limited operations phase

Commencement and duration

6. The works approval holder may only commence time limited operations for an item of critical containment infrastructure identified in condition 1 when at least 20 business days have passed after the Critical Containment Infrastructure Report for that item of infrastructure as required by condition 3 and the Construction Quality Assurance Validation Report required by condition 5 have been submitted to the CEO.

7. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 8:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 6 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 7(a).

Operations requirements

8. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in condition 1 is maintained and operated in accordance with the corresponding operational requirement set out in Table 3.

Table 3: Infrastructure and equipment requirements during time limited operations

	Site infrastructure and equipment	Operational requirement
1	Evaporation Pond 3 and 4	(a) Maintain a minimum freeboard of 0.5 m at all times; (b) HDPE liner maintained to achieve permeability of 1 x 10^{-9} m/sec; and (c) Maintain the pond and associated pipework to be free of leaks and defects.
2	Septage Screen	(a) Septage screen outlet must be piped to discharge below usual wastewater level to minimise the disturbance to the surface crust; and (b) Must collect > 5mm debris from wastewater and discharge directly into skip bins;
3	Septage unloading bays	Maintain two 31.4 m long unloading bays free of leaks and defects
4	Groundwater monitoring bores	To be maintained in good working order

Monitoring during time limited operations

9. The works approval holder must undertake the monitoring outlined in Table 4 and Table 5 during time limited operations.

Table 4: Monitoring of inputs

Input/output	Parameter	Unit	Averaging period	Frequency
Septage waste discharged to pond 4	Volumetric flow rate (cumulative)	Tonnes or m^3/week	Monthly	Quarterly

Table 5: Monitoring of ambient groundwater quality

Location	Parameter	Unit	Averaging period	Frequency
New groundwater monitoring bores PBH1, PBH2 and PBH3)	pH[1]	pH units	Spot sample	Quarterly
	Electrical conductivity	µS/cm		
	Standing water level (SWL)[2]	m AHD (and mbgl		
	Total phosphorous	Mg/L		
	Chloride			
	Total Nitrogen			
	Ammonia-nitrogen			
	Total potassium			

Location	Parameter	Unit	Averaging period	Frequency
	Total chromium			
	Cadmium			
	Copper			
	Mercury			
	Molybdenum			
	Nickel			
	Manganese			
	Lead			
	Zinc			

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

Compliance reporting

10. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

11. The works approval holder must ensure the report required by condition 10 includes the following:

(a). a summary of monitoring results obtained during time limited operations under condition 9,

(b). a review of performance and compliance against the conditions of the works approval; and

(c). where the manufacturer's design specifications and 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)

12. 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.

13. 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;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 8;

(c) monitoring programmes undertaken in accordance with condition 9 and

(d) complaints received under condition 12.

14. The books specified under condition 13 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 6 have the meanings defined.

Table 6: Definitions

Term	Definition
annual period	a 12 month period commencing from 1 January until 31 December of the same year.
AS1726	Australian Standard Geotechnical Site Investigations
ASTM D5092/D5092M-16	Standard Practice for Design and Installation of Groundwater Monitoring Wells
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
critical containment infrastructure	means the items of infrastructure listed in condition 1.
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.
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.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
GITA	Geotechnical Inspection and Testing Authority
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.

Term	Definition
suitably qualified geotechnical engineer	means a person who: (a). holds a Bachelor of Engineering degree recognised by Engineers Australia; and (b). has a minimum of five years of experience working in a supervisory role of geotechnical engineering; and (c). is employed by an independent third party external to the Works Approval Holder's business; or is otherwise approved in writing by the CEO to act in this capacity.
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.
waste	has the same meaning given to that term under the EP Act.
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: Map of the boundary of the prescribed premise

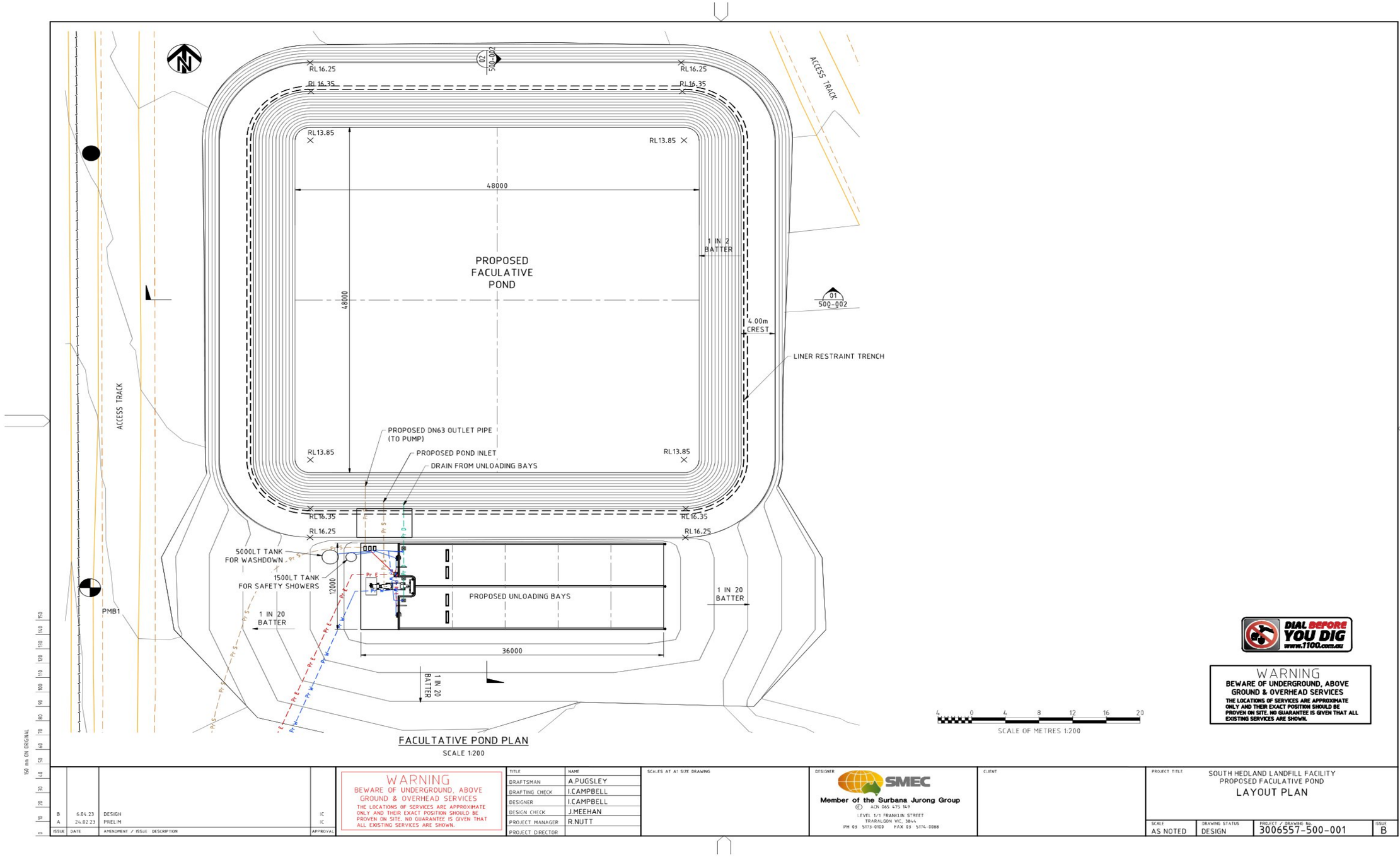

Figure 2: Pond specifications

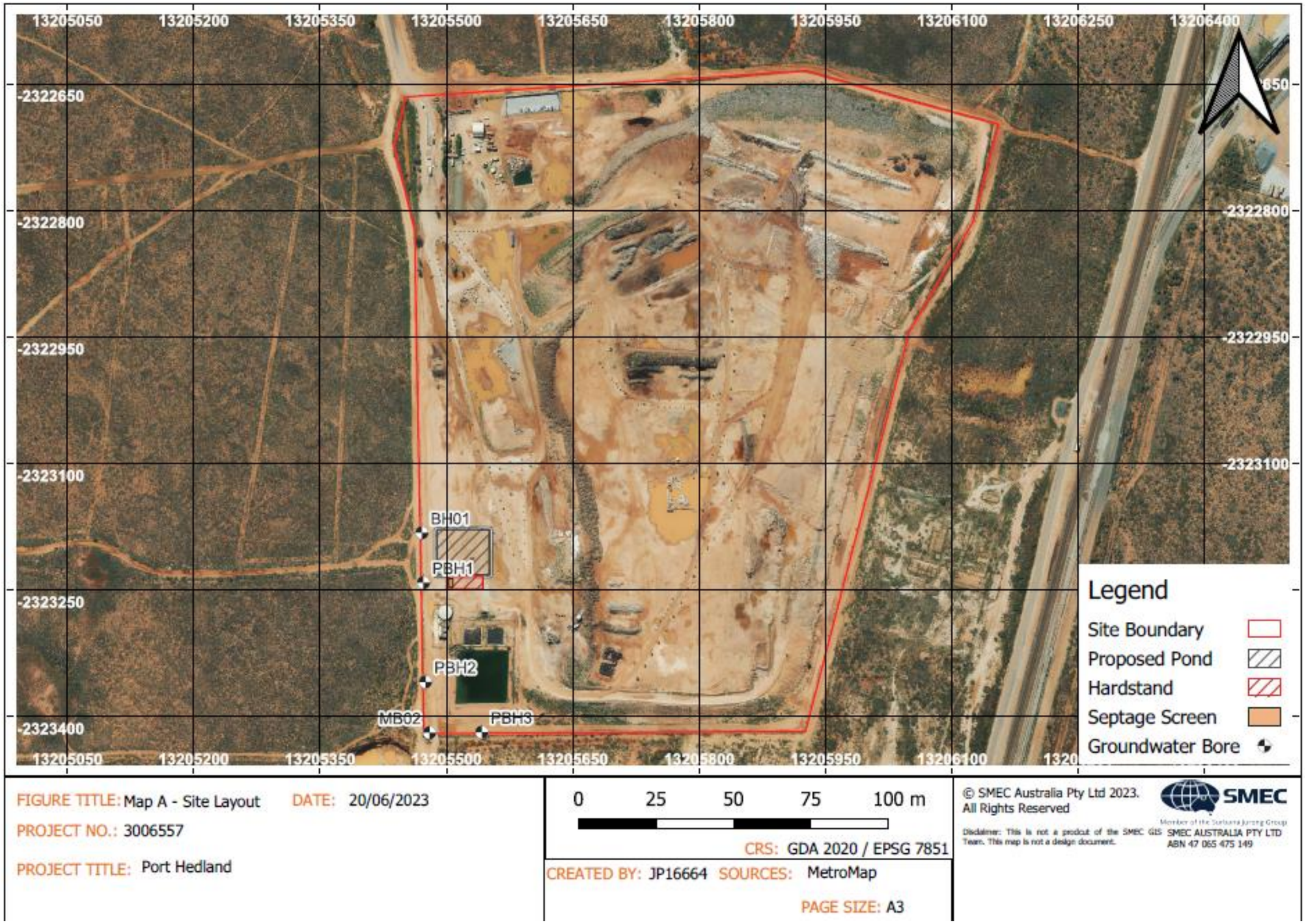

Figure 3: Groundwater monitoring bore location

Schedule 2: Minimum specification for excavation and HDPE geomembrane installation

The construction works and requirements described in the following tables are required to be completed in accordance with Condition 1.

Table 7: Leachate Pond Subgrade Construction Specifications

Infrastructure or Equipment	Requirements (design and construction)
Site Preparation and Subgrade construction	The following site preparation works must be undertaken: • Clearing and grubbing of entire pond footprint including embankments, bunds and base. • Excavation of all unsuitable materials to a minimum depth of 100mm from final surface level (FSL) to form a suitable subgrade, and replace with engineered fill material, moisture condition and compact to Standard Maximum Dry Density (SMDD) of 95% and Optimum Moisture Content (OMC) of -2% to +2%. • If suitable material (meeting requirements for engineered fill material) exists in the pond footprint, the material shall be excavated to -250mm of FSL, ripped and treated as per engineered fill material for moisture conditions and compaction requirements. • Proof roll entire footprint including pond floor and embankments • following rolling, the surface is to have no irregularities in excess of 10 mm deep over a straightedge length of 20 mm.

Table 8: HDPE Liner Design, Construction and Quality Assurance Specifications

<table>
<tr><th></th><th>Parameter</th><th>Requirements (design and construction)</th></tr>
<tr><td>1</td><td>High Density Polyethylene liner</td><td>• To extend over the entire pond base and up the side embankments;
• Must be uniform and free of pin holes, blisters, blemishes, striations, bubbles, roughness, contaminants and permanently attached raw materials;
• Completely sealed and waterproof along all joins and seams with heat welded joints;
  • All seams and joins made on site should be continuous;
  • Panels of the liner should be overlapped by a minimum of 100mm, prior to heat welding; and
• Leak detection survey to be carried out following installation.</td></tr>
<tr><td>2</td><td>Quality Assurance and Quality Control</td><td>Construction and installation performance must be measured by the following specifications:
• Construction requirements (as specified by condition 1 and this table);
• Conformance testing – to show materials meet the following minimum requirements
<table>
<tr><th>Property</th><th>Units</th><th>Value</th><th>Test</th><th>Testing Frequency</th></tr>
<tr><td>Thickness (average)</td><td>mm</td><td>1.5</td><td>ASTM D5199</td><td>One for every two</td></tr>
</table>
</td></tr>
</table>

	Parameter	Requirements (design and construction)					
		Thickness (minimum)		mm	1.5	ASTM D5199	rolls
		Density		g/cc	> 0.940	ASTM D1505	
		Water permeability (liquid tightness) (minimum)		m/s	< 1 x 10^{-9}	ASTM E96	Every five years
		Tensile properties	Break strength	kN/m	40	ASTM D6693	One per batch
			Yield strength	kN/m	22	ASTM D6693	
			Yield elongation	%	12	ASTM D6693	
			Break elongation	%	700	ASTM D6693	
		Tear resistance		N	187	ASTM D1004	
		Puncture resistance		N	480	ASTM D4833	
		Carbon black content		%	2.0 – 3.0	ASTM D4218	
		Carbon black dispersion		Cat	Cat 1 or Cat 2	ASTM D5596	
		Destructive fusion weld testing on-site tests undertaken by Contractor, witnessed by CQA Consultant	Fusion/Wedge Weld - Shear strength	N/25 mm	700	ASTM D6392	Every 150m along weld
			Fusion/Wedge Weld - Peel strength		530		
			Extrusion Weld – Shear Strength		700		Every 150m along weld
			Extrusion Weld – Peel Strength		455		
		Non - destructive weld testing – tests undertaken by Contractor, witnessed by CQA Consultant	Air pressure test	-	pass/fail	ASTM D5820	All seams over full length
			Vacuum box test			ASTM D5641	