Licence

Licence number	L9159/2018/2
Licence holder	City of Cockburn
Registered business address	9 Coleville Crescent SPEARWOOD WA 6163
DWER file number	DER2018/001433
Duration	23/10/2021 to 22/10/2031
Date of issue	28/10/2021
Date of amendment	28/01/2025
Premises details	Henderson Waste Recovery Park 920 Rockingham Road WATTLEUP WA 6166 Legal description - Lot 202 on Deposited plan 60443, Lot 2 on Diagram 17988 and Lot 235 on Deposited Plan 226117

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed design capacity**
Category 61A: Solid waste facility: premises (other than premises with category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	15,000 tonnes per annual period
Category 62: Solid waste depot: premises on which waste is stored or sorted, pending final disposal or re-use, other than in the course of operating — (a) a refund point (as defined in the *Waste Avoidance and Resource Recovery Act 2007* section 47C(1)) (a *refund point*); or (b) a facility or other place (an *aggregation point*) for the aggregation of containers that have been returned to refund points until those containers are accepted for processing or disposal.	40,400 tonnes per annual period
Category 63: Class I inert landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the *Landfill Waste Classification and Waste Definitions 1996*, is accepted for burial.	15,000 tonnes per annual period

Category 64: Class II or III putrescible landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the *Landfill Waste Classification and Waste Definitions 1996*, is accepted for burial.	200,000 tonnes per annual period

This licence is granted to the licence holder, subject to the attached conditions, on 28 January 2025, by:

Melissa Chamberlain

Digitally signed by Melissa Chamberlain
Date: 2025.01.28 14:09:28 +08'00'

MANAGER, WASTE INDUSTRIES

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

Licence history

Date	Reference number	Summary of changes
13/12/2012	L6965/1997/14	Licence amendment to include Leachate Pond B.
02/04/2015		Licence amendment to extend duration for two months.
04/06/2015		Licence reissue in new format.
29/04/2016		Licence duration was extended to 2021.
28/03/2018		Amendment Notice 1 issued to include additional Category 61. L6965 licence ceased to have effect in 2018 due to non-payment of fees.
23/10/2018	L9159/2018/1	The new replacement licence issued for the ceased licence. This licence includes amendments issued under the previous licence.
10/03/2020		Amendment issued for capping of landfill Cell 6.
28/09/2021	L9159/2018/2	Licence reissue in new format with the addition of Category 61A to reflect existing green waste mulching operations.
11/10/2023		Amendment to hazardous waste acceptance, processing and storage requirements. Addition of electronic waste, waste oil and mattresses to the licence
18/06/2023		Amendment to recommence landfilling activities in Cells 4 & 5.
28/01/2025		Amendment for the construction of additional leachate ponds and the relocation of waste transfer station

Interpretation

In this licence:

(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 licence:

  (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 licence requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this licence.

Licence conditions

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

Construction

Infrastructure and equipment

1. The licence holder must construct and/or install the infrastructure listed in Table 1, in accordance with;

   (a) the corresponding design, construction or installation requirement; and
   (b) at the corresponding infrastructure location,

   as set out in Table 1.

Table 1: Design, construction and installation requirements

	Infrastructure	Design, construction or installation requirement	Infrastructure location
1.	Transfer station: Thirteen concrete hardstands for the acceptance and storage of waste. As depicted in Schedule 1, Figure 12.	All concrete hardstands must be designed to achieve a permeability of equal to or less than 10^{-9} m/s.	Within the areas titled 'transfer station location options' as depicted in Schedule 1, Figure 13. Infrastructure layout as outlined in Schedule 1, Figure 12.

2. The licence holder must:

   (a) construct the critical containment infrastructure;
   (b) in accordance with the corresponding design and construction requirements;
   (c) at the corresponding infrastructure location; and
   (d) within the corresponding timeframe,
   (e) as set out in Table 2.

Table 2: Critical containment infrastructure design and construction requirements

	Infrastructure	Design and construction requirements	Infrastructure location	Timeframe
1.	Leachate Pond C	(a) Leachate Pond C must be constructed according to the specifications outlined in Figure 6, Figure 7, Figure 8 and Figure 11; (b) Leachate Pond D, if required, must be constructed according to the specifications outlined in Figure Figure 9, Figure 10 and Figure 11; (c) Must be lined with a geosynthetic clay liner and minimum 2 mm thick HDPE liner that has a permeability of less than 2 x 10^{-10} m/s or equivalent; (d) CQA activities must be undertaken according to Schedule 3 Tables 1 and 2 and the *Henderson Waste Recovery Park Leachate Pond 3 Construction – Construction Quality Assurance Plan*;	Within the 'proposed leachate ponds area' as depicted in Schedule 1, Figure 4.	Before 30 June 2025.
2.	Leachate Pond D	(e) Pond C must provide a minimum storage capacity of 78,000 m^3; (f) Pond embankments must be raised a minimum 1 m above surrounding ground level to prevent stormwater ingress; (g) Each pond must provide a minimum additional storage for a 1 in 100 year (1% Annual Exceedance Probability), 168-hour/7-day storm event with a design operational freeboard height of 0.5 m; (h) Any new pipework, fittings, joints and pumps installed must be: i) Constructed of impervious material that is free from leaks and/or defects; ii) Tested and visually inspected to confirm they are free from leaks and defects prior to use.		If required.

3. The licence holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 3.

Table 3: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Timeframe
Groundwater monitoring well(s) as required by condition 12.	Well design and construction: 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.	Must be constructed, developed (purged), and determined to be operational within 180 calendar days following submission of the report required in condition 12, or as otherwise determined by the CEO.
	Logging of borehole: 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 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.

4. The licence holder must, within 60 calendar days of monitoring wells being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of condition 3.

Construction quality assurance requirements

5. The licence holder must undertake construction quality assurance (CQA) testing for the geosynthetic clay liner installed within Leachate Ponds C and D in accordance with the specifications outlined in Table 18 of Schedule 3.

6. The licence holder must undertake CQA testing for the geomembrane layer installed in Leachate Ponds C and D in accordance with the specifications outlined in Table 19 of Schedule 3.

Compliance reporting – Environmental Compliance Report

7. The works approval holder must within 30 calendar 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.

8. The Environmental Compliance Report required by condition 7, must include as a minimum the following:

   (a) certification by a suitably qualified engineer 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) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 1; and

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

Compliance reporting – Critical Containment Infrastructure Report (CCIR)

9. The licence holder must within 30 calendar days of an item of infrastructure or equipment required by condition 2 being constructed and/or installed:

   (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.

10. The Critical Containment Infrastructure Report required by condition 9 must include as a minimum the following:

   (a) is written and certified by a suitably qualified CQA engineer/consultant who has undertaken CQA activities for the relevant stage of leachate pond construction;

   (b) details the CQA procedures and testing undertaken for the relevant works;

   (c) confirms subgrade preparation and installation of geosynthetic or geotextile materials have met the relevant requirements specified in Table 18 and Table 19 of Schedule 3;

   (d) confirms the quality control and assurance measures specified in conditions 5 and 6 and the *Construction Quality Assurance Plan* have been completed and that satisfactory results have been demonstrated;

   (e) includes evidence of quality assurance and conformance testing works;

(f) includes as constructed plans of geosynthetic or geotextile material for the relevant works that include roll numbers, panel layouts, seam locations and repair locations;

(g) photographic evidence of the installation of the infrastructure;

(h) certifies that the sub-grade and composite liner system is free of fault or defect, built to the design specification and fit for the intended purpose; and

(i) be signed by both the suitably qualified CQA engineer/consultant and a person authorised to represent the licence holder and contains the printed names and positions of these people.

Operation of Leachate Ponds C and D

11. The licence holder may only commence use of the infrastructure identified in condition 2 where the CEO has notified the licence holder that the Critical Containment Infrastructure Report required by condition 9 meets the requirements of condition 10.

Specified actions

12. The licence holder must complete the specified actions by the date of completion outlined in Table 4.

Table 4: Specified actions

	Specified action	Date of Completion
1.	The licence holder must engage a suitably qualified hydrogeological consultant to prepare comprehensive assessment which: (a) Characterises the spatial distribution of groundwater contamination near the landfill to determine the adequacy of the facility's current monitoring network; and (b) Determines the recommended depth and locations for any additional monitoring wells necessary to ensure adequate network coverage. At a minimum, the monitoring network must include at least one well upgradient and one well downgradient of Leachate Ponds C and D.	30 June 2025
2.	The licence holder must provide to the CEO a report outlining the results of the comprehensive assessment undertaken in accordance with Specified Action 1, for review, including: (a) The number of groundwater monitoring wells proposed, if any; (b) Details of the proposed locations for installation of additional groundwater monitoring wells; (c) Justification of the proposed changes to the groundwater monitoring network; and (d) A map detailing the proposed installation locations.	30 June 2025
3.	The licence holder must provide to the CEO a summary of updated leachate management practices at the premises following commencement of operation of each new pond, including: (a) The volume of leachate collected by the newly constructed pond; (b) An analysis of whether further pond space is necessary;	60 days after the commencement of operation of each pond in accordance with condition 11

	Specified action	Date of Completion
	(c) A revised estimate of current depth below overflow levels across all landfill cells; and (d) Water balance calculations (two years cumulative) for the premise, or a summary of further information or infrastructure required to be able to provide a water balance.	

Waste acceptance

13. The licence holder must only accept waste on the premises if:

(a) it is of a type listed in Table 5;
(b) the quantity accepted is below any quantity limit listed in Table 5;
(c) it meets any specification listed in Table 5; and
(d) in the case of contaminated solid waste is supported by documentation that demonstrates compliance with the acceptance criteria for the relevant class landfill.

Table 5: Waste acceptance table

Waste type	Quantity limit per year	Specification
Clean fill	N/A	None specified
Category 61A: Solid waste facility		
Green waste	15,000 tonnes	None specified
Category 62: Solid waste facility		
Inert Waste Type 1	20,000 tonnes	Waste containing visible asbestos or ACM shall not be accepted.
Inert Waste Type 2	20,000 tonnes	Tyres and plastic only 8,000 tyres per annual period
Waste oil	50 tonnes	None specified
E-waste	100 tonnes	Electronic, electrical and battery-powered items that have been discarded or no longer in working order
Hazardous Waste	200 tonnes	Acids Aerosols – CFC based Aerosols, flammable – paint and lacquers Aerosols, flammable - pesticide Alkali Arsenic based products Batteries - household, dry cell Cyanides Engine coolants and glycols Fire extinguishers – non-Halon

Waste type	Quantity limit per year	Specification
		Flammable liquids – hydrocarbons and fuels Flammable solids Flares Fluorescent tubes, CFL and light fittings Gas cylinders – other Gas cylinders – propane General household chemicals eg cleaners Heavy metal compounds Inorganic oxidising agents – eg pool chlorine Low level radioactive substances eg smoke detectors Mercury – elemental Organic peroxides Paint – metal based Paint – other, including isocyanates and amines Paint – recyclable Paint – solvent based, including resins and adhesives Paint – water based PCB materials Pesticides – non Schedule X Pesticides – Schedule X Solvents – halogenated Toxics
Hazardous Waste – Used batteries	50 tonnes	Used lead acid batteries
Category 64: Class III landfill		
Putrescible	Combined total of 200,000 tonnes	None specified.
Special Waste Type 1		Cement bonded asbestos only. No fibrous asbestos shall be accepted. Must be wrapped or contained in a manner that prevents asbestos fibres entering the atmosphere.
Special Waste Type 2		Biomedical waste that is not Radioactive[2].
Contaminated Solid waste (Class I)		Must meet the waste acceptance criteria for Class I landfills.
Contaminated solid waste (Class II & III)		Must meet the waste acceptance criteria for Class II or III landfills.

Waste type	Quantity limit per year	Specification
Quarantine waste		As defined in Table 17.

Note 1: Additional requirements for the acceptance of controlled waste (including asbestos and tyres) are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

Note 2: Information relating to the classification of radioactive waste can be found in the *Western Australian Radiation Safety Act 1975*

Note 3: Additional requirements for the acceptance, handling and storage of dangerous goods are set out in the *Dangerous Goods Safety Act 2004 codes of practice.*

Note 4: Additional requirements for the acceptance, handling and storage of hazardous waste may apply under the Household Hazardous Waste (HHW) Program and Paintback Scheme.

14. The licence holder must ensure that where waste does not meet the waste acceptance criteria set out in condition 13 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

15. The licence holder must 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 described in that Table.

Table 6: Waste processing

	Waste type(s)	Process	Process limits [1,2]
1.	All Category 64 waste listed in Table 5	Disposal by landfilling.	(a) Landfilling shall only take place within Cells 4, 5 and 7, as shown in Schedule 1, Figure 3; (b) No waste shall be temporarily stored or landfilled within 35 metres from the boundary of the premises; and (c) The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m.
2.	Inert Waste Type 2	Receipt, handling and storage prior to disposal offsite.	No more than 100 tyres stored at any one time.

	Waste type(s)	Process	Process limits [1,2]
3.	Green Waste	Receipt and handling prior to disposal off-site or by landfilling.	(a) Only be stored on the Green Waste area concrete hardstand shown in Schedule 1, Figure 12 prior to removal from the premises; (b) Not to be stored in dried state; (c) No more than 2,000 m^3 of green waste and 6,000 m^3 of mulched green waste stored at any one time; (d) Mulched green waste to be stored in windrows no more than 3 metres high, 4 metres wide and be separated by at least 5 metres; (e) Mulched green waste windrows with an internal temperature exceeding 80 degrees Celsius shall be turned, mixed or otherwise treated, to reduce the temperature; and (f) A 5-metre fire break shall be maintained around the Green Waste area.
4.	Clean Fill	Receipt, handling and storage prior to disposal by landfilling.	None specified
5.	Inert Waste Type 1	Receipt, handling and disposal by landfilling.	None specified
6.	Inert Waste Type 2 (excluding tyres)		
7.	Contaminated Solid Waste		
8.	Special Waste Type 1		(a) Only to be disposed of into a designated asbestos disposal area within the landfill; (b) Not to be deposited within 2m of the final tipping surface of the landfill; and (c) No works shall be carried out on the landfill that could lead to a release of asbestos fibres.
9.	Special Waste Type 2		(a) Only to be disposed of into a designated biomedical waste disposal area within the landfill; (b) Not to be deposited within 2m of the final tipping surface of the landfill; (c) No works shall be carried out on the landfill that could lead to biomedical wastes being excavated or uncovered; and (d) During disposal access to the landfill area, where Special Waste Type 2 is buried, shall be restricted to authorised personnel only.

	Waste type(s)	Process	Process limits [1,2]
10.	Quarantine Waste		(a) Only to be disposed of into a designated quarantine waste disposal area within the landfill; (b) Not to be deposited within 2m of the final tipping surface of the landfill; (c) No works shall be carried out on the landfill that could lead to quarantine wastes being excavated or uncovered; and (d) During disposal access to the landfill area, where Quarantine Waste is buried, shall be restricted to authorised personnel only.
11.	Leachate	Storage prior to disposal offsite, infiltration to lined waste filled cells or evaporation through the Accelerated Forced Evaporation System	(a) All leachate from the landfill shall be collected and contained within lined Leachate Ponds A, B, C or D (in accordance with condition 11 prior to removal from the premises, evaporation through the Accelerated Forced Evaporation System, or infiltration/recirculation to the uncapped lined waste filled cells; and (b) Leachate or leachate contaminated water shall not be discharged to the environment.
12.	Hazardous waste	Receipt, handling and storage prior to off-site disposal	(a) Only to be stored in dedicated impermeable bunded pallets or bunded containerised cabinets as depicted in Schedule 1, Figure 12; (b) A maximum of 20 liters or 20 kilograms per package/item; (c) All hazardous wastes (other than fire extinguishers and gas bottles) must be stored on a sealed hardstand area, on separate shelves, and in secondary containers (e.g. chemical resistant plastic tubs or trays); (d) Flammable liquids, toxic substances, corrosive substances, oxidising agents and miscellaneous dangerous goods (household chemicals and unknown liquids) must be stored within impermeable dangerous goods containers located on a sealed hardstand; (e) Paint and resins shall be stored in dedicated impermeable and bunded storage containers ('stillages'); (f) Fire extinguishers and gas bottles must be stored in metal cages; (g) Used lead acid batteries must be stored in a self-bunded and covered battery storage container; (h) Shall not be decanted or treated on the premises; (i) Shall not be stored on the site for longer than 90 days; (j) Must be sent to an appropriately licensed facility; (k) All hazardous waste storage containers must be visually inspected regularly for leakage and/or damage; and

	Waste type(s)	Process	Process limits [1,2]
			(l) Any accumulated liquids, and residues from the recovery of spills or leaks of hazardous waste, are stored in an impervious container prior to disposal at an appropriately authorised facility.
13.	E-Waste	Receipt handling and storage prior to removal offsite	All electronic waste: (a) Must be stored within bunded containment; (b) Must be protected by a weatherproof covering; and (c) Must be sent to an appropriately licensed facility for the processing of such waste.
14.	Waste oil		(a) Waste oil must be stored in a self-bunded, double walled storage tank designed to contain any spillage as depicted in Figure 12 (110% of the largest interconnected container(s)) (b) Must not be processed or treated onsite; (c) No more than 1,000 litres of waste oil can be stored at the premises at any one time; and (d) Must be sent to an appropriately licensed facility.
15.	Mattresses		(a) No more than 130 mattresses to be stored on site at any one time; (b) Mattresses must be stored in sealed hook-lift bins covered with tarp to minimise rainwater ingress; (c) Mattresses to be stacked in piles of no more than 10; (d) Must not be processed on the premises; (e) Shall not be stored on the site for longer than 30 days; and (f) Must be sent to an appropriate facility for recycling or disposal.

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.

Note 3: Additional requirements for the acceptance, handling and storage of dangerous goods are set out in the Dangerous Goods Safety Act 2004 codes of practice.

Note 4: Additional requirements for the acceptance, handling and storage of hazardous waste may apply under the Household Hazardous Waste (HHW) Program and Paintback Scheme.

Note 5: Additional requirements for collection, storage, transport and treatment of end-of-life electrical and electronic equipment are set out in the AS/NZS 5377:2013 standard.

Landfill and containment infrastructure

16. The licence holder must ensure that waste is only disposed of in landfill cells or phases provided with the infrastructure detailed in Table 7 for that Class of landfill cell or phase.

Table 7: Landfill infrastructure

Cell or Phase Number	Class of Cell or Phase	Infrastructure requirements
Cells 4, 5 and 7 (as depicted in Figure 3, Schedule 1)	Class III (Putrescible)	• Lined to achieve a permeability of less than or equal to $1x10^{-9}$ m/s. • Leachate collection system. • Landfill gas collection and management system.

17. The licence holder must ensure that waste materials are only stored and/or treated within vessels or compounds provided with the infrastructure detailed in Table 8.

Table 8: Containment infrastructure

	Infrastructure	Material	Infrastructure requirements
1.	Leachate Ponds A, B, C & D (as depicted in Schedule 1, Figure 3)	Leachate	(a) Lined to achieve a permeability of less than $1x10^{-9}$ m/s or equivalent; and (b) Maintain a freeboard of no less than 500mm.
2.	Accelerated Forced Evaporation System (labelled as 'Leachate Evaporation Units' in Schedule 1, Figure 3)		Evaporation units must be positioned on bunded HDPE liner with any overflow contained and directed into a leachate pond.
4.	Washdown Bay (as depicted in Figure 3, Schedule 1)	Washwater	Concrete bunded hardstand with grading to sealed tank via screens to fully contained underground settlement tank.

General site management

18. The licence holder must implement the following security measures at the site:
    (a) erect and maintain suitable fencing to prevent unauthorised access to the site as far as is practicable;
    (b) ensure that any entrance gates to the premises are securely locked when the premises are unattended; and
    (c) undertake regular inspections of all security measures and repair damage as soon as practicable.

19. The licence holder must install and maintain a sign at the entrance to the Premises which clearly displays the following information:
    (a) hours of operation;
    (b) contact telephone number; and
    (c) warning indicating penalties for people lighting fires.

20. The licence holder must ensure that no waste is burnt on the premises.

21. The licence holder must ensure that no visible dust generated by the activities on the premises crosses the boundary of the premises.

22. The licence holder must provide and maintain suitable wheel cleaning facilities to ensure that no waste or other debris is tracked beyond the boundary of the premises.

23. The licence holder must ensure that odour 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.

24. The licence holder must ensure that wind-blown waste is contained within the boundary of the premises and that wind-blown waste is collected on at least a weekly basis and returned to the tipping area or appropriately contained.

25. The licence holder must ensure that vermin, birds, flies and other insects do not give rise to nuisance at the premises or in the immediate area of the premises. Any method used by the licence holder shall not cause environmental pollution.

26. The licence holder must operate and maintain all pollution control and monitoring equipment to the manufacturer's specification or any relevant and effective internal management system.

27. The licence holder, except where storage is prescribed under condition 17, must ensure that environmentally hazardous materials are stored in accordance with the relevant code of practice approved in accordance with section 20 of the *Dangerous Goods Safety Act 2004.*

28. The licence holder must immediately recover or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

29. The licence holder must take all reasonable and practicable measures to prevent stormwater run-off becoming contaminated by the activities and operations undertaken at the premises.

30. The licence holder must ensure all residual waste located in the waste recovery area of the Transfer Station shall be removed by the close of each business day.

Landfill management

31. The licence holder must manage the landfilling activities to ensure:

    (a) the size of the tipping face is kept to a minimum and not larger than 30 m long x 40 m wide x 2 m high;

    (b) waste is levelled and compacted as soon as practicable after it is discharged;

    (c) waste is placed and compacted to ensure all faces are stable and capable of retaining rehabilitation material; and

    (d) rehabilitation of a cell or phase takes place within 6 months after disposal in that cell or phase has been completed.

32. The licence holder must ensure that cover is applied to waste in accordance with Table 9 and that sufficient stockpiles of cover are maintained on site at all times.

Table 9: Cover requirement

Waste type	Material	Depth	Timeframe
Special Waste Type 1	Inert waste type 1 or clean fill	300 mm	As soon as practicable and not later than the end of the working day after deposit and prior to compaction to prevent the release of asbestos fibres as a result of compaction and other landfilling activities.
	Solid waste or soil	1000 mm	As soon as practicable after deposit.
Special Waste Type 2	Inert waste type 1 or clean fill	300 mm	As soon as practicable and no later than the end of the working day after deposit and before being compacted to prevent further disturbance as a result of compaction and other landfilling activities.
	Solid waste or soil	1000 mm	As soon as practicable after deposit.
Quarantine Waste (non-Aircraft Galley Waste)	Non-Quarantine solid waste or soil	2000 mm	Immediately after deposit.
Quarantine Waste (Aircraft Galley waste)	Non-Quarantine solid waste or soil	1000 mm	Immediately after deposit.
Putrescible Wastes	Inert waste type 1, soil or clay	150 mm	As soon as practicable and not later than the end of the working day.
	Inert waste type 1, soil, or clay	1000 mm	Within 3 months of achieving final waste contours.
Inert Waste Type 2	Inert waste type 1 or soil	100 mm	By the end of the working day after deposit.

Note 1: As required by Department of Agriculture Fisheries and Forestry's 'Process Management System for the Burial of Quarantine Waste'

21. The licence holder must operate and maintain a system for controlling landfill gas generated on the premises to prevent lateral migration of landfill gas outside the boundary of the Premises.

22. The licence holder must ensure that there is no excavation of areas of the premises where waste has previously been buried.

Monitoring

23. The licence holder must ensure that:

    (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;

    (b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;

    (c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

24. The licence holder must ensure that:

    (a) six monthly monitoring is undertaken at least 5 months apart; and

(b) annual monitoring is undertaken at least 9 months apart.

25. The licence holder must ensure that all monitoring equipment used on the premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

26. The licence holder must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

27. The licence holder must record the total amount of waste accepted onto the premises, for each waste type listed in Table 10, in the corresponding unit, and for each corresponding time period, as set out in Table 10.

Table 10: Waste accepted onto the premises

Waste type	Unit	Time period
Clean fill	Tonnes (where a weighbridge is present on the site)	Each load arriving at the premises
Inert waste type 1		
Inert waste type 2		
Putrescible waste		
Contaminated solid waste		
Special waste type 1		
Special waste type 2		
Quarantine waste		
Hazardous waste		
E-Waste		
Waste oil		

28. The licence holder must record the total amount of waste removed from the premises, for each waste type listed in Table 11, in the corresponding unit, and for each corresponding time period set out in Table 11.

Table 11: Waste removed from the premises

Waste type	Unit	Time period
Waste type as defined in the Landfill Definitions	Tonnes (where a weighbridge is present on the site	Each load leaving or rejected from the premises, after acceptance

29. The licence holder must undertake the process monitoring in Table 12 according to the specifications in that table.

Table 12: Process monitoring

Monitoring point reference	Process description	Parameter	Units	Frequency
-	Mulched green waste windrows	Temperature	^{0}C	Weekly
Leachate Pond A Leachate Pond B Leachate Pond C (once constructed) Leachate Pond D (once constructed) C4 C5 As depicted in Schedule 1 - Map of monitoring (Figure 2)	Leachate	Volume of leachate irrigated over lined cells	m^3	Whenever irrigated
		pH[1]	None specified	Annual
		Electrical conductivity	µS/cm	
		Total Dissolved Solids	mg/L	
		Total Chloride		
		Ammonia-Nitrogen, Nitrate- Nitrogen		
		Total Nitrogen		
		Total Phosphorus		
		<u>Metals</u> Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Total Potassium, Zinc		
		<u>Non-chlorinated organics</u> Benzene, Ethylbenzene, Toluene, Xylenes, Total Petroleum Hydrocarbons		
		<u>Polycyclic aromatic Hydrocarbons (PAHs)</u> Acenapthene, Anthracen, Benz(a)pyrene, Fluoranthene, Napthalene, Pyrene		
		<u>Organochlorine Pesticides (OCPs)</u> Aldrin, Chlordane and metabolites, DDT and metabolites, Dieldrin, HCB, Heptachlor and its epoxide, Lindane		
		<u>Organophosphate Pesticides (OPPs)</u> Chlorpyrifos, Demeton-S-Methyl, Diazinon, Dimethoate, Fenamiphos, Fenthion, Maldison, Parathion		

Monitoring point reference	Process description	Parameter	Units	Frequency
		Other Pesticides and Organic Compounds Atrazine, PCB, TCE, PCE		

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

30. The licence holder must monitor the groundwater for concentrations of the parameters listed in Table 13:

(a) at the corresponding monitoring location;
(b) in the corresponding unit;
(c) at no less that the corresponding frequency; and
(d) for the corresponding averaging period;

as set out in Table 13.

Table 13: Monitoring of ambient groundwater concentrations

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
Bore 1 – 4 MW4-S, MW4-I, MW4-D MW5-S, MW5-I, MW5-D MW6-S, MW6-I, MW6-D MW7-S, MW7-I, MW7-D MW8-S, MW8-I, MW8-D MW9-S, MW9-I, MW9-D MW10-S, MW10-I, MW10-D MW11-S, MW11-I, MW11-D	Standing water level[1]	mBGL and m(AHD)	Spot sample	Six monthly
	pH[1]	None specified		
	Electrical conductivity	µS/cm		
	Dissolved Methane	µg/L		
	Dissolved Organic Carbon			
	Total Dissolved Solids			
	Total Chloride			
	Ammonia-Nitrogen, Nitrate- Nitrogen			
	Total Nitrogen			
	Total Phosphorus			
	Ions Bicarbonate ions, sulfate ions			
	Metals Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Total			

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
As depicted in Figure 2, Schedule 1 And any additional monitoring wells constructed in accordance with condition 3	Potassium, Zinc			
	Non-chlorinated organics Benzene, Ethylbenzene, Toluene, Xylenes, Total Petroleum Hydrocarbons			Annual
	Polycyclic aromatic Hydrocarbons (PAHs) Acenapthene, Anthracen, Benz(a)pyrene, Fluoranthene, Napthalene, Pyrene			
	Organochlorine Pesticides (OCPs) Aldrin, Chlordane and metabolites, DDT and metabolites, Dieldrin, HCB, Heptachlor and its epoxide, Lindane			
	Organophosphate Pesticides (OPPs) Chlorpyrifos, Demeton-S-Methyl, Diazinon, Dimethoate, Fenamiphos, Fenthion, Maldison, Parathion			
	Other Pesticides and Organic Compounds Atrazine, PCB, TCE, PCE			

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

Note 2: mBGL means metres below ground level

31. The licence holder must adhere to the field quality assurance and quality control procedures specified in Schedule 2 for the monitoring required by condition 30.

Records

32. The licence holder must maintain accurate and auditable books that include the following records, information, reports, and data required by this licence:

    (a) the calculation of fees payable in respect of this licence;

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

    (c) monitoring programmes undertaken in accordance this licence; and

    (d) complaints received under condition 35 of this licence.

33. The books specified under condition 32 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 licence holder for the duration of the licence; and

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

34. The licence holder must:

(a) undertake an audit of their compliance with the conditions of this licence during the preceding annual period, and

(b) prepare and submit to the CEO an Annual Audit Compliance Report in the approved form by 30 March each year.

35. The licence holder must record the following information in relation to complaints received by the licence 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 licence holder to investigate or respond to any complaint

36. The licence holder must maintain a register of Special Waste Type 1 (Asbestos waste), Special Waste Type 2 (Biomedical and clinical waste) and Quarantine Waste disposed of at the Premises which must include:

(a) a plan showing the position of Special Waste Type 1 (Asbestos waste), Special Waste Type 2 (Biomedical and Clinical waste) and Quarantine Waste disposed of at the premises;

(b) the date of the deposit; and

(c) the name of the person that deposited the waste.

Reporting

37. The licence holder must:

(a) prepare an environmental report that provides information in accordance with Table 14 for the preceding annual period, and

(b) submit the environmental report to the CEO by 30 March each year.

Table 14: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[4]
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified.
-	Surveyed Topographic contour map depicted the area of the planned footprint including cross sections for cut slopes, filled areas and un-excavated areas	At least A3 in size in electronic format
-	Geotechnical Inspection Report prepared on behalf of the licence holder by a Qualified Engineer that, through visual inspection,	None specified.

Condition or table (if relevant)	Parameter	Format or form[4]
	assesses the stability of all landfill embankments, cut slopes and visual inspections to confirm integrity of final capping.	
Condition 27 and 28 (Tables 10 and 11)	Waste input and output data (including rejected loads)	None specified.
Condition 29 (Table 12)	Process Monitoring	
Condition 30 (Table 13) and Condition-31	A Groundwater Monitoring Report demonstrating compliance with Condition 30 and 31 for the annual period, and must include: (a) a clear statement of the scope of work carried out; (b) a description of the field methodologies employed; (c) a summary of the field and laboratory quality assurance / quality control (QA/QC) program; (d) copies of the field monitoring records and field QA/QC documentation; (e) an assessment of reliability of field procedures and laboratory results; (f) a tabulated summary of results, as well as all raw data provided in an accompanying Microsoft Excel spreadsheet digital document/file (or a compatible equivalent digital document/file), with all results being clearly referenced to laboratory certificates of analysis; (g) a diagram with aerial image overlay showing all monitoring locations and depicting groundwater level contours, flow direction and hydraulic gradient (relevant site features including discharge points and other potential sources of contamination must also be shown); (h) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the Guideline Assessment and management of contaminated sites; (i) an interpretive summary and assessment of results against previous monitoring results; (j) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the Guideline Assessment and management of contaminated sites; and (k) trend graphs to provide a graphical representation of historical results and to support the interpretive summary. Note 1: General guidance on report presentation can be found in the Department's *Guideline: Assessment and management of contaminated sites*.	

Condition or table (if relevant)	Parameter	Format or form[4]
34	Compliance	Annual Audit Compliance Report (AACR)
35	Complaints summary	None specified

38. The licence holder must ensure that the Annual Environmental Report also contains:

(a) any relevant process, production or operational data recorded under Condition 25; and

(b) an assessment of the information contained within the report against previous monitoring results and licence limits and/or targets.

39. The licence holder must submit the information in Table 15 to the CEO according to the specifications in that table.

Table 15: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form[4]
-	Copies of original monitoring reports submitted to the licence holder by third party	Not applicable	Within 14 days of the CEOs request	As received by the licence holder from third parties

40. The licence holder must ensure that the parameters listed in Table 16 are notified to the CEO in accordance with the notification requirements of the table.

Table 16: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement[1]
-	Any failure or malfunction of any pollution control equipment or any incident, which has caused, is causing or may cause pollution	As soon as practicable but no later than 5pm of the next usual working day.
26	Calibration report	As soon as practicable
Table 13	Any bores or wells listed in Table 13 that are destroyed or otherwise made unusable	Within 7 days

Note 1: Notification requirements in the licence shall not negate the requirement to comply with s72 of the EP Act

Definitions

In this licence, the terms in Table 17 have the meanings defined.

Table 17: Definitions

Term	Definition
ACM	means asbestos containing material and has the meaning defined in the Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia, (DOH, 2009).
Accelerated Forced Evaporation System	Refers to the leachate evaporation plant, which extracts leachate from the leachate ponds and passes it through an aeration process to accelerate the evaporation of leachate as depicted as Leachate Evaporation Units in Figure 3, Schedule 1.
Acceptance criteria	has meaning defined in Landfill Definitions.
AHD	means the Australian height datum.
Annual Audit Compliance Report (AACR)	means a report submitted in a format approved by the CEO (relevant guidelines and templates may be available on the Department's website).
annual period	a 12 month period commencing from 2 March until 1 March of the immediately following year.
AQIS	means Australian Quarantine and Inspection Service.
asbestos	means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite and any mixture containing 2 or more of those.
asbestos fibres	has the meaning defined in the Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia, (DOH, 2009).
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Accessible here: http://www.nepc.gov.au/nepms/assessment-site-contamination.
averaging period	means the time over which a limit or target is measured, or a monitoring result is obtained.
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer of the Department. "submit to / notify the CEO" (or similar), means either: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919

Term	Definition
	or: info@dwer.wa.gov.au
Clean fill	has the meaning defined in Landfill Definitions.
code of practice for the storage and handling of dangerous goods	means the document titled "Storage and handling of dangerous goods: Code of Practice" published by the Department of Mines, Industry Regulation and Safety, as amended from time to time.
Contaminated solid waste	has the meaning defined in Landfill Definitions.
Controlled waste	has the definition in *Environmental Protection (Controlled Waste) Regulations 2004.*
Dangerous goods	has the meaning defined in the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.*
Department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
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.
environmentally hazardous material	means material (either solid or liquid raw materials, materials in the process of manufacture, manufactured products, products used in the manufacturing process, by-products and waste) which if discharged into the environment from or within the premises may cause pollution or environmental harm. Note: Environmentally hazardous materials include dangerous goods where they are stored in quantities below placard quantities. The storage of dangerous goods above placard quantities is regulated by the Department of Mines, Industry Regulation and Safety.
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
e-waste	means electronic, electrical and battery-powered items that have been discarded or no longer in working order. Covers a range of items used in commercial, industrial and residential premises and includes, but is not limited to, televisions, computers, mobile phones, kitchen appliances and audio/visual equipment.
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.
fugitive emissions	means all emissions not arising from point sources.
Green Waste	means waste that originates from flora and which does not contain or has not been treated or coated with, preserving agents, biocides, fire retardants, paint, adhesives or binders.
Guideline:	means the document titled *Assessment and management of contaminated*

Term	Definition
Assessment and management of contaminated sites	*sites, Contaminated sites guidelines* as published by the Department of Water and Environmental Regulation.
Hazardous Waste	has the meaning defined in the Landfill Definitions
HDPE	High-density polyethylene.
Inert Waste Type 1	has the meaning defined in Landfill Definitions.
Inert Waste Type 2	has the meaning defined in Landfill Definitions.
Landfill Definitions	means the document titled *"Landfill Waste Classification and Waste Definitions 1996"* published by the Chief Executive Officer of the Department of Environment as amended from time to time.
Landfill gas	means gas generated from the decomposition of waste containing a mixture of methane, carbon dioxide and other gases.
Leachate	means liquid released by or water that has percolated through waste and which contains some of its constituents.
Licence	refers to this document, which evidences the grant of a Licence by the CEO under section 57 of the EP Act, subject to the specified conditions contained within.
Licence Holder	refers to the occupier of the premises, being the person specified on the front of the Licence as the person to whom this Licence has been granted.
mulched	means green waste shredded by a mechanical process into small pieces.
NATA	means the National Association of Testing Authorities, Australia.
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis.
premises	refers to the premises to which this licence applies, as specified at the front of this Licence and as shown on the Premises Map in Figure 1, Schedule 1 of this Licence.
prescribed premises	has the same meaning given to that term under the EP Act.
Putrescible	has the meaning defined in Landfill Definitions.
quarantined storage area or container	means a hardstand storage area or sealed-bottom container that is separate and isolated from authorised waste disposal areas and is capable of containing all non-conforming waste and its constituents, these areas must be clearly marked and their access restricted to authorised personnel.
Qualified Engineer	means a person who:

Term	Definition
	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 Licence Holder's business;
Quarantine Waste	means material from a foreign region or country that is capable of being host to insects, helminths or other parasites, diseases, weeds or any other organisms that are not existent or prevalent in Australia and pose a potential threat to local ecosystems, people or local plant or animal industries. Quarantine Waste may include: • Material used to pack and stabilise imported goods; • Galley food and any other waste from overseas vessels; • Human; animal or plant waste bought into Australia; • Refuse or sweepings from a hold of an overseas vessel; • Any other waste or other material, which comes into contact with Quarantine Waste; • Contents of AQIS airport amnesty bins; and • Articles seized by AQIS and/or not collected by clients.
rehabilitation	means the completion of the engineering of a landfill cell and includes capping and/or final cover.
residual waste	Non-hazardous, non-reusable and non-recyclable materials intended for disposal to landfill.
six monthly	means the 2 inclusive periods from 2 March to 1 September and 2 September to 1 March in the following year.
Special Waste Type 1	has the meaning defined in Landfill Definitions.
Special Waste Type 2	has the meaning defined in Landfill Definitions.
spot sample	means a discrete sample representative at the time and place at which the sample is taken.
Temporary Transfer Station	means facility designed to separate waste from domestic trailer traffic, located on top of Cells 4 and 5 (as depicted in Schedule 1).
tipping area	means the area of the landfill in which waste other than cover material is being deposited.
usual working day	means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia.
waste	has the same meaning given to that term under the EP Act.
µS/cm	means microsiemens per centimetre.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The blue line depicts the Premises boundary.

Figure 1: Prescribed premises boundary

Map of monitoring locations

The locations of the monitoring points defined in Table 12 and Table 13 are shown below.

Figure 2: Monitoring Locations

Landfill and storage area map

The location of Cell 6 capping, the current landfilling areas (depicted within the yellow polygons), Household Hazardous Waste area, and the green waste area are shown in Figure 3 below.

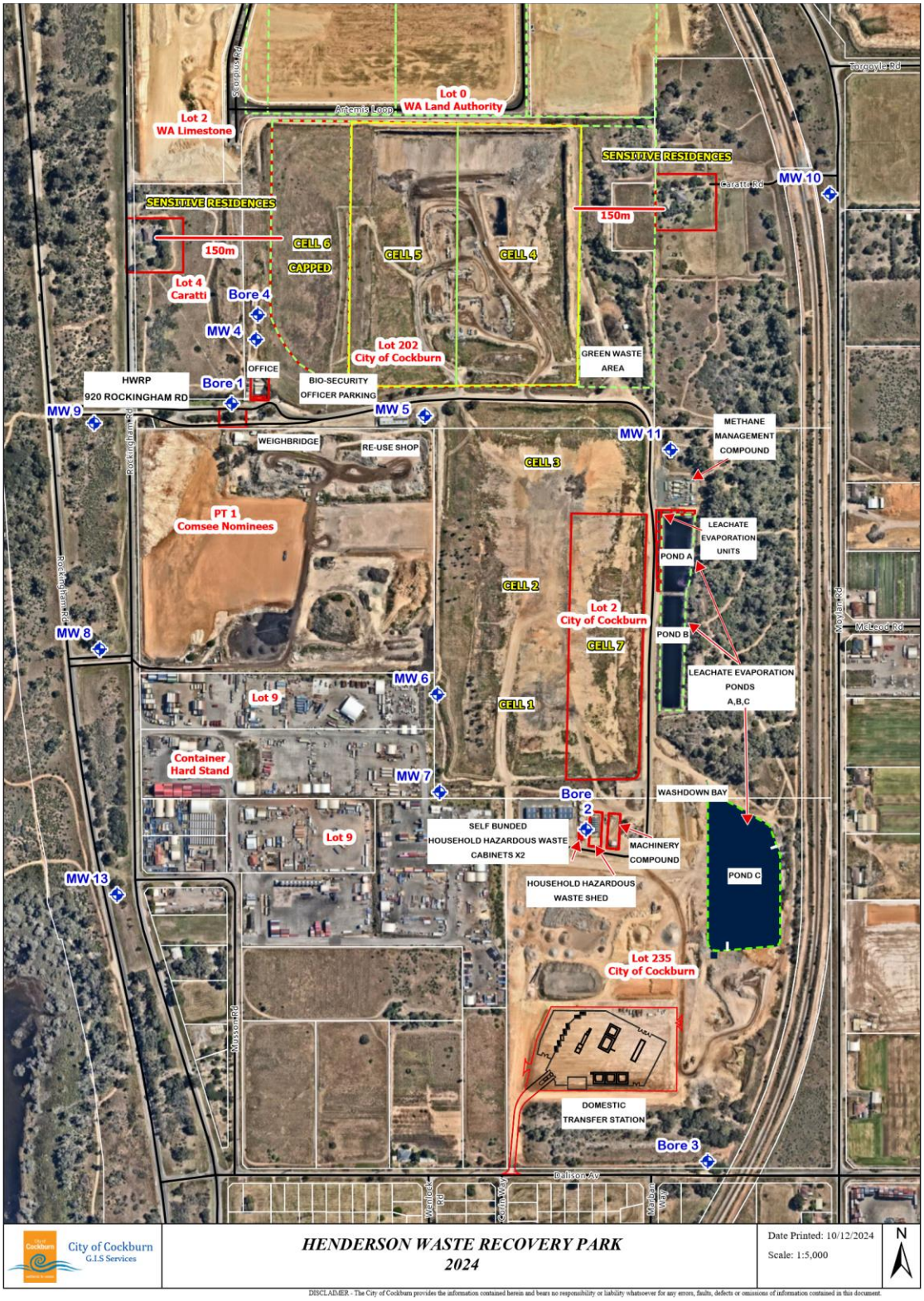

Figure 3: Location of landfill cells and storage areas

CITY OF COCKBURN

HENDERSON LANDFILL
PROPOSED LEACHATE PONDS

DRAWING SCHEDULE

DRAWING No.	REVISION	DESCRIPTION
HLL - 001	B	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
HLL - 002	B	OVERALL LAYOUT PLAN
HLL - 003	B	LEACHATE POND 3 LAYOUT PLAN
HLL - 004	B	LEACHATE POND 3 SECTIONS - SHEET 1 OF 2
HLL - 005	B	LEACHATE POND 3 SECTIONS - SHEET 1 OF 2
HLL - 006	B	LEACHATE POND 4 LAYOUT PLAN
HLL - 007	B	LEACHATE POND 4 SECTIONS
HLL - 008	B	LEACHATE POND DETAILS

FOR APPROVAL
24 APRIL 2024

Figure 4: Proposed leachate ponds area

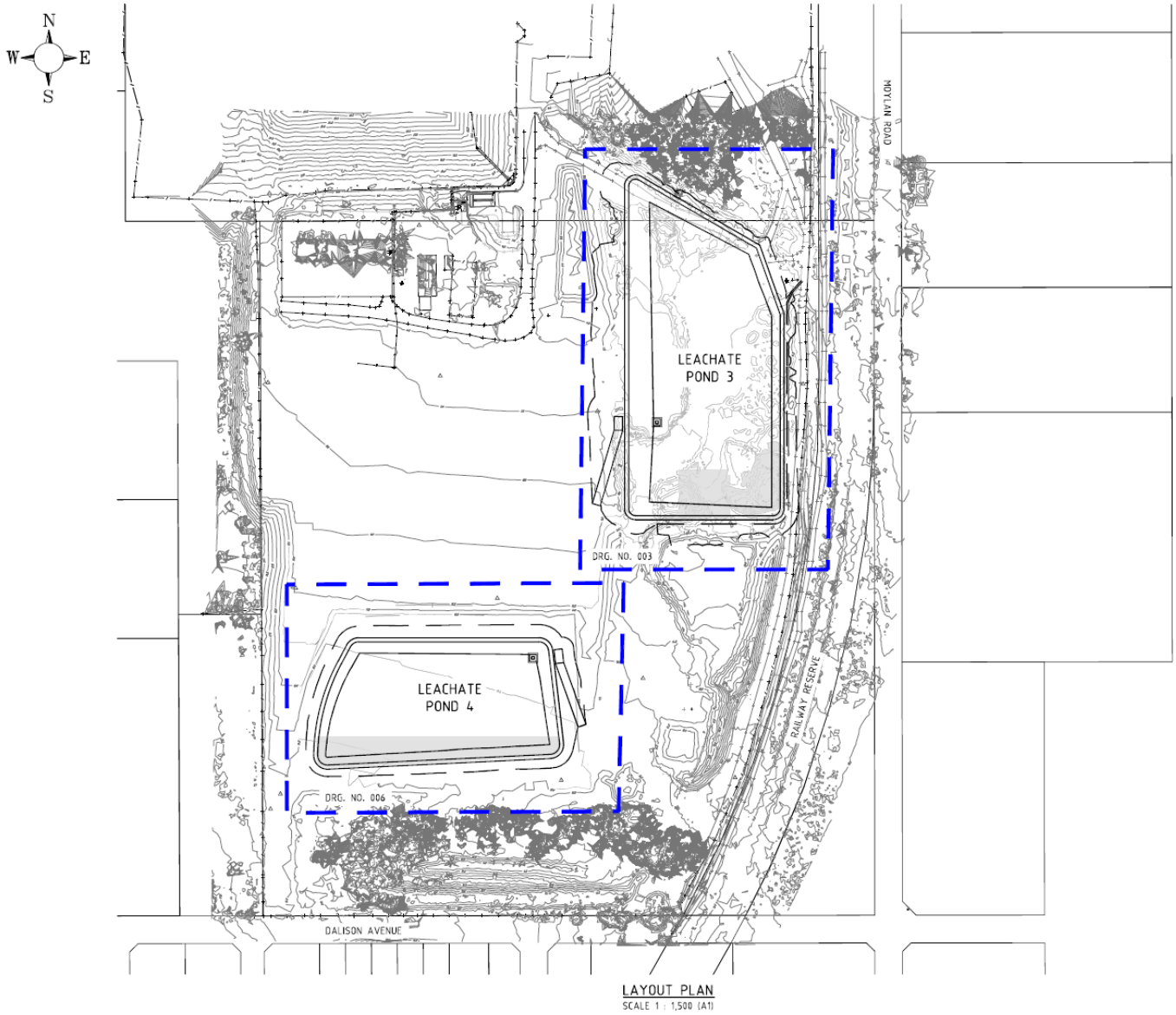

Figure 5: Proposed leachate pond layout

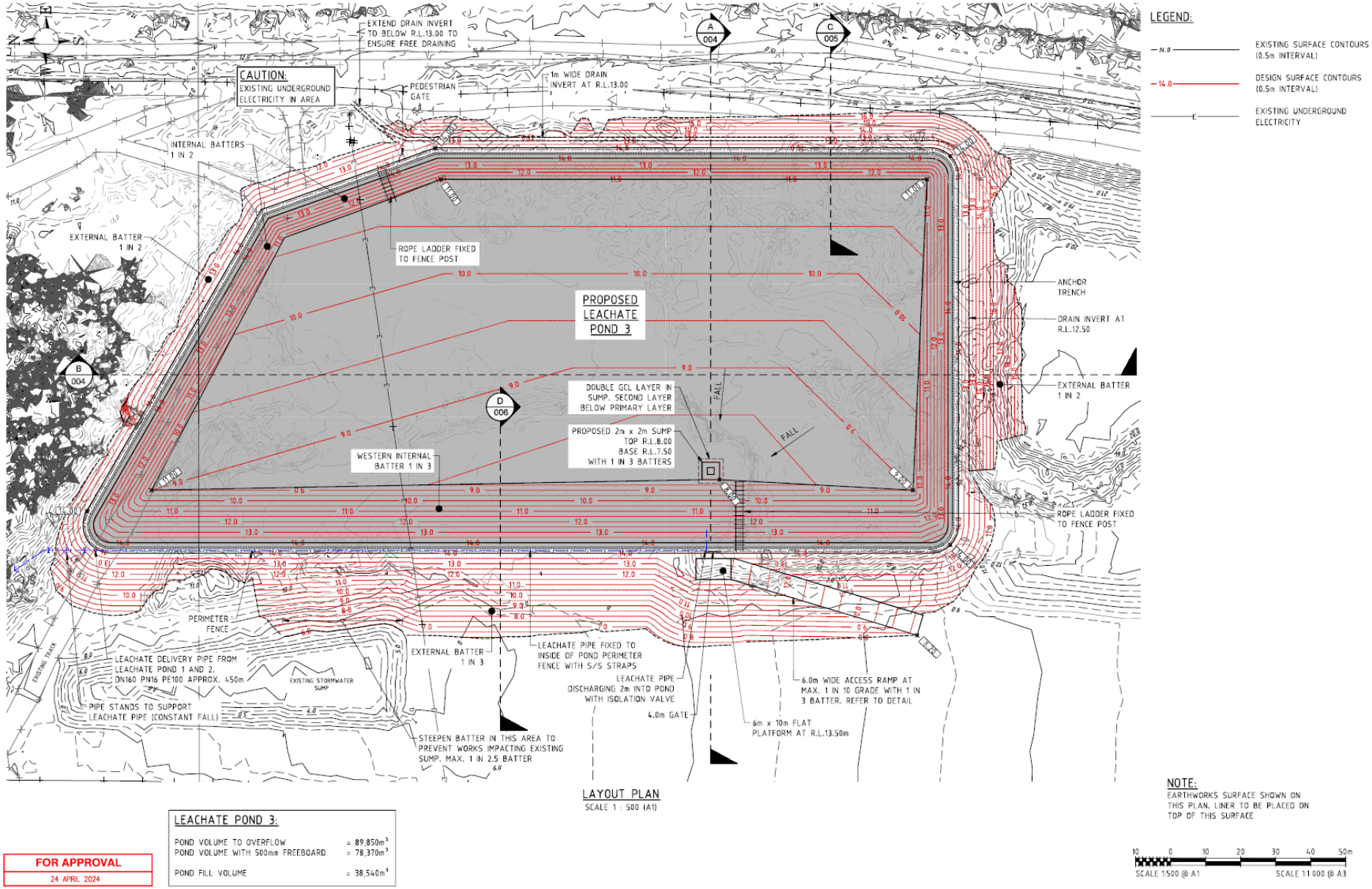

Figure 6: Leachate Pond C Layout Plan

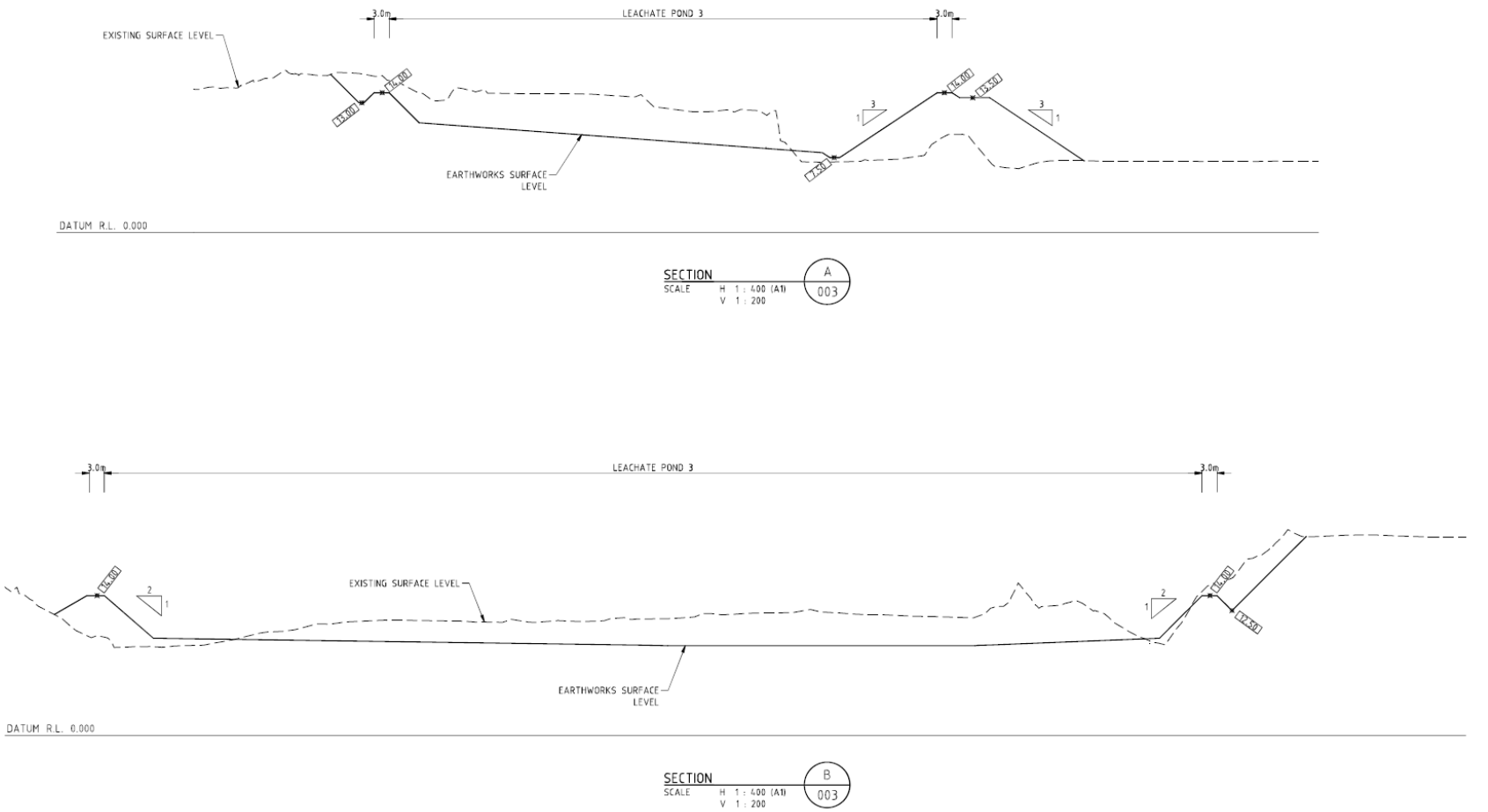

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Figure 7: Leachate Pond C Sections (1 of 2)

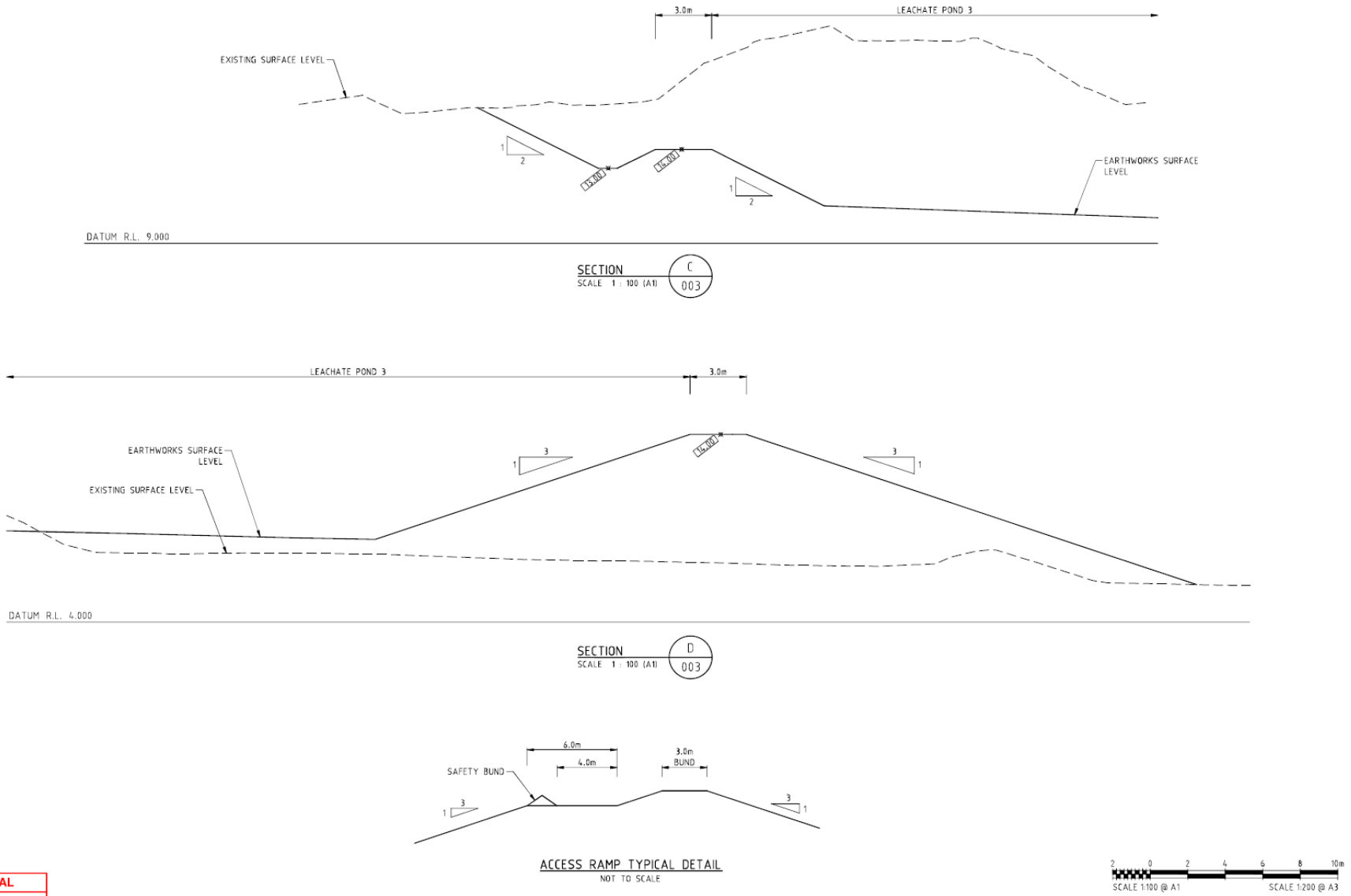

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Figure 8: Leachate Pond C Sections (2 of 2)

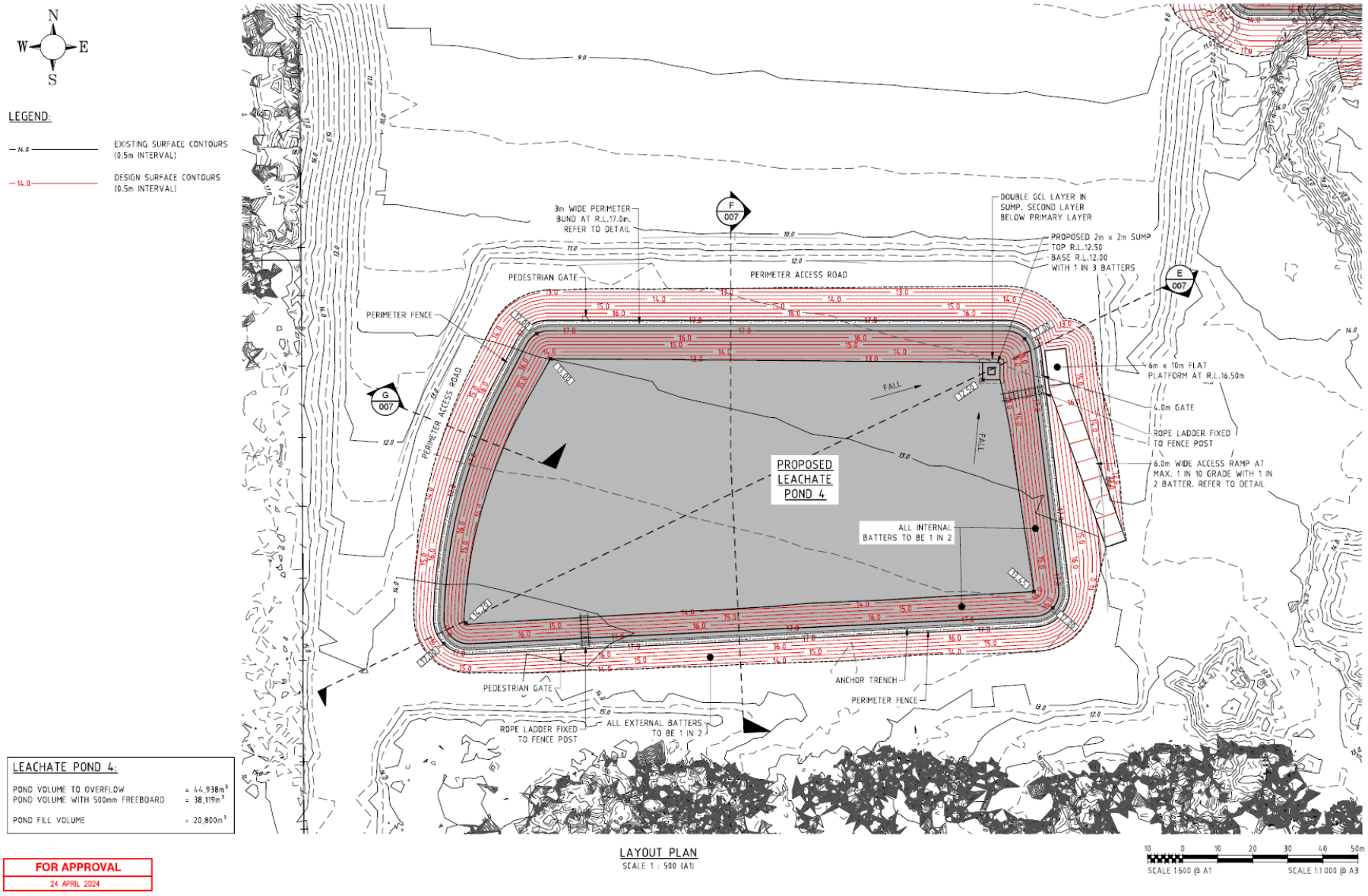


Figure 9: Leachate Pond D Layout Plan

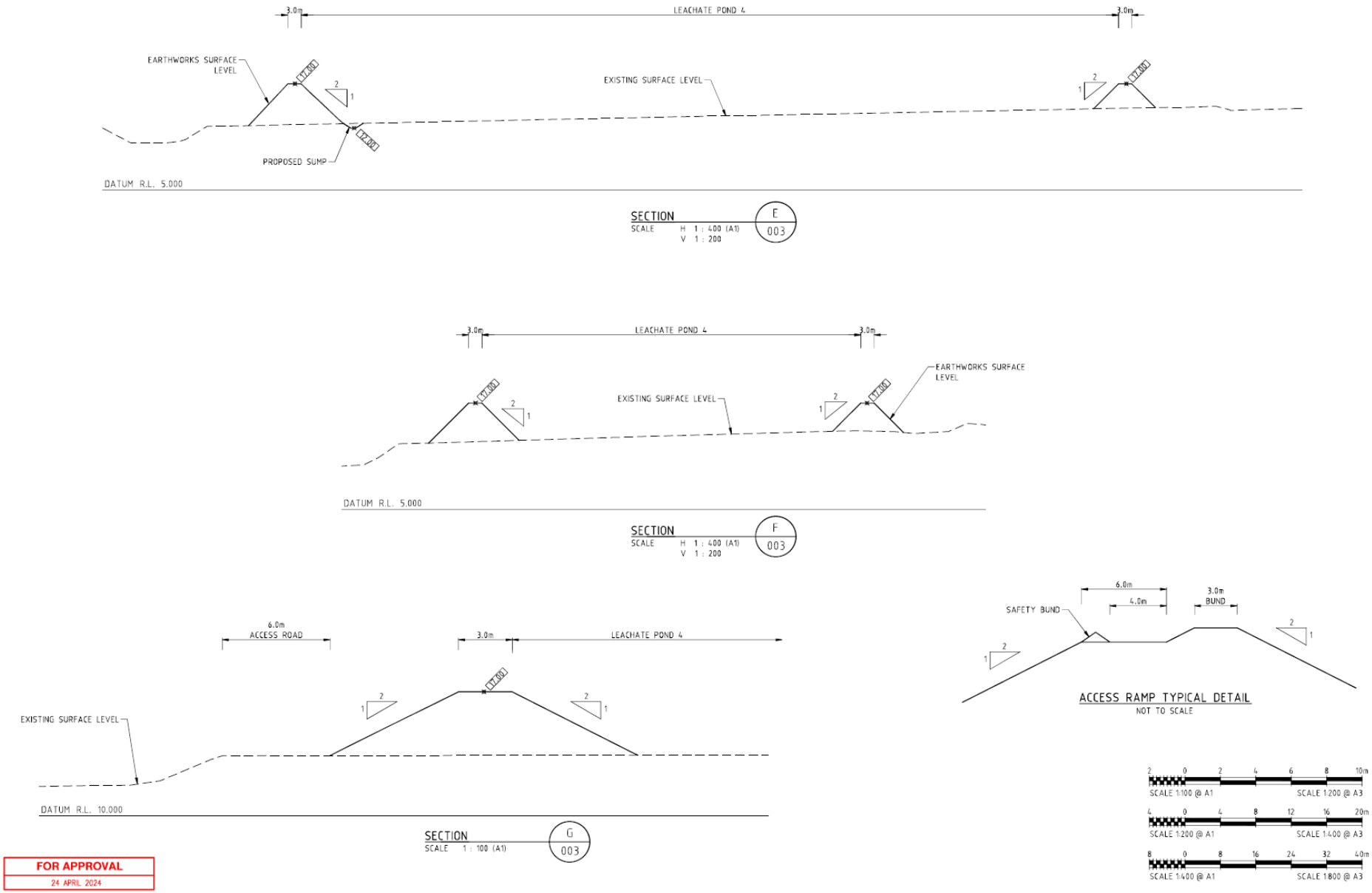
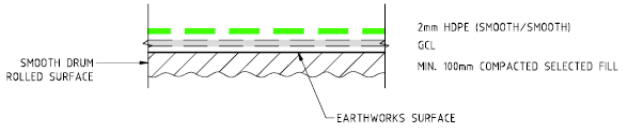
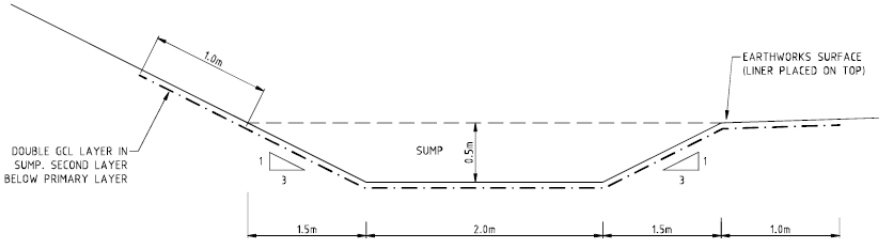


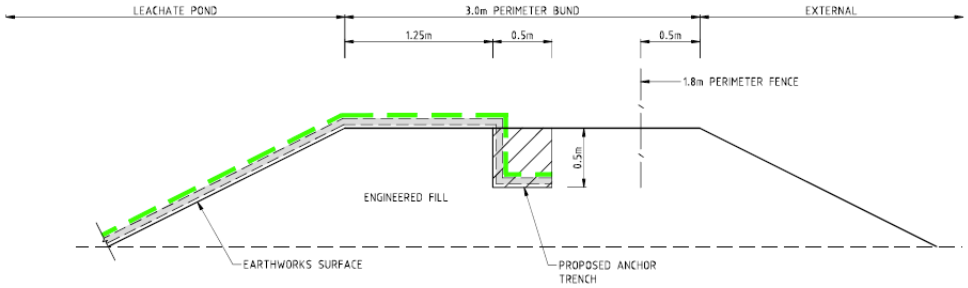
Figure 10: Leachate Pond D Sections



LEACHATE POND LINER DETAIL
SCALE 1 : 10 (A1)



LEACHATE POND SUMP TYPICAL DETAIL
SCALE 1 : 20 (A1)



LEACHATE POND PERIMETER TYPICAL DETAIL
SCALE 1 : 20 (A1)

FOR APPROVAL
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Figure 11: Leachate pond details

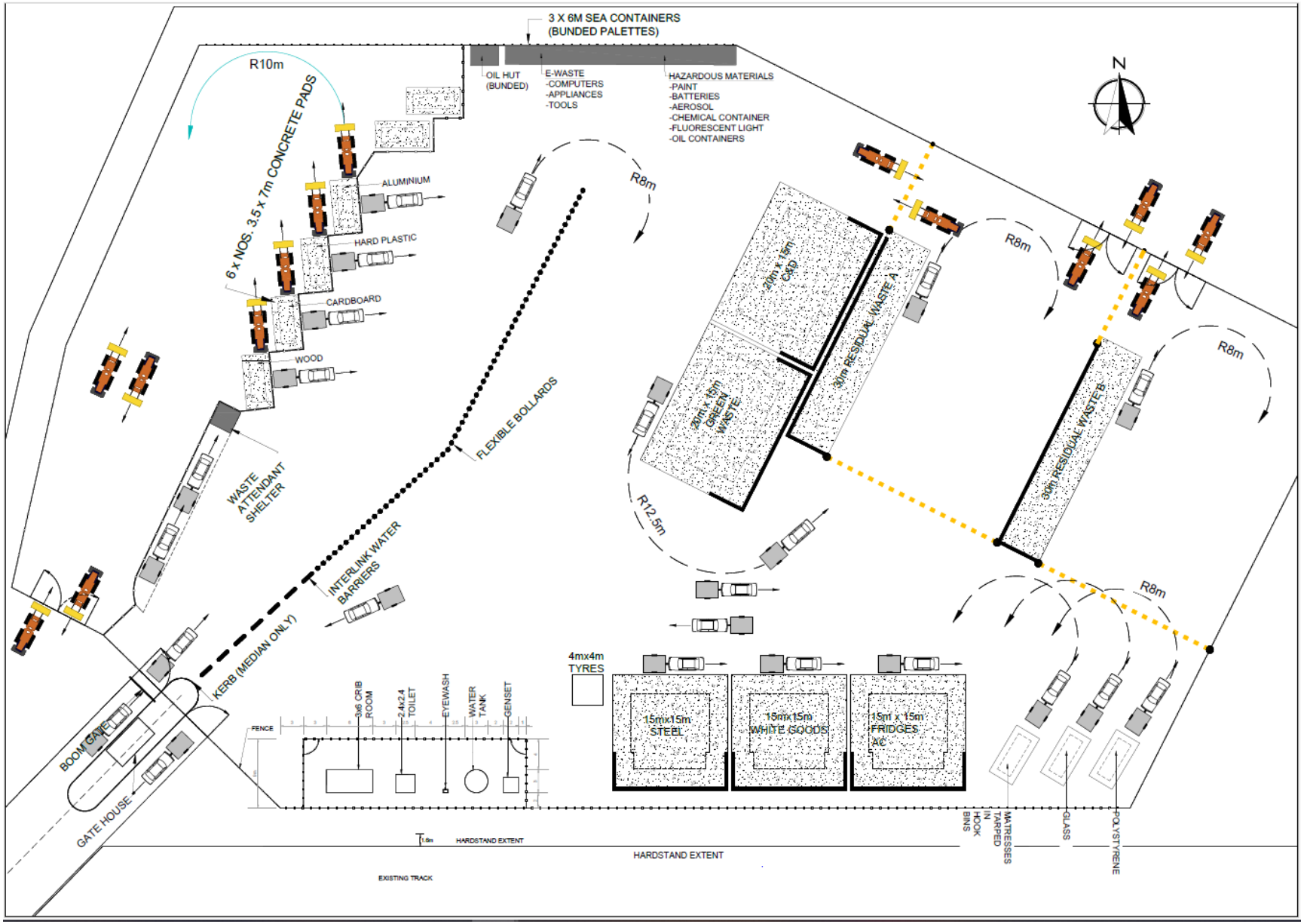

Figure 12: Proposed transfer station layout

Figure 13: Proposed transfer station location

Schedule 2: Quality assurance and quality control requirements – groundwater monitoring

The licence holder must adhere to the following field quality assurance and quality control procedures as specified in Schedule B2 of the Assessment of Site Contamination NEPM and must include as a minimum:

- decontamination procedures for the cleaning of tools and sampling equipment before sampling and between samples;
- field instrument calibration for instruments used on site;
- blind replicate samples and rinsate blanks must be collected in the field and sent to the primary laboratory to determine the precision of the field sampling and laboratory analytical program;
- completed field monitoring sheets/ sampling logs for each sample collected, showing time, location, initials of sampler, sampling method, field analysis results, duplicate type/location (if relevant), and site observations and weather conditions; and
- chain-of-custody documentation must be completed which details the following information: site identification; the sampler; nature of the sample; collection time and date; analyses to be performed; sample preservation method; departure time from site; dispatch courier(s); and arrival time at the laboratory

Schedule 3 – Leachate Pond CQA requirements

Table 18: Geocomposite clay liner (GCL) CQA requirements

	Item	Property	Standards	Frequency
1.	Conformance Quality Control testing (sampled at the point of manufacture or on site, as determined by the Superintendent)	Composite layer Thickness (dry)	ASTM D1777	1 sample every 3rd roll
2.		Mass per unit area of GCL	ASTM D5993	1 sample per 1,000 m_2
3.		Mass per unit area of Bentonite	ASTM D5993	1 sample per 2,500 m2
4.		Mass per unit area of Bentonite in overlaps	ASTM D5993	1 sample every 3rd roll
5.		Montmorillonite content	XRD (X-ray diffraction) Quantitative Mineralogy Analysis	sample per 10,000 m2
6.		Cation exchange capacity of bentonite	Methylene blue method	sample per 1,500 m2
7.		Moisture content of bentonite	ASTM D5993 AS 1289.2.1.1	sample per 2,500 m2
8.		Swell index/free swell of clay	ASTM D5890	1 sample per 1,500 m2
9.		Water absorption	ASTM D5891	1 sample per 1,500 m2
10.		Peel strength (for needle-punched products only)	ASTM D6496	1 sample every 3rd roll
11.		Tensile strength	ASTM D6768	1 sample per 10,000 m_2
12.		Index flux	ASTM 5887	1 sample per 10,000 m2
13.		Permeability	ASTM 5887	1 sample per 10,000 m2

	Item	Property	Standards	Frequency
14.	Visual inspection of GCL	Colour, thickness, needle punching, presence of needles or broken needles, and sewing density or other faults in the material.	N/A	Every roll
15.	Thickness of GCL and overlap (i.e. uniformity of bentonite distribution) and apparent variations in the as placed moisture distribution.	On-site	N/A	Each roll during placement. If thickness appears to be variable a check of the variability of the mass per unit area shall be conducted

Table 19: Geomembrane CQA requirements

	Item	Property	Standards	Frequency
1.	Conformance Quality Control testing (sampled at the point of manufacture or on site, as determined by the Superintendent)	Thickness	ASTM D5994	Every roll
2.		Asperity height	ASTM D7466	One sample per 5,000 m^2, or every five rolls delivered to Site whichever is the greatest number of tests
3.		Density	ASTM D1505 ASTM D792	
4.		Tensile properties (yield and break stress, yield and break elongation)	ASTM D6693 type IV	
5.		Puncture resistance	ASTM D4833	
6.		Tear resistance	ASTM D1004	
7.		Carbon black content	ASTM D4218	
8.		Carbon black dispersion	ASTM D5596	

	Item	Property	Standards	Frequency
9.		Stress crack resistance	ASTM D5397	One sample every 10,000 m^2, or resin type or manufacturing run
10.		Geomembrane Oxidative induction time	ASTM D8117 ASTM D5885	
11.	Start-up test weld	Welding equipment	N/A	Checked daily at start of Works, and whenever the welding equipment is shut-off for more than one hour. Also after significant changes in weather conditions
12.		Weld conditions	N/A	Test weld strips will be required whenever personnel or equipment are changed and/or wide temperature fluctuations are experienced. Minimum 1.5 m continuous seam
13.	Destructive weld testing	On-Site, hand tensiometer in peel and shear	ASTM D6392	Every 150 m (if fusion weld) Every 120 m (if extrusion weld)
14.		Off-Site — weld seam strength in peel and shear	ASTM D6392	Every 150 m (if fusion weld) every 120 m (if extrusion weld)
15.	Non-destructive weld testing	N/A	Air pressure test ASTM D5820 Vacuum box test ASTM D5641	All seams over full length
16.	Visual inspection of geomembrane	Smooth edges on both sides, tears, punctures, abrasions, cracks, indentations, thin spots, or other faults in the material.	N/A	Every roll
17.	Thickness of geomembrane	On-Site	N/A	Five per 100 m, 20 m apart, taken at the edge of the sheet