Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence number	L8904/2015/1
Licence holder	Cleanaway Solid Waste Pty Ltd
ACN	120 175 635
Registered business address	Level 4, 441 St Kilda Road MELBOURNE VIC 3004
DWER file number	DWERVT16037
Application number	APP-0028995
Duration	03/08/2015 to 02/08/2035
Date of issue	03/08/2015
Date of amendment	8/07/2025
Premises details	Banksia Road Putrescible Landfill Banksia Road CROOKED BROOK WA 6236 Legal description - Part of Lot 2 on Deposited Plan 65861 As defined by the premises map provided in Schedule 1

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed design capacity**
Category 5: Processing or beneficiation of metallic or non-metallic ore: premises on which: (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; (b) tailings from metallic or non-metallic ore are reprocessed; or (c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.	350,000 tonnes per annual period
Category 61: Liquid waste facility - Premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	3,000 tonnes per annual period
Category 64: Class II or III putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled “Landfill Waste Classification and Waste Definitions 1996” published by the Chief Executive Officer and as amended from time to time) is accepted for burial.	350,000 tonnes per annual period

This licence is granted to the licence holder, subject to the attached conditions, on 8 July 2025 by:

Grace Heydon

Digitally signed by Grace Heydon
Date: 2025.07.08 12:28:56 +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
13/11/1998	W2548/1998/1	First works approval issued for site construction. Issued to Kingscape Holdings Pty Ltd (J&P Metals). Approval was appealed and subsequently dismissed by the Minister for Environment.
29/11/1999	W2895/1999/1	Second works approval issued as the first approval expired prior to issue of development approval.
14/06/2000	L7439/1998/1	Licence first issued to authorise landfilling operations as a Class II landfill.
6/06/2001	L7439/1998/2	Licence reissued.
1/07/2002	L7439/1998/3	Licence reissued.
23/06/2003	L7439/1998/4	Licence reissued.
8/06/2004	L7439/1998/4	Licence reissued.
23/05/2005	L7439/1998/5	Licence reissued, including upgrade of landfill classification to Class III. The decision was appealed and subsequently dismissed by the Minister for Environment. First non-annual licence (3 years).
19/10/2006	L7439/1998/5	Licence transferred to Transpacific Waste Management.
5/06/2008	L7439/1998/6	Licence reissued. Issued for 3 years.
23/03/2009	L7439/1998/7	Licence amendment regarding construction of cell 4 without a works approval. Licence version updated to reflect ILS.
8/10/2010	L7439/1998/7	Ministerial licence amendment regarding disposal of processes septage waste (Appeal 337 of 2009).
9/12/2010	W4760/2010/1	Works approval for construction of cell 5.
3/06/2011	L7439/1998/8	Licence reissued. Issued for 3 years.
9/02/2012	W5096/2012/1	Works approval for construction of TDS Cell 1.
1/03/2012	W5124/2012/1	Works approval for construction of new leachate ponds.
15/11/2012	L7439/1998/8	Licence amendment regarding perimeter fencing requirements.
15/11/2012	W5096/2012/1	Works approval amendment to allow staged completion of TDS cell 1.
1/02/2013	W5301/2012/1	Installation of landfill gas collection and flare
22/02/2013	L7439/1998/8	Licence amendment to authorise use of TDS Cell 1.
23/01/2014	W5546/2013/1	Works approval for construction of cell #4B.

Date	Reference number	Summary of changes
29/05/2014	L7439/1998/9	Licence reissued. Converted to REFIRE format.
29/01/2015	W5748/2014/1	Works approval for construction of cell 12 and leachate evaporation pond 3
3/08/2015	L8904/2015/1	Licence issued due to L7439/1998/9 ceasing to have effect.
22/10/2015	L8904/2015/1	Licence amendment to authorise operation of leachate evaporation pond 3, constructed under W5748
5/05/2016	L8904/2015/1	Licence amendment to: • change company name; • authorise operation of cell 12 constructed under W5748; and • address stormwater upgrades
21/07/2016	L8904/2015/1	Licence amendment to: • Accept approximately 3,000 tonnes per annual period of drill muds for blending and disposal to landfill; and • increase allowable volumes of Processed Septage to 3,000 tonnes per annual period.
13/04/2017	L8904/2015/1	Licence amendment for: • construction and operation of three composite HDPE liner Class III landfill cells (cells 6, 7 and 8); • construction and operation of a phytocapping trial on Class III landfill cell 5; and • review of Premises operations and regulatory controls.
2/02/2018	L8904/2015/1	Amendment Notice 1 to reflect the completion of cell 6 construction and authorise its use.
18/02/2019	L8904/2015/1	Amendment Notice 2 for a new TDS Cell 2 and leachate pond under Category 61
25/06/2019	L8904/2015/1	Amendment Notice 3 to authorise the use of TDS Cell 2 and leachate pond constructed under Amendment Notice 2.
17/12/2019	L8904/2015/1	Licence amendment to: • Increase in quantity limit for Category 64 waste acceptance to 350,000 tonnes per annual period; • Review of regulatory controls relating to dust and windblown waste; and • Consolidate Amendment Notices 1, 2 and 3 into this licence document.
12/05/2020	L8904/2015/1	Licence amendment to reflect the completion of Cell 7 construction and authorise its use.
28/05/2021	L8904/2015/1	Licence amendment to upgrade southern boundary stormwater infrastructure.
5/10/2021	L8904/2015/1	DWER initiated amendment for the addition of odour controls following the Cell 7 Appeal Determination.

Department of Water and Environmental Regulation

Date	Reference number	Summary of changes
28/10/2021	L8904/2015/1	DWER initiated licence amendment to: • Review of premises operations and regulatory controls. • Incorporation of amendment application to reflect the completion of Cell 8 construction and authorise its use.
27/02/2023	L8904/2015/1	Licence amendment to commence capping of stage 1,2 and 5 and to allow for the construction and operation of a leachate recirculation system.
19/04/2023	W6745/2022/1	Works approval for the construction of additional stormwater management and storage infrastructure.
22/02/2024	L8904/2015/1	Licence amendment for the relocation of the landfill gas flare station and extension of landfill gas conveyance infrastructure.
23/02/2024	W6855/2023/1	Works approval for the construction of three additional landfill cells.
12/12/2024	L8904/2015/1	DWER initiated licence amendment to give effect to the Ministers appeal determination 048-21
03/02/2025	L8904/2015/1	APP-0025963. Amendment to change how freeboard is monitored and calculated in TDS Cell 2.
27/03/2025	L8904/2015/1	APP-0026186. Amendment to include capping provisions for TDS Cell 1.
23/04/2025	L8904/2015/1	APP-0026994. Amendment to include acceptance of Special Waste Type 3 in Class III landfill cells.
08/07/2025	L8904/2015/1	APP-0028995. DWER initiated amendment to give full effect to Ministers appeal determination 048-21 and to Ministers appeal determination 009-23.

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;

  (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:

Waste acceptance

Solid waste acceptance

1. The Licence Holder must only accept onto the premises solid 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 1.

Table 1: Types of solid waste authorised to be accepted onto the premises

	Waste type	Rate at which waste is received	Acceptance specification
1.	All waste types	350,000 tonnes per annual period with no more than 20,000 tonnes of Special Waste Type 1 received in any annual period.	(a) All waste accepted at the Premises must be completely covered; (b) All waste loads accepted at the Premises must be visually inspected to confirm waste type/s; (c) Should a hot load be identified, the waste must not be disposed of at the tipping face; and (d) All waste suspected of containing ACM or asbestos must be treated as being Special Waste Type 1.
2.	Contaminated Solid Waste Inert Waste Type 1 Inert Waste Type 2 Putrescible Waste Special Waste Type 2 Processed septage waste		(a) Contaminated Solid Waste must be supported by documentation that demonstrates compliance with the Acceptance Criteria for Class III landfills; and (b) No tyres are to be accepted.
3.	Special Waste Type 1		(a) All Special Waste Type 1 accepted at the Premises must be completely contained; and (b) Acceptance of any waste must not result in the discharge of ACM or asbestos fibres.
4.	Clean Fill		None specified
5.	Special Waste Type 3		(a) Must meet the acceptance criteria for Class III landfills as specified in Appendix 4 and the acceptance criteria for Class III landfills as specified in the Landfill Definitions for contaminants other than PFAS. (b) Consignments of Special Waste Type 3 must be supported by documentation that demonstrates compliance with the Acceptance Criteria for Class III landfills.

Industrial tailings waste acceptance

2. The Licence Holder must only accept onto the premises industrial tailings of a tailings type, which does not exceed the corresponding rate at which tailings are received, and which meets the corresponding acceptance specification set out in Table 2.

Table 2: Types of industrial tailings waste authorised to be accepted onto the premises

Tailings type	Rate at which tailings is received	Acceptance specification
Titanium Dioxide Tailings	350,000 tonnes per annual period	Tailings must be accepted in sealed vessels.

Liquid waste acceptance

3. The Licence Holder must only accept onto the premises liquid 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 3.

Table 3: Types of liquid waste authorised to be accepted onto the premises

Waste type	Rate at which waste is received	Acceptance specification
Drill Muds	3,000 tonnes per annual period	Drill muds must be accepted in sealed vessels.

Waste acceptance general

4. The Licence Holder must ensure that where a waste or tailings type does not meet the tailings type, waste type, Acceptance Criteria, or acceptance specification set out in Condition 1, Condition 2 or Condition 3, the waste is removed from the Premises by the delivery vehicle, or where that is not possible, stored in a quarantined storage area or container that prevents waste being discharged to the environment, and removed to an appropriately authorised facility within 21 days.

Waste processing

Solid waste processing

5. The Licence Holder must ensure that the waste types specified in Table 4 are only subjected to the corresponding processes, subject to the corresponding process limits and/or specifications.

Table 4: Solid waste processing

	Waste type	Process(es)	Process limits/specification
1.	Clean fill	Receipt, handling, and disposal by landfilling.	None specified
2.	Contaminated Solid Waste Drill muds (processed in accordance with Condition 8) Inert Waste Type 1 Inert Waste Type 2		(a) Waste must only be disposed of by burial into the Active Landfill Area and must not be used for any other purpose; (b) All waste, except Special Waste Type 1, must be levelled in layers no greater than 0.5 m thick and compacted; and (c) Highly Odorous Waste must be disposed of by burial immediately

	Waste type	Process(es)	Process limits/specification
	Putrescible Waste Processed septage		following acceptance.
3.	Special Waste Type 1		(a) Waste must only be disposed of by burial to the active Special Waste Disposal Area. (b) Disposal must not result in the discharge of ACM or asbestos fibres; (c) Bulk loads of soil containing ACM or asbestos must be wet down during disposal, levelling and immediate burial; and (d) Waste must not be compacted until covered in accordance with Condition 19.
4.	Special Waste Type 2		(a) Waste must only be disposed of by burial to the active Special Waste Disposal Area. (b) Waste must be levelled in layers no greater than 0.5 m thick and compacted; and (c) Highly Odorous Waste must be disposed of by burial immediately following acceptance.
5.	Special Waste Type 3		(a) Waste must only be disposed of by burial to the active Class III landfill cells. (b) No stockpiling of waste is to occur. (c) Bulk loads of soil must be wet down during disposal, levelling and immediate burial. (d) Waste must not be compacted until covered in accordance with Condition 19.

6. The Licence Holder must not excavate or uncover any landfilled waste at the Premises except:

(a) for the installation of landfill gas collection and management system infrastructure;

(b) for the installation of leachate sump access wells; and

(c) all waste that is uncovered or excavated must be landfilled in accordance with Condition 5 and Condition 19 of this Licence immediately following installation.

Industrial tailings waste processing

7. The Licence Holder must ensure that the tailings type specified in Table 5 is only subjected to the corresponding processes, subject to the corresponding process limits and/or specifications.

Table 5: Industrial tailings waste processing

Tailings type	Rate at which tailings are	Process limits/specification

	received	
Titanium Dioxide Tailings	Receipt, handling and disposal	(a) Tailings must only to be disposed of into the designated TDS Cells as depicted in Map 1 Schedule 1; (b) Tailings must be discharged into the designated TDS Cells directly from the sealed vessels in which they are accepted; (c) Vehicles unloading in accordance with b) must do so from the dedicated impervious hardstand TDS Unloading Areas as depicted in Figure 1, Schedule 1; and (d) Tailings must be maintained in a damp state.

Liquid waste processing

8. The Licence Holder must ensure that the waste types specified in Table 6 are only subjected to the corresponding processes, subject to the corresponding process limits and/or specifications.

Table 6: Liquid waste processing

Waste type	**Rate at which waste is received**	**Process limits/specification**
Drill Muds	Receipt, handling, storage, solidification and disposal of waste.	(a) Must be processed to a solid waste prior to landfilling by the following process: ○ temporarily stored in sealed vessels on a dedicated and cordoned off 200mm sacrificial sand layer within an active Class III landfill cell; ○ unloaded and treated on a Hardstand with bund walls that prevent the discharge of leachate from the Hardstand; and ○ by mixing with shredded timber, compost, or Clean Fill to ensure a spadeable consistency. (b) Must achieve contaminant levels that comply with the Acceptance Criteria for Class III landfills, as demonstrated by the analysis of samples required by Condition 48; and (c) Disposed of by landfilling in accordance with Condition 5.

9. The Licence Holder must ensure that waste is not burnt at the Premises.

Containment Infrastructure

Solid waste containment infrastructure

10. The Licence Holder must ensure that the solid waste containment infrastructure specified in Table 7 meets or exceeds the specifications in Table 7 for the corresponding infrastructure.

Table 7: Solid waste containment infrastructure

	Infrastructure	Specifications
1.	All landfill cells (Cell 1, 2, 3, 4A, 4B, 5, 12 and 6, 7 and 8)	(a) The landfill profile must be maintained in a stable condition and free of any cracking, slumping or failure; (b) All leachate pipes, gravity feeds and pumps must be free of blockage, leak and defect; (c) All leachate sumps must be maintained free of leaks and defects; (d) All leachate removed from the leachate sumps must be directed to a leachate pond; and (e) Landfill cells must be filled to ensure that the maximum height of waste placed within the amalgamated cells will be no greater than 128 m AHD while ensuring that all landfill cell faces are stable.
2.	Cells 3, 4A, 4B, 5 and 12 (Class III) Lining System	(a) Engineered geosynthetic/ 1.5mm HDPE composite cell floor liner to achieve a permeability of at least <1x10-9 m/s or equivalent; and (b) Leachate Collection System consisting of a 300mm layer of permeable gravel with a network of perforated collection pipes that direct leachate to the collection sump.
3.	Cells 6, 7 and 8 (Class III) Lining System	(a) Engineered geosynthetic/ 2.0mm HDPE composite cell floor liner to achieve a permeability of at least $<1x10^{-9}$ m/s or equivalent; and (b) Leachate Collection System consisting of a 300mm layer of permeable gravel with a network of perforated collection pipes that direct leachate to the collection sump.
4.	Capped landfill cells	(a) The Licence Holder must undertake quarterly visual inspections of the capping system. Inspections must review: • the integrity of growth medium, • capping drainage systems, • cap penetrations (landfill gas, leachate piping and wells), and pore pressures/ saturation levels in the growth medium and geotextile drainage liner. (b) Any deficiencies must be documented and remediated.

Industrial waste containment infrastructure

11. The Licence Holder must ensure that the industrial tailings containment infrastructure specified in Table 8 meets or exceeds the specifications in Table 8 for the corresponding infrastructure.

Table 8: Industrial tailings containment infrastructure

Infrastructure	Specifications
TDS Cell 1 TDS Cell 2	(a) Lined with an engineered geosynthetic/ HDPE composite liner free of leaks and defects;

Infrastructure	Specifications
	(b) Maintain an under-liner pressure relief system and an over-liner drainage collection system for TDS Cell 2; (c) Contain a 5% AEP rainfall event in TDS Cell 1 while maintaining an additional 0.5m freeboard (total freeboard of at least 1.0m above the maximum operating level); (d) Contain a 1% AEP rainfall event in TDS Cell 2 while maintaining freeboard of at least 1.7m at all times~~;~~ (e) Contingency volume for liquid storage within TDS Cell 2 must be calculated using Propellor™ software on a monthly basis. (f) All leachate must be directed to the TDS Cell 1 leachate pond or the TDS Cell 2 leachate pond; and (g) All leachate pipes, gravity feeds and pumps must be free of blockage, leaks and defects.

Leachate containment infrastructure

12. The Licence Holder must ensure that the leachate containment infrastructure specified in Table 9 meets or exceeds the specifications in Table 9 for the corresponding infrastructure.

Table 9: Leachate containment infrastructure

	Infrastructure	Specification
1.	All	(a) Pond liners must be maintained free of leaks and defects; (b) Overtopping of the ponds and tanks must not occur; (c) Stormwater runoff must not enter the ponds or tanks or cause erosion of embankments; and (d) Daily inspections of the TDS Cells and TDS Leachate ponds to assess compliance with condition must be undertaken and recorded.
2.	TDS Cell 1 leachate pond	(a) 1.5mm HDPE lined to achieve a permeability of at least <1x10^{-9} m/s or equivalent; (b) Maintain a water recovery system which allows for the transfer of leachate from the TDS leachate ponds to the leachate storage tank; and (c) Maintenance of at least 1.0m freeboard at all times.
3.	TDS Cell 2 leachate pond	(a) 2.0mm HDPE lined to achieve a permeability of at least <1x10^{-9} m/s or equivalent; (b) Maintenance of at least 1.0m freeboard at all times; (c) Maintain a water recovery system which allows for the transfer of leachate from the TDS leachate ponds to the leachate storage tank; and (d) All pipelines associated with the return water system and the water recovery system are able to be isolated with shut-off valves which are bunded.

	Infrastructure	Specification
4.	TDS leachate storage tanks	(a) Four impervious storage tanks each with a minimum storage capacity of 85 kL; (b) The four impervious storage tanks must be located on a hardstand that directs any leachate back to the TDS Cells. (c) Maintain an indicator float on the leachate tanks that allows operators to inspect leachate levels in the storage tanks; and (d) The indicator float must be clearly visible from the TDS unloading position. (e) Leachate must be sent for reuse at the Kemerton Titanium Dioxide Processing Plant.
5.	Primary Landfill Leachate Pond Landfill Leachate Evaporation Ponds 1, 2 and 3	(a) 1.5mm HDPE lined to achieve a permeability of at least $<1x10^{-9}$ m/s or equivalent; (b) Designed to contain leachate and stormwater produced as a result of a 1% AEP rainfall event; (c) Leachate ponds 1, 2 and 3 must have a total storage capacity of at least 8,500 kL; and (d) A freeboard of 500 mm must be maintained on all ponds at all times.

13. The Licence Holder must manage leachate in accordance with the following physical controls and limits:

(a) Re-use of TDS leachate at the Premises must not occur;

(b) Recirculation of TDS leachate must only occur to prevent overflow of TDS leachate storage tanks, and must be recirculated within TDS Cells only;

(c) the recirculation of landfill leachate via spray over the internal walls of the leachate ponds must not result in discharge beyond the leachate pond embankment liners;

(d) the recirculation of landfill leachate for dust suppression must only occur to the active tipping area within the Active Landfill Area;

(e) the recirculation of landfill leachate for dust suppression at the active tipping area within the Active Landfill Area must not occur when winds at the premises are predicted to be above 63 km/hr; and

(f) direct reinjection of landfill leachate into landfill cells must not occur.

Landfill gas management infrastructure

14. The Licence Holder must install, operate and maintain an active landfill gas collection and management system infrastructure that meets or exceeds the specifications in Table 10 according to the specifications in that table for each of the corresponding infrastructure.

Table 10: Landfill gas collection and management systems

	Infrastructure	Specifications
1.	Active landfill gas collection and management system	Designed, installed and operated to prevent landfill gas migration, minimise landfill gas emissions and optimise utilisation (where possible).
2.	Gas extraction wells	Vertical and horizontal HDPE extraction wells completely sealed to prevent air draw down in accordance with the specifications in Plans 3 – 5F of Schedule 3.
3.	Collection infrastructure - gas transfer pipelines, laterals and headers	HDPE, impervious and free of leaks and defects.
4.	Condensate system	All captured condensate is returned to the Primary Leachate Pond or Leachate Evaporation Pond.
5.	Landfill gas flare	(a) 2,000 m^3/ hour capacity enclosed flare with a ≥850^{o}C chamber temperature with gas residence time of >0.6 seconds. (b) System designed, installed, and operated to ensure that the integrity of the landfill cap liners are not compromised by the sub-surface accumulation of landfill gas.

15. The Licence Holder must:

(a) install landfill gas extraction wells and collection infrastructure in Cell 3, 4, 4B, 12 and the southern and eastern areas of Cell 5 and connect this infrastructure to the active landfill gas management system (flare) by 30 June 2022;

(b) connect the installed horizontal landfill gas extraction wells in Cell 6 and Cell 7 to the active landfill gas management system (flare) by 31 March 2022;

(c) install vertical landfill gas extraction wells and collection infrastructure in Cell 6 and Cell 7, and connect this infrastructure to the active landfill gas management system (flare) by 31 December 2022;

(d) install landfill gas extraction wells and collection infrastructure in Cell 8 and connect this infrastructure to the active landfill gas management system (flare) within 12 months of reaching final waste contours in these Cells.

Stormwater management infrastructure

16. The Licence Holder must ensure that:

(a) the infrastructure depicted in Plans 1, 1A, 1B and 2 of Schedule 3 and specified in Table 11 must meet or exceed the corresponding specifications; and

(b) Any departure from the specifications in Table 11 and Plans 1, 1A, 1B and 2 of Schedule 3 must not increase the risk to public health, public amenity or the environment.

Table 11: Stormwater infrastructure requirements

	Site infrastructure and equipment	Specification
1.	Stormwater ponds and spillways	(a) Sized to accommodate a 1% AEP rainfall event. (b) A freeboard of 0.5 m is maintained in stormwater pond 2.
2.	Eastern area stormwater diversion	(a) Sized to accommodate a 1% AEP rainfall event. (b) Minimum 0.5m high bund with adjacent channel 1 m wide and 0.5 m deep.
3.	Western stormwater bund	Minimum height of 1 m.
4.	Northern boundary drains	None specified.
5.	Southern boundary drains	Sized to accommodate a 1% AEP rainfall event.
6.	Sediment traps, drains, bunds and culverts	Sized to accommodate a 5% AEP rainfall event.

17. The Licence Holder must submit an Environmental Compliance Report, within 60 calendar days of the southern boundary drain and firebreak being constructed.

18. The Environmental Compliance Report required by Condition 17 must:

(a) include certification by a Suitably Qualified Engineer that the southern boundary drain and firebreak have been constructed in accordance with the specifications in Table 11 and Plans 1, 1A, 1B and 2 of Schedule 3;

(b) contain as constructed plans of the southern boundary drain and firebreak; and

(c) assess the ability of the upgraded stormwater infrastructure to manage a 1% AEP rainfall event, taking into account normal operating water levels in stormwater ponds 1 and 2; and

(d) be signed by a person authorised to represent the Licence Holder and contain the printed name and position of that person within the company.

Cover and capping requirements

Daily and Interim cover

19. The Licence Holder must ensure that daily and interim cover is applied and maintained on landfilled waste types in accordance with the corresponding cover requirements in Table 12 and Table 13 and that sufficient stockpiles of cover are maintained on the premises at all times to meet the requirements of this condition.

Table 12: Daily cover requirements

	Waste type	Material	Depth	Timescales
1.	Clean Fill	No cover requirement		
2.	Special Waste Type 1 Special Waste	Either:		As soon as practicable after acceptance and no later than the end of the working day that the waste was accepted, and before being compacted to prevent the release of asbestos

	Waste type	Material	Depth	Timescales
	Type 2 Special Waste Type 3	(a) 300 mm of Inert Waste Type 1 or Clean fill; or (b) 1,000 mm of Solid waste		fibres and further disturbance as a result of compaction and other landfilling activities.
3.	Contaminated Solid Waste Drill muds Inert Waste Type 1 Inert Waste Type 2 Putrescible Waste	Inert Waste Type I or Clean Fill	150 mm	As soon as practicable and not later than the end of the working day that the waste was deposited.
4.	Processed Septage waste	Inert Waste Type 1 or Clean Fill	300 mm	As soon as practicable and not later than the end of the working day that the waste was deposited.
5.	All waste types (excludes Titanium Dioxide Tailings)	Inert Waste Type 1 or Clean Fill	300 mm	Immediately following disposal for any wastes meeting the definition of Highly Odorous Wastes[1] or Dusty Wastes[1].
6.		Putrescible Waste	1000 mm	Immediately following disposal for any wastes meeting the definition of Highly Odorous Wastes[1] or Dusty Wastes[1].

Note 1: Where waste meets the definition of Highly Odorous Wastes and/or Dusty Wastes, the cover requirements for Highly Odorous Wastes and Dusty Wastes take precedence over any other cover requirements.

Table 13: Interim cover requirements

Waste type	Material	Depth	Timescales
All waste types (excludes Titanium Dioxide Tailings)	Clean Fill	1000 mm	Progressively applied and within 3 months of achieving Interim Waste Contours

Final capping

20. The Licence Holder must prepare and submit to the CEO by **31 July 2025**, an updated Rehabilitation and Closure Plan for all Landfill Cells. The updated Rehabilitation and Closure Plan must include as a minimum:

(a) A proposed filling schedule and timeframes to achieve final waste contours for all landfill Cells in accordance with Plan 6, Schedule 3 which prioritises the completion of landfill Cells containing waste over the construction and filling of new landfill Cells and justifies where such prioritisation is not possible;

(b) The proposed construction specification for final capping for all landfill Cells;

(c) Existing surveyed levels of all landfill Cells relative to the proposed final waste contours;

(d) Construction quality assurance plans for capping works for all landfill Cells; and

(e) A capping schedule that ensures that:

(i) All portions of landfill Cells that have achieved final waste contours are capped within 18 months;

(ii) Cells 7 and 8 are capped within 18 months of reaching final waste contours in each cell.

(f) Construction and Quality Assurance plans and specifications for rehabilitation stages 2 and 5; and

21. The Licence Holder must provide to the CEO by **31 July 2025**, evidence of adequate financial provisions for unplanned and planned closure of the landfill.

22. The Licence Holder must prepare and submit to the CEO by 30 June 2022, a Rehabilitation and Closure Plan for the TDS Cells. The Rehabilitation and Closure Plan must include as a minimum:

(a) A geotechnical assessment of the Titanium Dioxide Tailings in all TDS Cells;

(b) A proposed schedule, timeframe and methodology to achieve consolidation of Titanium Dioxide Tailings to ensure sufficient strength to allow capping of all TDS Cells;

(c) A proposed schedule and timeframes to achieve final waste contours for all TDS Cells;

(d) A proposed schedule and timeframes for capping all TDS Cells;

(e) The proposed capping construction specification for all TDS Cells; and

(f) Construction quality assurance plans for capping works for all TDS-Cells.

23. The Licence Holder must undertake quarterly visual inspections of capped landfill cells to identify any bare patches more than four square metres and any naturally recruited native or exotic tree species (mature height more than 2 m) which are not suitable species for cap revegetation.

24. The Licence Holder must ensure that any unsuitable tree or shrub species identified during quarterly capped landfill cell inspections are manually removed or treated to prevent establishment.

25. The Licence Holder must replant and/or reseed any bare patches of the capped landfill cells greater than four square metres by 1 September each year.

Emissions and discharges

Dust emissions

26. The Licence Holder must, prior to using the southern haul road for access to/from Cell 8, extend the bitumised southern haul route to the eastern extent of Cell 8.

27. The Licence Holder must keep all roads used by vehicles greater than 2.5 tonnes damp at all times during operational hours by applying water via a water cart, collected from Stormwater Pond 1 and Stormwater Pond 2;

28. The Licence Holder must restrict vehicle speeds on the premises to below 20 km per hour.

29. The Licence Holder must manage fugitive dust emissions from the active tipping area during operational hours by:

(a) applying water collected from Stormwater Pond 1 and Stormwater Pond 2, via a water cart, to the active tipping area; or

(b) applying leachate via the water cart to the active tipping area in accordance with Condition 13;

(c) ensuring waste is levelled and compacted as soon as practicable after it is discharged and at a minimum by the end of the working day; and

(d) ensuring waste is placed and compacted to ensure all faces are stable and capable of retaining further waste placement or placement of cover or rehabilitation material.

30. The Licence Holder must, during operational hours, undertake targeted wetting down of Dusty Wastes during disposal and burial at the active tipping area.

31. The Licence Holder must implement ongoing dust suppression measures across any unvegetated or partially vegetated areas of the capping layer.

32. All operational vehicles must pass through an operational wheel wash prior to exiting the Premises.

Asbestos emissions

33. All Special Waste Type 1 accepted at the Premises must be received and landfilled immediately in accordance with Condition 5.

34. All Special Waste Type 1 and bulk loads of soil containing ACM or asbestos must not be deposited within 2m of the final waste profile.

Noise emissions

35. All vehicles entering the premises and within the Licence Holders control must be fitted with broadband reversing alarms.

Odour emissions

36. The Licence Holder must ensure that odour from the premises does not unreasonably interfere with the health or amenity of persons not on the premises.

37. The Licence Holder must ensure the active tipping area is limited to an area no greater than 1,800 m^2, or to two areas no greater than 1,800 m^2 each for periods of up to three months when transitioning between cells.

38. The Licence Holder must dispose of highly odorous waste by burial immediately following acceptance in accordance with cover requirements specified in Condition 19.

Stormwater emissions

39. The Licence Holder must operate and maintain a stormwater management system in accordance with the following physical controls and limits:

(a) Stormwater arising within the excavations for landfill cell 8 is directed to temporary stormwater ponds, sized to accommodate a 1% AEP, 24-hour storm event;

(b) Stormwater must not be directed into the Active Landfill Area, TDS Cells, TDS leachate ponds or any leachate containment infrastructure; and

(c) Stormwater arising within, or which has had contact with, the Active Landfill Area and the areas of the Premises where landfilling, waste acceptance and processing and leachate containment occurs must not discharge beyond the Premises boundary.

40. The Licence Holder must ensure that the southern boundary drain:

(a) is inspected monthly for signs of erosion;

(b) monthly inspections are recorded; and

(c) Report to the CEO, within 2 weeks of erosion being identified:

(i) The location, description and cause of erosion; and

(ii) Measures taken to rectify any damage.

Windblown waste

41. The Licence Holder must operate and maintain a minimum of 10 portable litter control screens with a minimum height of 4 metres and a minimum length of 4 metres each, located within 15 metres, where practicable, downwind of the working face of the landfill.

42. The Licence Holder must by 31 August 2022, install and operate at least 500m of litter control nets with a minimum height of 6 metres around the active landfill faces, positioned to best capture windblown waste based on prevailing wind direction.

43. The Licence Holder must ensure windblown waste is collected from the landfill area and control screens on a daily basis and from the greater Premises including, perimeter fencing, roads and vegetated areas on at least a weekly basis and returned to the tipping area or appropriately contained.

44. The Licence Holder must, by 31 March 2022, install and maintain chain wire fencing of a minimum 1.8 metres in height around the prescribed premises boundary, and designed so as to effectively capture windblown waste not captured by the portable litter screens and litter nets as specified in Condition 41 and 42.

Fire/smoke

45. The Licence Holder must implement the following fire control measures:

(a) Maintain an operational and full water cart with a storage capacity of at least 15 kL on the Premises;

(b) Maintain a minimum of 50 kL of water within Stormwater pond 1 and Stormwater pond 2 (combined) which can be used for firefighting;

(c) Maintain a supply of cover material and apply that cover to the active tipping area to a minimum depth of 150 mm, in the event that a fire within the Dardanup Conservation Park and/or Boyanup State Forest presents a material risk to the Premises.

46. The Licence Holder must prepare and submit to the CEO a Fire Management Plan for the premises by **31 August 2025**. The Fire Management Plan must:

(a) Be reviewed and endorsed by a suitably qualified fire safety engineer;

(b) Include the relevant and current emergency contact details for site personnel and emergency service operators;

(c) Outline credible emergency scenarios and clear procedures to manage them, including initial intervention measures, personnel responsibilities, notification and escalation procedures;

(d) Identify all required fire prevention and management infrastructure and equipment to be maintained on-site for the scenarios identified, including details on the distribution and operation of installed fire safety systems and water access requirements for fire-fighting purposes;

(e) Include written details and a corresponding site plan of all fire prevention and

management infrastructure and equipment maintained on site;

(f) Include procedures for managing and disposing recoverable fire wash waters from waste management areas;

(g) Outline the intended disposal facility or mechanism for fire wash water generated on the premises during a fire event. The turnaround time for disposal must also be listed and considered in response procedures requiring the removal of fire wash water;

(h) Include a list of contingency actions to be undertaken in the event that fire wash water discharges off site;

(i) Outline post fire management procedures for smoldering waste;

(j) Outline training requirements and the schedule of delivery of training to operational staff on emergency response procedures and the requirements of the Fire Management Plan; and

(k) Address the risk from bush fire in the Dardanup Conservation Park.

47. The Licence Holder must maintain and implement the Fire Management Plan once submitted to the CEO.

48. The Licence Holder must test the Fire Management Plan annually.

Vermin/Pest management

49. The Licence Holder must implement the following feral animal, vermin and weed management measures:

(a) Install a 400 mm wire mesh skirt/apron by 31 March 2022 along the eastern and southern prescribed premises boundary fence;

(b) Ensure that the base of the premises entrance gates will, when closed, not allow cat or fox access by having a maximum 50 mm clearance at the base of the gate to the ground;

(c) Ensure that the road surface at the entrance gate consists of bitumised or concrete hardstand material;

(d) Check and record the integrity of the premises boundary fence on a weekly basis and undertake repairs within 1 week of any damage being identified;

(e) Undertake vermin prevention measures including baiting and trapping;

(f) Inspect the premises monthly for the presence of weeds, record observations of the inspections and take and record measures to prevent the growth and spread of weeds; and

(g) Inspect the premises / Dardanup Conservation Park boundary quarterly to detect and remove weeds or wind-spread invasive plants.

50. The Licence Holder must maintain a register of visual signs, presence and visitation of feral cats and foxes within the landfill area.

Monitoring

General monitoring

51. The Licence Holder must ensure that:

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

(b) All surface water sampling is conducted in accordance with AS/NZS 5667.4;

(c) All groundwater sampling is conducted in accordance with AS/NZS 5667.11;

(d) All laboratory samples are submitted to and tested by a laboratory with NATA accreditation for the parameters being measured unless indicated otherwise within the relevant table.

52. The Licence Holder must ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is maintained and calibrated in accordance with the manufacturer's specifications.

53. 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.

54. The Licence Holder must ensure that:

(a) monthly monitoring is undertaken at least 15 days apart;

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

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

Input and output monitoring

55. The Licence Holder must record the total amount of waste accepted onto, and removed from the premises, for each waste type listed in Condition 1, Condition 2 and Condition 3, in the corresponding unit, and for each corresponding time period, as set out in Table 14.

Table 14: Monitoring of inputs and outputs

Input/Output	Unit	Time period	Frequency
Waste Inputs	Tonnes	Annual period	Each load arriving at the Premises
Waste Outputs			Each load leaving or rejected from the premises

Process monitoring

56. The Licence Holder must undertake the process monitoring in Table 15 according to the corresponding specifications in that table.

Table 15: Process monitoring requirements

	Process description	Parameter	Threshold concentrations	Frequency	Method
1.	Verification of contaminant levels in Drill Muds treated in accordance with Condition 8, prior to landfilling	All relevant parameters to the Acceptance Criteria for Class III landfills	N/A	In line with the Landfill Definitions	In line with the Landfill Definitions

2.	Verification of contaminant levels in titanium dioxide tailings.	All relevant parameters to the Acceptance Criteria for Class III landfills	N/A	Six monthly	In line with the Landfill Definitions
		Titanium	3.7 mg/L		N/A
		Iron	15.6 mg/L		
		Chromium (III)	5 mg/L		
		Potassium	89 mg/L		
		Chloride	38,198 mg/L		
		Sulfate	4,300 mg/L		
		pH	5.0 – 9.0		
		Electrical conductivity	66 dS/m		
		Calcium	13,354 mg/L		
		Magnesium	1,381 mg/L		
		Sodium	6,503 mg/L		
		Bicarbonate	6,503 mg/L		
		Uranium	0.043 mg/L		
		Thorium	0.01 mg/L		
		Radium-226	21 Bq/L		
		Radium-228	8 Bq/L		
3.	Verification of the percentage of solids in the titanium dioxide tailings slurry stream	Percentage of solids	N/A	Six monthly	N/A

Leachate monitoring

57. The Licence Holder must inspect and monitor the leachate management system at in accordance with Condition 12 and Condition 13. The Licence Holder shall monitor and record, at a minimum, the parameters specified in Table 16 at the locations, levels and recording frequency specified in that table.

Table 16: Leachate Management System monitoring requirements

Parameter	Location	Operational levels	Recording period
Depth of leachate	TDS Cell 1 Leachate Pond	Less than minimum freeboard as specified in Condition 12	Daily
	TDS Cell 2 Leachate Pond		
	Primary Leachate Pond	Less than minimum freeboard as specified in Condition 12	Daily
	Leachate Evaporation Ponds 1		
	Leachate Evaporation Ponds 2		
	Leachate Evaporation Ponds 3		
Volume of leachate	Pumped out of leachate ponds	N/A	Weekly

58. The Licence Holder must undertake the process monitoring at the monitoring point reference locations specified in Table 17 according to the corresponding specifications.

Table 17: Leachate quality monitoring

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
Primary leachate pond	Leachate extracted from Landfill Cells	pH[1]	pH units	6 monthly	Spot sample in accordance with Condition 51
		Electrical conductivity[1]	µS/cm		
		Total soluble solids	mg/L		
		Cations and anions – Potassium, chloride and sulfate			
		Total metals – arsenic (total) cadmium, chromium, copper, iron (total), lead manganese, mercury, molybdenum, nickel, selenium, zinc			
		Nutrients – Ammoniacal nitrogen, nitrate-nitrogen, total nitrogen, total phosphorus, total organic carbon, chemical oxygen demand			

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Monitoring point reference	Process description	Parameter	Units	Frequency	Method
	Leachate extracted from Landfill Cells	Total recoverable hydrocarbons Monocyclic aromatic hydrocarbons – benzene, toluene, methylbenzene, xylene (total) Polycyclic aromatic hydrocarbons – acenaphthene, anthracene, ben(a)pyrene, fluoranthene, naphthalene, pyrene Organochlorine pesticides – Aldrin, chlordane (and metabolites), DDT (and metabolites), dieldrin, chlorpyrifos, HCB, heptachlor (and its epoxide), lindane Organophosphates – parathion, demeton-S-methyl, maldison, diazinon, dimethoate, fenamiphos, fenthion Other – atrazine, TCE, PCE and polychlorinated biphenyls (total)	µg/L	6 monthly	Spot sample in accordance with Condition 51

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
	Leachate extracted from Landfill Cells	PFAS: • Perfluorooctane sulfonate; • Perfluorooctanoic acid; • 6:2 Fluorotelomer sulfonate; • 8:2 Fluorotelomer sulfonate, • Perfluoroheptanoic acid; • Perfluorobutane sulfonate; • Perfluorobutanoic acid; • Perfluorohexanoic acid; • Perfluorohexane sulfonate; • Perfluoropentanoic acid; • Perfluorooctane sulfanomide; • Perfluorodecane sulfonate; • Perfluorononanoic acid; • Perfluorodecanoic acid; • Perfluoroundecanoic acid; • Perfluorododecanoic acid; • Perfluorotridecanoic acid; • Perfluorotetradecanoic acid; • N-Methyl-heptadecafluorooctane sulfanomide; • N-Eethyl-heptadecafluorooctane sulfanomide; • N-Methyl-heptadecafluorooctane sulfanomidoethanol; and • N-Ethyl-heptadecafluorooctane sulfanomidoethanol	µg/L	6 monthly	Spot sample in accordance with Condition 51
TDS Leachate Pond	Leachate extracted from TDS Cells	pH[1]	pH units	6 monthly	Spot sample in accordance with Condition 51
		Electrical conductivity[1]	µS/cm		
		Total soluble solids	mg/L		
		Cations and anions – Potassium, chloride, bicarbonate and sulfate			

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
		Total metals – Aluminum, arsenic (total), barium, beryllium, boron, cadmium, calcium, chromium (III), chromium (VI), cobalt, copper, iron (total), lead, manganese, magnesium, mercury, molybdenum, nickel, selenium, silver, sodium, titanium, thorium, uranium, vanadium and zinc			
		Radium-226, Radium-228	Bq/L	Yearly	

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

59. The Licence Holder must undertake leachate head monitoring at the monitoring point reference locations specified in Table 18 according to the corresponding specifications.

Table 18: Leachate head monitoring requirements

Parameter	Location	Units	Recording period	Method
Leachate head recovery period for leachate levels to return to rest levels after cessation of pumping	All active and closed cells containing leachate sumps	Minutes	One off for all leachate sumps	None specified
Leachate head within the leachate sumps	All active and closed cells containing leachate sumps	mm	Monthly	Depth to be measured after the relevant recovery period, determined in accordance with this Condition, for that sump has passed following the temporary cessation of pumping

60. The Licence Holder must commence monitoring of leachate flows from landfill cells 1, 2 and 5 by 1 January 2025 in accordance with Table 19.

Table 19: Leachate flow monitoring requirements

Parameter	Location	Units	Recording period	Method
Leachate	Exit location from landfill cell to flow channel feeding leachate pond 1	mm	Weekly	Visual inspection of leachate flow from cells to leachate ponds

61. The Licence Holder must prepare and submit to the CEO a Leachate Plan for the

premises by 31 March 2022. The Leachate Plan must:

(a) Include a map with aerial image overlay showing the leachate sump locations in all active and closed landfill cells;

(b) Detail the leachate head recovery period for all leachate sumps in all active and closed landfill cells and a description of the methodology employed to determine the leachate head recovery periods;

(c) Detail the findings of the monthly leachate head monitoring undertaken in accordance with Condition 59;

(d) Include an interpretive assessment of the current leachate heads across each active and closed landfill cells;

(e) Propose leachate head management levels for each active and closed landfill cells;

(f) Detail how the results of the leachate head monitoring required by Condition 59 and the findings of the detailed quantitative hydrogeological risk assessment required by Condition 0 have been considered in the development of the leachate head management levels;

(g) Where leachate head monitoring required by Condition 59 identifies that leachate heads exceed the proposed leachate management level in any active or closed landfill or TDS cells, include an action plan, including timescales, for reducing leachate heads to below the leachate head management levels;

(h) Includes an action plan for maintaining leachate heads below the proposed leachate head management levels in all active and closed landfill cells; and

(i) Include investigation options, timeframes and monitoring methodologies proposed to monitor leachate levels in all TDS Cells and all landfill Cells that do not contain leachate sumps.

62. The Licence Holder must implement the Leachate Plan required by condition 61 by no later than 1 January 2025.

Landfill gas monitoring

63. The Licence Holder must undertake the landfill gas monitoring in Table 20 according to the corresponding specifications in Table 20.

Table 20: Landfill gas monitoring requirements

Monitoring Point	Parameter	Units	Averaging period	Frequency	Method
Each well, as depicted in Schedule 3, Plan 3 Flare, as depicted in Schedule 3, Plan 3	Volumetric flow rate	m^3/hr	Spot sample	Monthly	Landtec GEM2000, GEM5000 (or superior field test methods)
	Methane	volume%			
	Carbon dioxide	volume%			
	Oxygen	volume%			
	Nitrogen	volume%			
	Carbon monoxide	Ppm			

	Gas temperature	℃			
	Pressure	Pa			

64. The Licence Holder must take the specified actions in Table 21 when the corresponding specified parameters fall outside of the corresponding trigger levels.

Table 21: Landfill gas collection trigger levels

<table>
<tr><th>Parameter</th><th>Trigger levels</th><th>Specified actions</th></tr>
<tr><td>Gas temperature</td><td>> 55 ºC</td><td>
(a) The Licence Holder must, within one week of the becoming aware of a parameter value falling outside of the corresponding trigger level:

Visually check the integrity of the landfill cover and landfill gas infrastructure such as wellheads and piping, for signs of melting, smoke and residue.
Resample all monitoring points for the parameters in Condition 63.
Adjust the landfill gas well flow rate control valves if required.
Review the monitoring results against the parameters and investigation levels in the below table.

<table>
<tr><th>Parameter</th><th>Investigation level</th></tr>
<tr><td>Carbon dioxide</td><td>25 – 50 % by volume</td></tr>
<tr><td>Carbon monoxide[1]</td><td>< 25 parts per million (ppm)</td></tr>
<tr><td>Methane</td><td>30 – 60 % by volume</td></tr>
<tr><td>Nitrogen</td><td>2 – 25 % by volume</td></tr>
<tr><td>Oxygen</td><td>< 2 % by volume</td></tr>
<tr><td>Temperature</td><td>< 55ºC</td></tr>
</table>

Continue monitoring as described in Condition 63 weekly until the parameters fall within the corresponding investigation level.

(b) Submit a notification to the CEO within 2 weeks that details:

the parameters that were found outside of the investigation levels;
the records of the visual assessment of the landfill cover and landfill gas infrastructure;
the cause of the investigation level exceedance; and

</td></tr>
</table>

Parameter	Trigger levels	Specified actions
		the specified actions taken and any further action that is being or when the action will be taken to mitigate a reoccurrence of the exceedance.
Volume	400 – 2000 m^3/hr	(c) Adjust the gas flare flow rate control valves if required. (d) Submit a notification to the CEO within 2 weeks that details: ○ the parameter found outside the trigger level; ○ the cause of the trigger level exceedance; and ○ the specified actions taken and any further action that is being or when the action will be taken to mitigate a reoccurrence of the exceedance.

Note 1: Conformation laboratory analysis should be undertaken for Carbon Monoxide should the initial field tests be outside the trigger level.

Dust monitoring

65. The Licence Holder must;

(a) Develop and submit a Sampling and Analysis Plan by 31 January 2022, prepared by an Air Quality Professional for dust composition sampling that includes:

(i) sampling regime;

(ii) averaging period that must not be less than one 24 hour sample collected every 6 days for a period of at least six months;

(iii) sampling methodology;

(iv) siting requirements;

(v) contaminants of concern;

(vi) appropriate target levels; and

(vii) quality assurance / quality control (QA/QC) program.

(b) Install monitors that are capable of collecting bulk dust for quantitative analysis as specified in the Plan required by Condition 65(a) by 28 February 2022, placed in proximity to identified receptors, and collect dust that is emitted from the Premises.

(c) undertake monitoring as specified in the sampling and analysis plan specified by Condition 65(a), commencing within 14 days of installation of the monitoring equipment specified in Condition 65(b).

66. The Licence Holder must submit to the CEO by no later than 60 days after completion of the sampling and receipt of laboratory data, a report prepared by an Air Quality Professional, of the sampling conducted in accordance with the requirements of Condition 65(c), including but not limited to:

(a) a clear statement of the sampling and analysis undertaken;

(b) a description of the methodologies employed;

(c) a summary of the field and laboratory quality assurance / quality control (QA/QC) program;

(d) copies of the monitoring records and 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) an interpretive summary and assessment of the results against relevant assessment levels, as per the Sampling and Analysis Plan required in Condition 65(a); and

(h) an interpretive summary and assessment of any future monitoring requirements.

Groundwater monitoring

67. The Licence Holder must monitor groundwater for concentrations of the identified parameter(s) in accordance with Table 22.

Table 22: Groundwater monitoring of ambient concentrations

Monitoring well location	Parameter	Unit	Frequency	Averaging period
Monitoring wells as shown in Figure 2, Schedule 1 of the Licence	Standing water level[1]	m(AHD)	Quarterly	Spot sample, in accordance with AS/NZS 5667.11
	pH[1]	pH unit		
	Electrical conductivity[1]	µS/cm		
	Redox potential[1]	Eh		
	Chemical oxygen demand	mg/L		
	Nitrate-nitrogen			
	Ammonia-nitrogen			
	Total nitrogen			
	Total phosphorus			
	Total dissolved solids			
	Total organic carbon			
	Dissolved oxygen[1]			
	Major cations and anions: calcium, magnesium, potassium, sodium, chloride, bicarbonate and sulphate			
	Heavy Metals: Aluminium, Arsenic, Cadmium, Chromium, Copper, Iron (total) Lead, Manganese, Mercury, Nickel, Selenium and Zinc			
	PFAS: • Perfluorooctane sulfonate; • Perfluorooctanoic acid; • 6:2 Fluorotelomer sulfonate; • 8:2 Fluorotelomer sulfonate, • Perfluoroheptanoic acid; • Perfluorobutane sulfonate; • Perfluorobutanoic acid;	µg/L	Six monthly	Spot sample, in accordance with AS/NZS 5667.11

	• Perfluorohexanoic acid; • Perfluorohexane sulfonate; • Perfluoropentanoic acid; • Perfluorooctane sulfanomide; • Perfluorodecane sulfonate; • Perfluorononanoic acid; • Perfluorodecanoic acid; • Perfluoroundecanoic acid; • Perfluorododecanoic acid; • Perfluorotridecanoic acid; • Perfluorotetradecanoic acid; • N-Methyl-heptadecafluorooctane sulfanomide; • N-Eethyl-heptadecafluorooctane sulfanomide; • N-Methyl-heptadecafluorooctane sulfanomidoethanol; and N-Ethyl-heptadecafluorooctane sulfanomidoethanol.			
	Organics: Phenols, Polyaromatic hydrocarbons (PAH), Organochlorine pesticides, Organophosphate pesticides (Demeton-S-Methyl, Diazinon, Dimethoate, Fenamiphos, Fenthion, Malathion and Parathion), Polychlorinated biphenyls (PCB), Atrazine, BTEX (benzene, toluene, ethylbenzene, xylens), Total Petroleum Hydrocarbons and Trichloroethylene/ Perchloroethylene	mg/L	Six monthly	Spot sample, in accordance with AS/NZS 5667.11
	Uranium, Thorium	mg/L	Six monthly	Spot sample, in accordance with AS/NZS 5667.11
	Radium-226, Radium-228	Bq/L	Yearly	Spot sample, in accordance with AS/NZS 5667.11

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

68. The Licence Holder must provide to the CEO a detailed quantitative hydrogeological risk assessment for the Premises, prepared by a Hydrogeological Professional by 31 March 2022 that:

(a) Includes a detailed conceptual site model;

(b) Ensures that the conceptual site model:

(i) considers the presence and significance of perched aquifers in the superficial formations,

(ii) considers the relationship between the aquifers present beneath the premises;

(c) Includes bore logs for any additional groundwater monitoring wells which are installed (if required) to accurately define the conceptual site model;

(d) Assesses the potential concentration of contaminants, arising from leachate emissions from the landfilling and tailings disposal activities at the Premises, at receptors over time, including both the operational and closure phases of the Premises;

(e) Compares predicted contaminant concentrations at receptors with relevant environmental quality criteria and assesses potential impacts to receptors from leachate emissions from the landfilling and tailings disposal activities at the Premises, during both the operational and closure phases of the Premises;

(f) considers the degradation of engineering lining and management systems over time;

(g) considers the current and proposed specification of interim cover and capping for each Cell;

(h) includes a sensitivity analysis, including for leachate heads across landfill cell liners and TDS cell liners;

(i) includes the use of site-specific data where available in any modelling or calculations and specifies and justifies any assumptions made and any subsequent uncertainties in the assessment.

Quality assurance and quality control requirements

69. 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:

(a) decontamination procedures for the cleaning of tools and sampling equipment before sampling and between samples;

(b) field instrument calibration for instruments used on site;

(c) 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;

(d) completed field monitoring sheets / sampling logs for each sample collected, showing:

(i) time of collection;

(ii) location of collection;

(iii) initials of sampler;

(iv) sampling method;

(v) field analysis results;

(vi) duplicate type / location (if relevant); and

(vii) site observations and weather conditions, and

(e) chain-of-custody documentation must be completed which details the following information:

(i) site identification;

(ii) the sampler;

(iii) nature of the sample;

(iv) collection time and date;

(v) analyses to be performed;

(vi) sample preservation method;

(vii) departure time from site;

(viii) dispatch courier(s); and

(ix) arrival time at the laboratory.

Records and reporting

Waste acceptance reporting

70. The Licence Holder must:

(a) maintain a waste acceptance register which ensures that a record is made of:

(i) the time and date of each waste delivery;

(ii) the name and licence number of the carrier;

(iii) the weight of the waste;

(iv) a detailed description of the type of waste;

(v) the determination of the waste type as defined in Condition 1, Condition 2 and Condition 3;

(vi) all supporting documentation related to waste acceptance and classification;

(vii) any loads of waste rejected from the premises; and

(viii) the amount of landfill levy payable in respect of the waste.

(b) maintain a register of Special Waste Type 1 (Asbestos waste), Special Waste Type 2 (Biomedical and clinical waste) and Processed Septage disposed of at the Premises which must include:

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

(ii) the date of the deposit;

(iii) the name of the person that deposited the waste; and

(iv) for the Annual Period and make these registers available on request.

Complaints reporting

71. 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;

(d) the complete details and dates of any action taken by the Licence Holder to investigate or respond to any complaint;

(e) the location about which the complaint was made;

(f) the wind direction, wind speed and air temperature at the time of the complaint;

(g) the likely source(s) of the cause of the complaint; and

(h) the time taken to respond to the complainant.

Compliance reporting

72. 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 by no later than 90 days after the end of that annual period an Annual Audit Compliance Report in the approved form.

73. The Licence Holder must maintain accurate and auditable books including the following records, information, reports, and data required by this licence:

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

(b) the works conducted in accordance with this licence;

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

(d) monitoring programmes undertaken in accordance with this licence;

(e) records and documents for the waste acceptance register system required under Condition 70 of this licence: and

(f) complaints received under Condition 71 of this licence.

74. The books specified under Condition 73 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 or any subsequent licence; and

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

75. The Licence Holder must submit to the CEO by no later than 90 days after the end of each annual period, an Annual Environmental Report for that annual period for the conditions listed in Table 23, and which provides information in accordance with the corresponding requirement set out in Table 23.

Table 23: Annual Environmental Report

Condition	Requirement
Condition 5 & Condition 7	Summary of the Active Landfill Area, Special Waste Disposal Area and TDS Cells that includes: (a) Areas that have been subject to waste deposition for the Annual Period; (b) Remaining void capacity for waste deposition in each cell at the end of the Annual Period; and (c) Summary of any alterations to cell rehabilitation sequencing & timing
Condition 10	(a) A summary of capping layer inspections. (b) Details of any documented and remediated closed cell cap deficiencies identified during scheduled inspections.
Condition 11, Table 8, specification (d)	Monthly Propellor™ software calculations demonstrating the remaining capacity to the top of wall (TOW), or the contingency volume available for TDS Cell 2.
Condition 12	Summary of leachate containment and collection infrastructure performance including: (a) Inputs; (b) Outputs; (c) Calculations: and (d) explanation of any changes that may indicate an issue with the leachate collection or management system or a failure of the landfill or leachate pond liner.
Condition 14	Summary of landfill gas collection and management system that includes: (a) Infrastructure installed during the Annual Period; (b) A map of the spatial coverage of the landfill gas collection and management system; (c) A summary of landfill gas infrastructure operational performance including an annual review of flare rate against landfill gas generation rate; (d) A review of gas generation rates to determine if sustained generation rates warrant gas utilisation; and (e) A description of changes to operational performance that may indicate an issue with the landfill gas management system and actions taken to investigation and mitigate issues.
Condition 23 Condition 24 Condition 25	(a) A review of rehabilitation status and success of the vegetative cover, (b) details of related maintenance and monitoring measures completed, and (c) whether there have been any incursions of weeds or invasive plant species from the premises into the conservation park.
Condition 49 Condition 50	Summary of actions undertaken to control pests and vermin, and a summary of fox and feral cat observations recorded at the premises.
Condition 55	Volume of wastes arriving, leaving or rejected from the premises, for each waste type during the annual period in a table format.

Condition	Requirement
Condition 56	(c) Process monitoring: data in a table format for the annual period. (d) A comparison of monitoring results obtained for outlined parameters to verify contaminant levels in titanium dioxide tailings against associated threshold concentration values.
Condition 57 Condition 58 Condition 59 Condition 60	Leachate Monitoring: data in a table format for the annual period. A summary of action taken within the Annual Period to address leachate head levels which exceeded the leachate head management levels
Condition 63 Condition 64	Landfill gas monitoring: a summary of the landfill gas monitoring results. A summary of notifications provided to the CEO following landfill gas trigger level exceedances, causes of trigger level exceedances and actions taken to mitigate a reoccurrence of the exceedances.
Condition 65 Condition 66	A summary of all dust monitoring undertaken as part of this licence that includes: (a) data in a table format for the annual period; and (b) data in table format for trend analysis to include at least the last five years data where available.
Condition 67 Condition 76	Groundwater Monitoring Report
Condition 70	Plan of disposal locations for Special Waste Type 1 and Special Waste Type 2 and for the Annual Period
Condition 71	Complaints summary for the annual period must include: (a) number and type of complaints received; (b) nature of complaint and complainant details; (c) ambient environmental conditions at the time of compliant; and (d) actions and time taken to address compliant.
Condition 78	Summary of landfill and unauthorised fires at the premises.

76. The Licence Holder must submit with the Annual Environmental Report required by Condition 75, a groundwater monitoring report demonstrating their compliance with Conditions 67 for the preceding 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;

(k) trend graphs to provide a graphical representation of historical results for at least the last 10 years where available and comparison against relevant assessment levels for water to support the interpretive summary; and

(l) A comparison of the inputs used in the hydrogeological modelling required under condition 64 with data collected under conditions 52 and 54, which identifies any differences.

Note 1: General guidance on report presentation can be found in the Department's Guideline: Assessment and management of contaminated sites.

Notifications

77. The Licence Holder must, within 7 days of becoming aware of any non-compliance with conditions of this licence not otherwise controlled through a management action, notify the CEO in writing of that non-compliance and include in that notification the following information:

(a) which condition was not complied with;

(b) the time and date when the non-compliance occurred;

(c) if any environmental impact occurred as a result of the non-compliance and if so what that impact is and where the impact occurred;

(d) the details and result of any investigation undertaken into the cause of the non-compliance;

(e) what action has been taken and the date on which it was taken to prevent the non-compliance occurring again; and

(f) what action will be taken and the date by which it will be taken to prevent the non-compliance occurring again.

78. The Licence Holder must notify the CEO in writing accordance with the notification requirements of Table 24.

Table 24: Notification requirements

Condition or Table (if relevant)	Information required	Notification requirement[1]	Format or form
Condition 12 Condition 58	Failure or malfunction of the leachate collection and management system	As soon as practicable, but no later than 1700 hrs of the next usual working day	

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Condition or Table (if relevant)	Information required	Notification requirement[1]	Format or form
Condition 15 Condition 16	Landfill gas management system	Details of any works proposed for the expansion of the landfill gas collection and management system as depicted in Plan 3 of Schedule 3 in the Licence, at least 6 months prior to any expansion occurring.	None specified
Condition 39	Southern stormwater drain and fire track	The location, description and cause of erosion, and measures taken to rectify any damage, and to ensure against a recurrence, within 1 month of the erosion being identified.	
N/A	Landfill fire	As soon as practicable but no later than 24 hours of the fire being identified.	
N/A	Unauthorised fire	Within 14 days of the fire occurring. Notification should include: • Date, time and location of the fire; • Measures used to control the fire; • Cause or suspected cause of the fire; • Any residual issues or impacts related to the fire, including details of any discharge of fire-fighting wash water or other wastes from the premises • Any damage to landfill liners or other landfill infrastructure resulting from the fire; and • Proposed rectification of any damage or impacts if required.	
Condition 79	Final waste profile achieved for each rehabilitation stage as depicted in Plan 6 in Schedule 3, and details of when capping works will commence and conclude for that stage	No later than 60 days after final landform is achieved	

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

Construction works – Landfill cell capping

79. The Licence Holder must:

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

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

(c) at the corresponding infrastructure location; and

(d) within the corresponding timeframe,

as set out in Table 25.

Table 25: Capping design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
1.	Capping of Stage 1, 2 and 5	To be constructed with a maximum slope profile of 1V:3.5H and maximum length of 255 meters, and consist of: • Minimum 500 mm cover material over waste • Geosynthetic Clay Liner (GCL) • 1.5mm double textured LLDPE liner • Geocomposite Drainage Material with A34 geotextile heat bonded to the top and bottom surface • 1.3 m to 1.5 m of uncompacted soil growing medium • Rehabilitation with grasses and shallow rooted shrubs that have no potential to reach the base of the soil growing medium • Stormwater control drains (contour, primary and stormwater control bunds) Specific direct shear testing in accordance with ASTM D5341 is to be undertaken on each of the material interfaces used in the final cap to validate the parameters used for the stability assessment. Stability assessments must be provided for slopes to support capping Stages 2 and 5. Construction Quality Assurance plans and specifications for capping Stages 2 and 5 must be submitted to DWER prior to construction of each stage. Plans must include maximum slope lengths and gradients for each rehabilitation	Each stage as depicted in Plan 7 in Schedule 3	As soon as practicable, but no later than 12 months after final waste profile is achieved for each stage

	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
		stage. Stage 1 stormwater infrastructure must be installed consistent with the Licence Holder's capping specifications and drawings. Stage 2 and 5 stormwater infrastructure must be installed consistent with the design within Plans 9, 10 and 11 of Schedule 1.		
2.	Leachate reticulation system	Up to 4 systems, each consisting of • A 22,500-litre storage tank • 63mm to 90mm HDPE pipework from the storage tank installed within a drainage channel in the waste mass • Pipework is to be installed at a slope of 2 degrees or greater	Within the footprint of cells 1, 2, 3, 4, 4B, 5 and/or 12 as depicted in Plan 3 in Schedule 3	None specified

80. The Licence Holder must within 60 calendar days of an item of infrastructure or equipment required by condition 79 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 79 and

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

81. The Environmental Compliance Report required by condition 80, must include as a minimum the following:

(a) certification by a suitably qualified engineer (as defined in Table 25) confirming that the items of infrastructure or component(s) thereof, as specified in condition 79, have been constructed in accordance with the relevant requirements specified in condition 79;

(b) details of the direct shear testing carried out in accordance with condition 79, including comparison of updated parameters to parameters used in the stability assessment;

(c) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 79; and

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

82. The Licence Holder must prepare and submit to the CEO by 13 November 2025 a feasibility study for the monitoring of strains on liner interfaces, pore pressures and saturation in the capping layers for capping undertaken in Stages 2 and 5. The feasibility study must include:

(a) An overview of methodologies for how the monitoring of strains on liner interfaces, pore pressures and saturation in the capping layers could be undertaken;

(b) An overview of infrastructure and/or equipment required for each methodology outlined in condition 82(a);

(c) Details of a trial comparison of the methodologies outlined in condition 82(a) for suitability for implementation into the capping layers constructed within Stages 2 and 5; and

(d) Information supporting the selection of a preferred methodology for implementation into Stage 2 and 5 capping.

Construction works – Landfill gas flare station

83. The Licence Holder must:

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

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

(c) at the corresponding infrastructure location

as set out in Table 26.

Table 26: Landfill flare design and construction / installation requirements

	Infrastructure	Design and construction / installation requirements	Infrastructure location
1.	Landfill gas flare station	Must be composed of the infrastructure outlined in Schedule 3, Plan 5. Lateral and header systems must be connected to the landfill gas flare station so that no leakage of gas occurs. Enclosed flare must be installed to achieve a 2,000 m^3/ hour capacity with a ≥850ºC chamber temperature with gas residence time of >0.6 seconds. All infrastructure must be installed on a concrete hardstand.	As depicted in Schedule 3, Plan 4
2.	Collection infrastructure - gas transfer pipelines, laterals and headers	Additional collection infrastructure to facilitate the transfer of captured landfill gas from landfill cells to the landfill gas flare station must be located as depicted in Schedule 3, Plan 4 Must be constructed using HDPE so as to be impervious and free of leaks and defects.	As depicted in Schedule 3, Plan 4

84. The Licence Holder must within 60 calendar days of an item of infrastructure or equipment required by condition 83 being constructed and/or installed:

(a) undertake an audit of their compliance with the requirements of condition 83 and

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

85. The Environmental Compliance Report required by condition 84, must include as a minimum the following:

(a) certification by a suitably qualified engineer (as defined in Table 28) confirming that the items of infrastructure or component(s) thereof, as specified in condition 83, have been constructed in accordance with the relevant requirements specified in condition 83;

(b) as constructed plans for each item of infrastructure or component of infrastructure specified in condition 83;

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

(d) confirmation that the existing landfill gas collection and management systems have been successfully connected to the landfill gas flare station with no material faults or defects.

86. The Licence Holder must not commission or operate the infrastructure or equipment required by condition 83 until the Environmental Compliance Report specified in condition 84 has been submitted.

Construction works – TDS Cell 1 Capping

87. The Licence Holder must:

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

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

(c) at the corresponding infrastructure location

as set out in Table 27.

Table 27: TDS Cell 1 capping design and construction / installation requirements

Stage	Works	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
1.	Capping (Bulk earthworks)	Interim capping layer	As per relevant specifications sent out in Appendix 1	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2026.
		High strength geotextile for foundational support (cushion geotextile)	As per relevant specifications sent out in Appendix 1		
			6 m roll width		
			Mass per unit area ≥ 1,900 g/m^2		
			Wide Strip Tensile Strength (MD/CMD) ≥ 52 kN/m		
			Trapezoidal Tear ≥ 1,200 N		

Stage	Works	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
			CBR Burst Strength ≥ 10,000 N Grab Tensile Strength ≥ 4,000 N UV stabilised to retain at least 70% of the trapezoidal tear strength when tested for 500 hours exposure		
1B.	Bulk earthworks	Stage 1B: Placement of select fill layer around the perimeter embankment (nominal depth approximately 500 mm).	• As per relevant specifications sent out in Appendix 1 • Fill shall be placed in uniform horizontal layers of 300 mm thickness. • Each layer shall be compacted to 95% Maximum dry density (standard compaction) (SMDD) placed within +/- 2% of Optimum moisture content (OMC)	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2026.
2.	Capping	– Placement of 1.5 mm linear low-density polyethylene (LLDPE) geomembrane. – Placement of geocomposite drainage net.	• As per relevant specifications sent out in Appendix 1 • Thickness 1.5 mm • Lowest individual roll thickness (any of the 10 values) 1.35 mm • Lowest individual roll thickness (8 of the 10 values) 1.4 mm • Density (min) 0.92 g/cm3 • Density (max) 0.939 g/cm3 • 2% modulus (max) <840% • Axi-symmetric Break Resistance Strain	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2028.

Stage	Works	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
			≥30% • Carbon Black Content (range) 2 – 3% • Carbon Black Dispersion (rating) 90 % Cat. 1 or 2, 10% Cat 3 • Tensile Properties (each direction): - Strength at Break ≥21 kN/m - Break Elongation ≥250% • Tear Resistance ≥200 N • Puncture Resistance ≥400 N • Oxidative Induction Time (OIT): - Standard OIT ≥100 min, and - High Pressure OIT ≥400 min • Oven Aging at 85°C – High Pressure Oxidative Induction Time 60% retained after 90 days		
3	Capping	Placement of revegetation layer (nominal depth approximately 1,300 mm).	• Nominal depth approximately 1300 mm • Rehabilitation with grasses and shallow rooted shrubs	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2028.
4	Hydromulch	Spreading of hydromulch/sprayseed	Polymer spray containing jute fibre to bind soil surface, potentially containing pre-treated seed of appropriate shallow-rooted revegetation species (e.g. colonising native pea and Acacia species)	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2028

Stage	Works	Infrastructure	Design and construction / installation requirements	Infrastructure location	Timeframe
5	Surface water management infrastructure	Stormwater management and drainage system	Positive gradient (1% or more) after settlement to form a self-shedding profile which achieves drainage away from capped area towards existing stormwater drainage network	As depicted in the Capping Plan diagrams provided in Schedule 3.	Before 31 December 2028

88. The Licence Holder must manage dust generation during TDS Cell 1 capping activities by:

(a) wetting down the cell surface, fill stockpiles, unsealed roads, and trafficable areas with a water truck using uncontaminated bore or stormwater;

(b) application of dust-suppression polymer sprays to stockpiles during prolonged dry conditions;

(c) limiting all vehicle traffic within the premises to speeds of less than 20 km/hr;

(d) ceasing dust-generating activities during strong wind conditions; and

(e) unloading fill material from a height of no more than 2 metres.

89. The Licence Holder must not use collected landfill or tailings cell leachate for dust suppression activities during TDS Cell 1 capping works.

90. The Licence Holder must ensure that the final cap depth is more than 2m.

91. The Licence Holder must undertake construction quality assurance, including visual inspection and materials testing for the high strength geotextile (cushion geotextile), low-density polyethylene geomembrane, and geocomposite drainage net, for the for each item of infrastructure specified in condition 87, in accordance the requirements set out in Appendix 2.

92. The Licence Holder must within 60 calendar days of all items of infrastructure or equipment required by condition 87 being constructed and/or installed as part of each capping stage:

(a) undertake an audit of their compliance with the requirements of condition 87, and

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

93. The Environmental Compliance Reports required by condition 92, must include as a minimum the following:

(a) certification by a suitably qualified engineer (as defined in Table 28) confirming that the items of infrastructure or component(s) thereof, as specified in condition 87, have been constructed in accordance with the relevant requirements specified in condition 87;

(b) 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;

(c) as constructed plans for each item of infrastructure or component of infrastructure specified in condition 87;

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

(e) as constructed plans and a detailed site plan for each item of infrastructure or component of infrastructure specified in condition 87; confirmation that the existing leachate and stormwater collection and management systems have been successfully integrated with the caped cell with no material faults or defects; and

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

94. The Licence Holder must undertake quarterly visual inspections of the capped TDS Cell 1 to identify any naturally recruited native or exotic tree species (mature height more than 2 m) which are not suitable species for cap revegetation.

95. The Licence Holder must ensure that any unsuitable tree or shrub species identified during quarterly cap inspections are manually removed or treated to prevent establishment.

Definitions

In this licence, the terms in Table 28 have the meanings defined.

Table 28: Definitions

Term	Definition
Acceptance Criteria	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
ACM	means asbestos containing material as defined in the Department of Heath 2009, *Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia.*
ACN	Australian Company Number.
Active Landfill Area	An area defined as an active Special Waste Type 1 and 2 disposal areas, Cell 7, Cell 8 and any part of adjoining cells (excluding Cell 1 and Cell 2) where waste is required to be deposited to achieve final waste contours.
Special Waste Disposal Areas	means the designated disposal areas within an approved landfill cell for the disposal of Special Waste Type 1 and Special Waste Type 2.
AEP	Annual Exceedance Probability.
AHD	means the Australian Height Datum.
Air Quality Professional	means a person who: a) Holds a Bachelor of Science qualification, or an Air Quality Science-related tertiary level qualification; and b) Has a minimum of at least 3 years' experience working in the field of air quality monitoring and assessment; or is otherwise approved by the CEO to act in this capacity.
anniversary date	means 31 December of each year.
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 1 January until 31 December of the immediately following year.
AS1289 3.6.1	means the Australian Standard AS 1289.3.6.1-2009 *Methods of testing soils for engineering purposes Soil classification tests - Determination of the particle size distribution of a soil - Standard method of analysis by sieving (Reconfirmed 2022).*

Term	Definition
AS1289.3.8.1	means the Australian Standard 1289.3.8.1:2017 *Methods of testing soils for engineering purposes Soil classification tests - Dispersion - Determination of Emerson class number of a soil.*
AS1289.5.1.1	means the Australian Standard AS 1289.5.1.1, *Methods of testing soils for engineering purposes - Soil compaction and density tests - Determination of the dry density/moisture content relation of a soil using standard compactive effort*.
AS1289.5.7.1	means the Australian Standard AS 1289.5.7.1—2006 Methods of testing soils for engineering purposes Method 5.7.1: Soil compaction and density tests—Compaction control test—Hilf density ratio and Hilf moisture variation (rapid method).
AS1726	means the Australian Standard AS1762 *Geotechnical site investigations*, as amended from time to time.
AS3706.1	means the Australian Standard AS3706.1-2012 *Geotextiles - Methods of test General requirements, sampling, conditioning, basic physical properties and statistical analysis (Reconfirmed 2023).*
AS3706.2	means the Australian Standard AS 3706.2-2000 *Geotextiles - Methods of test Determination of tensile properties - Wide-strip method.*
AS3706.3	means the Australian Standard AS 3706.3-2012 *Geotextiles - Methods of test Determination of tearing strength - Trapezoidal method (Reconfirmed 2023).*
AS3706.4	means the Australian Standard AS 3706.4-2012 *Geotextiles - Methods of test Determination of burst strength - California bearing ratio (CBR) - Plunger method (Reconfirmed 2023).*
AS3798	means the Australian Standard AS 3798-2007, *Guidelines on Earthworks for Commercial and Residential Development.*
ASTM D1004	means ASTM International standard ASTM D1004-21 *Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.*
ASTM D1505	means ASTM International standard ASTM D1505-18 *Standard Test Method for Density of Plastics by the Density-Gradient Technique.*
ASTM D1603	means ASTM International standard ASTM D1603-20 *Standard Test Method for Carbon Black Content in Olefin Plastics.*

Term	Definition
ASTM D3895	means ASTM International standard ASTM D3895-19 *Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry.*
ASTM D4218	means the ASTM D4218-20 *Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.*
ASTM D4595	means ASTM International standard ASTM D4595-17 *Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.*
ASTM D5092/D5092M-16	means the ASTM international standard for *Standard practice for design and installation of groundwater monitoring wells (Designation: ASTM D5092/D5092M-16)*, as amended from time to time.
ASTM D5199	means ASTM International standard ASTM D5199-12(2019) *Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.*
ASTM D5323	Means the ASTM International standard ASTM D5323-19a *Standard Practice for Determination of 2 % Secant Modulus for Polyethylene Geomembranes.*
ASTM D5596	means the ASTM International standard ASTM D5596-03(2021) *Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.*
ASTM D5617	means the ASTM International standard ASTM D5617-04(2015) *Standard Test Method for Multi-Axial Tension Test for Geosynthetics.*
ASTM D5641	means the ASTM International standard ASTM D5641-94(2006) *Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.*
ASTM D5721	means the ASTM International standard ASTM D5721-22 *Standard Practice for Air-Oven Aging of Polyolefin Geomembranes.*
ASTM D5820	means the ASTM International standard ASTM D5820-95(2018) *Standard Practice for Pressurized Air Channel Evaluation of Dual-Seamed Geomembranes.*
ASTM D5885	means the ASTM International standard ASTM D5885/D5885M-20 *Standard Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High-Pressure Differential Scanning Calorimetry.*

Term	Definition
ASTM D5994	means the ASTM International standard ASTM D5994/D5994M-10(2021) *Standard Test Method for Measuring Core Thickness of Textured Geomembranes.*
ASTM D6392	means the ASTM International standard ASTM D6392-12(2018) *Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.*
ASTM D6693	means the ASTM International standard ASTM D6693/D6693M-20 *Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.*
ASTM D7466	means the ASTM International standard ASTM D7466-10 *Standard Test Method for Measuring the Asperity Height of Textured Geomembrane.*
ASTM D792	means the ASTM International standard ASTM D792-00 *Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.*
ASTM D4833	means the ASTM International standard ASTM D4833/D4833M-07(2020) *Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.*
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.
AS/NZS5667.1	means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples.*
AS/NZS5667.11	means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters.*
Assessment of Site Contamination NEPM	means the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended from time to time.
Averaging Period	means the time over which a limit is measured, or a monitoring result is obtained.
books	has the same meaning given to that term under the EP Act.

Term	Definition
Cell 7	means the cell marked as 'Cell 7' in Figure 1, Schedule 1.
Cell 8	means the cell marked as 'Cell 8' in Figure 1, Schedule 1.
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 or: info@dwer.wa.gov.au
CEO Request	means a request made by the CEO to the Licence Holder in writing sent to the Licence Holder's address for notifications, as described at the front of this Licence, in relation to: (a) information, records or reports in relation to specific matters in connection with this Licence including in relation to compliance with any Conditions and the calculation of fees (whether or not a breach of Condition or the EP Act is suspected); or (b) reporting, records or administrative matters: (i) which apply to all Licences granted under the EP Act; or (ii) which apply to specified categories of Licences within which this Licence falls.
Conceptual site model	Defines the nature of the Premises and its hydrogeological setting. It should describe the design, construction and operation of the activities on the Premises and the nature of baseline environmental conditions. It should identify possible sources, pathways and receptors, and the processes that are likely to occur along each of those source-pathway-receptor linkages.
Contaminant	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Contaminated Solid Waste	Means a solid waste that contains contaminants that meets the solid waste acceptance requirements of Table 1, Condition 1.
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.

Term	Definition
Drill Muds	means the liquid or sludge residue generated during directional drilling of boreholes or non-destructive hydro-excavation of soil, consisting of a mixture of naturally occurring rock, soil, organic matter and water and/or oil-based drilling fluid.
Dusty Wastes	means solid waste approved for acceptance under the Licence which has the potential to generate dust emissions during handling and disposal that can be carried beyond the premises boundary if left uncovered.
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 has been constructed in accordance with the licence.
EP Act	*Environmental Protection Act 1986* (WA).
EP Regulations	*Environmental Protection Regulations 1987* (WA).
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.
Highly Odorous Waste	means solid waste approved for acceptance under the Licence which has the potential to produce odour emissions that can be detected beyond the premises boundary if left uncovered.
Hydrogeological Professional	Means a person who: a) Holds a Bachelor of Science qualification, or a hydrology related tertiary level qualification; and b) Has a minimum of at least 6 years' experience working in the field of hydrogeological assessment, modelling and reporting; or is otherwise approved by the CEO to act in this capacity.
Inert Waste Type 1	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Inert Waste Type 2	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Interim Waste Contour	The waste height achieved, in advance of achieving final waste contours, when waste disposal operations temporarily cease in the cell due to the lack of a suitably sized platform for operational vehicles.
Landfill Definitions	means the document titled *"Landfill Waste Classification and Waste Definitions 1996".*

Term	Definition
leachate head management level	A leachate level within a cell that: (a) Is demonstrative of the engineering and management measures for that cell performing as designed; (b) Does not represent an unacceptable risk to the environment and public health; and (c) Is set at a level which provides an early warning system for potential engineering or management control failure and to enable appropriate investigation or corrective management measures to be implemented to mitigate potential impacts to the environment and public health.
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.
monthly period	means a one-month period commencing from the 2nd of a month until the first day of the immediately following month.
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 (Figure 1, Schedule 1 to this licence.
prescribed premises	has the same meaning given to that term under the EP Act.
Prevailing wind direction	The wind direction most frequently observed during each season.
Processed Septage	means the semi-dry fibrous residue produced from dewatering septage waste.
Putrescible waste	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Six monthly	means the 2 inclusive periods from 1 April to 30 September and 1 October to 31 March in the following year.
solid	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*

Term	Definition
spadeable	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Special Waste Type 1	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Special Waste Type 2	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
Special Waste Type 3	Has the same meaning given to that term under the *Landfill Waste Classification and Waste Definitions 1996.*
spot sample	means a discrete sample representative at the time and place at which the sample is taken.
Suitably qualified engineer	means a person who: (a) demonstrates competency in the area of civil or structural engineering; and (b) has a minimum of at least three years working in the area of civil or structural engineering; and (c) is employed by an independent third party external to the Licence Holder's business. or is otherwise approved in writing by the CEO to act in this capacity.
Suitably qualified fire safety engineer	means a person who: (a) demonstrates competency in the area of fire safety engineering; and (b) has a minimum of at least three years working in the area of fire safety engineering; and (c) is employed by an independent third party external to the Licence Holder's business. or is otherwise approved in writing by the CEO to act in this capacity.
Suitably qualified hydrogeologist	means a person who: (a) demonstrates competency in the area of hydrogeology; and (b) has a minimum of at least six years working in the area of hydrogeology; and (c) is employed by an independent third party external to the Licence Holder's business. or is otherwise approved in writing by the CEO to act in this capacity.
TDS Cell 1	refers to the previously referenced MIC Titanium Dioxide Slurry disposal cell on the Premises Map in Figure 1, Schedule 1.

Term	Definition
TDS Cell 1 leachate pond	refers to the leachate pond for the collection of leachate (underdrainage and supernatant water) collected from the TDS Cells in Figure 1, Schedule 1.
TDS Cell 2	refers to the previously referenced CC2 titanium dioxide slurry disposal cell whose construction and resulting structure was divided two stages, in the areas labelled Tronox Cell 2 and Tronox Cell 2A in Figure 1, Schedule 1.
TDS Cell 2 leachate pond	refers to the leachate pond for the collection and storage of leachate (underdrainage and supernatant water) collected from the TDS Cells in Figure 1, Schedule 1.
Titanium Dioxide Tailings	means the process residue from the Titanium Dioxide Processing and finishing plants (Part V licence numbers L6046/1967/15 and L8870/2014/1).
waste	has the same meaning given to that term under the EP Act.

END OF CONDITIONS

Schedule 1: Maps

Figure 1: Premises map

The Premises is shown in the map below. The red line depicts the Premises boundary with excised extractive industries operations defined by the coordinates in Schedule 2.

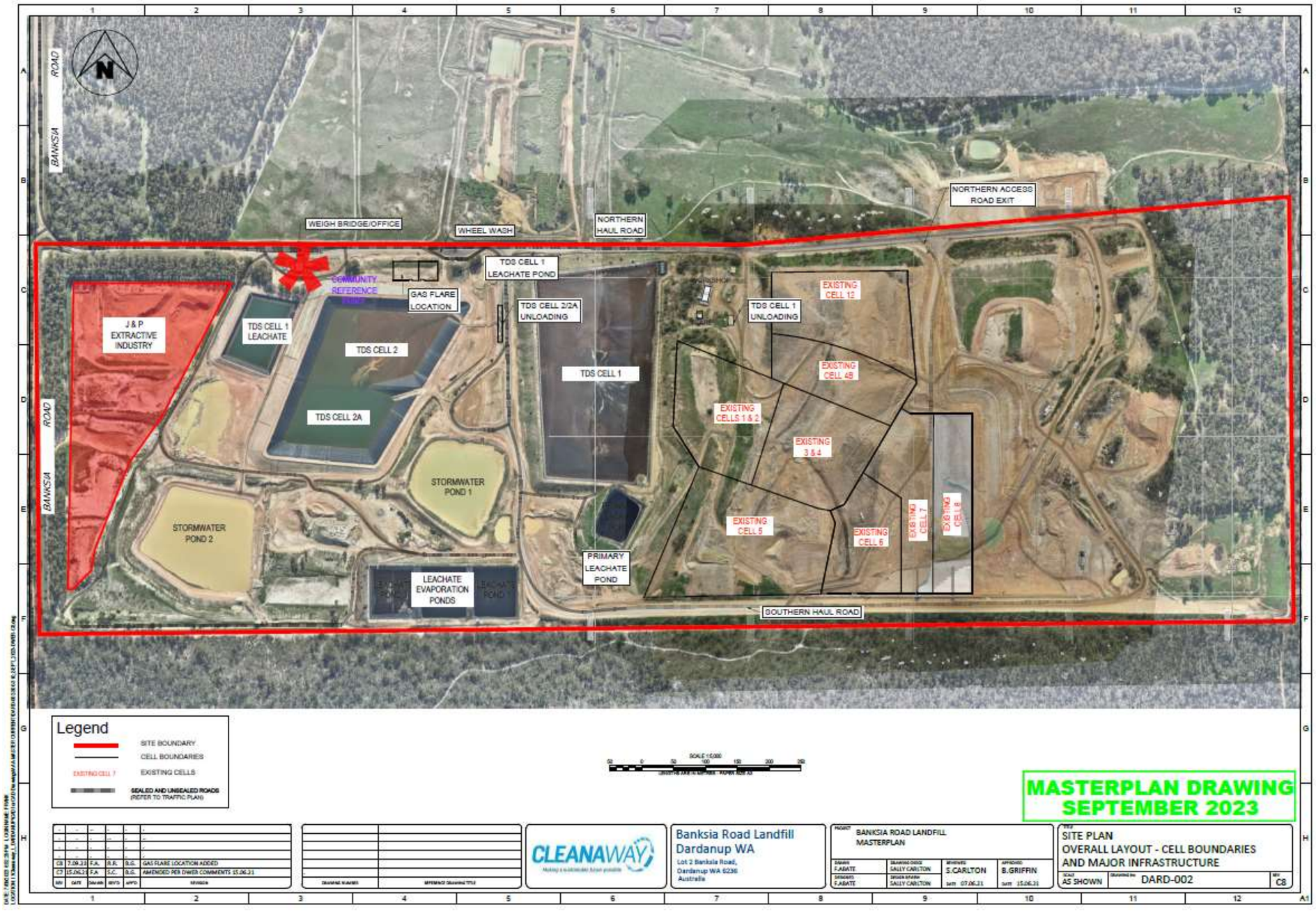
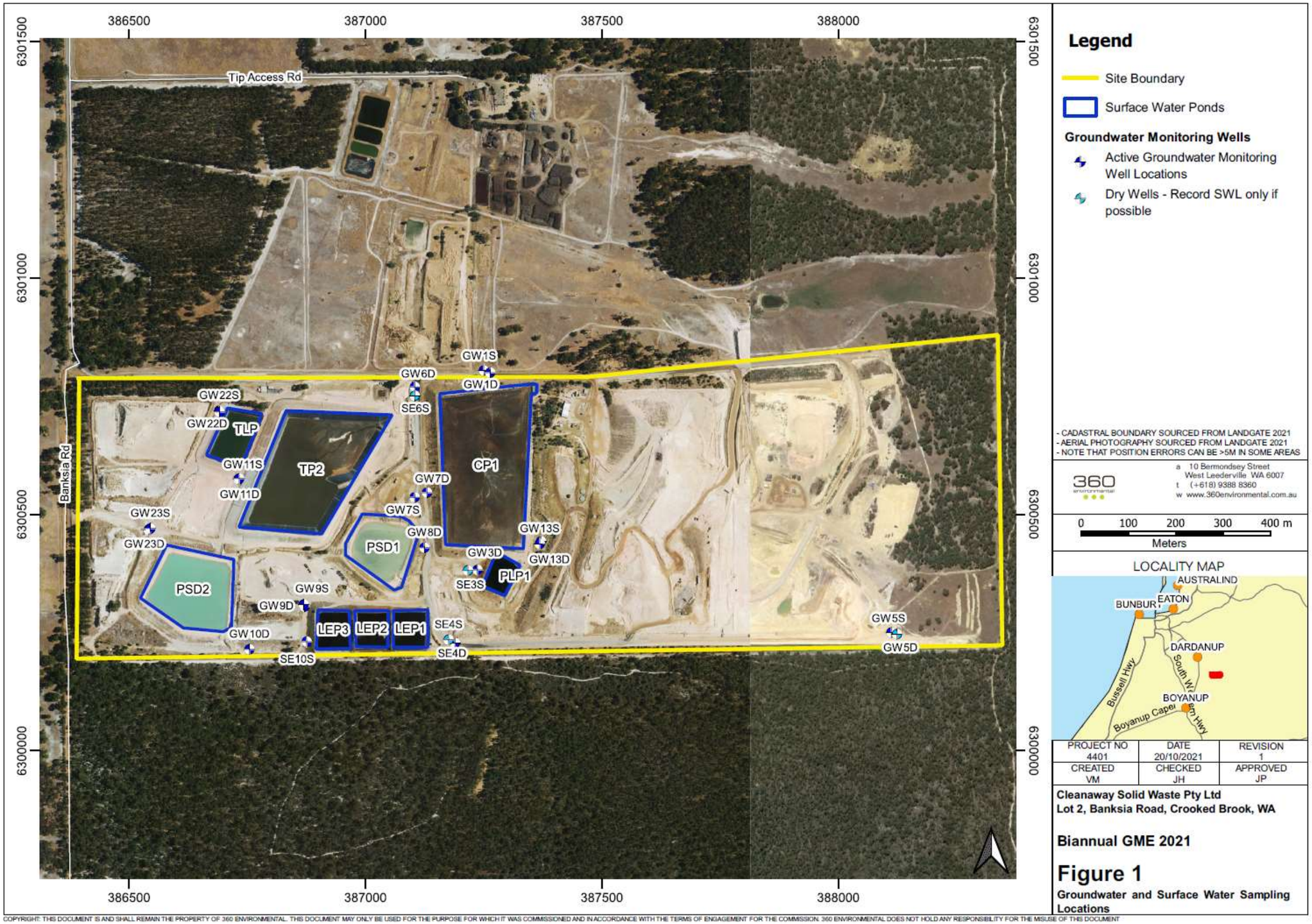


Figure 2: Groundwater monitoring well map



Schedule 2: Excised extractive industry boundary

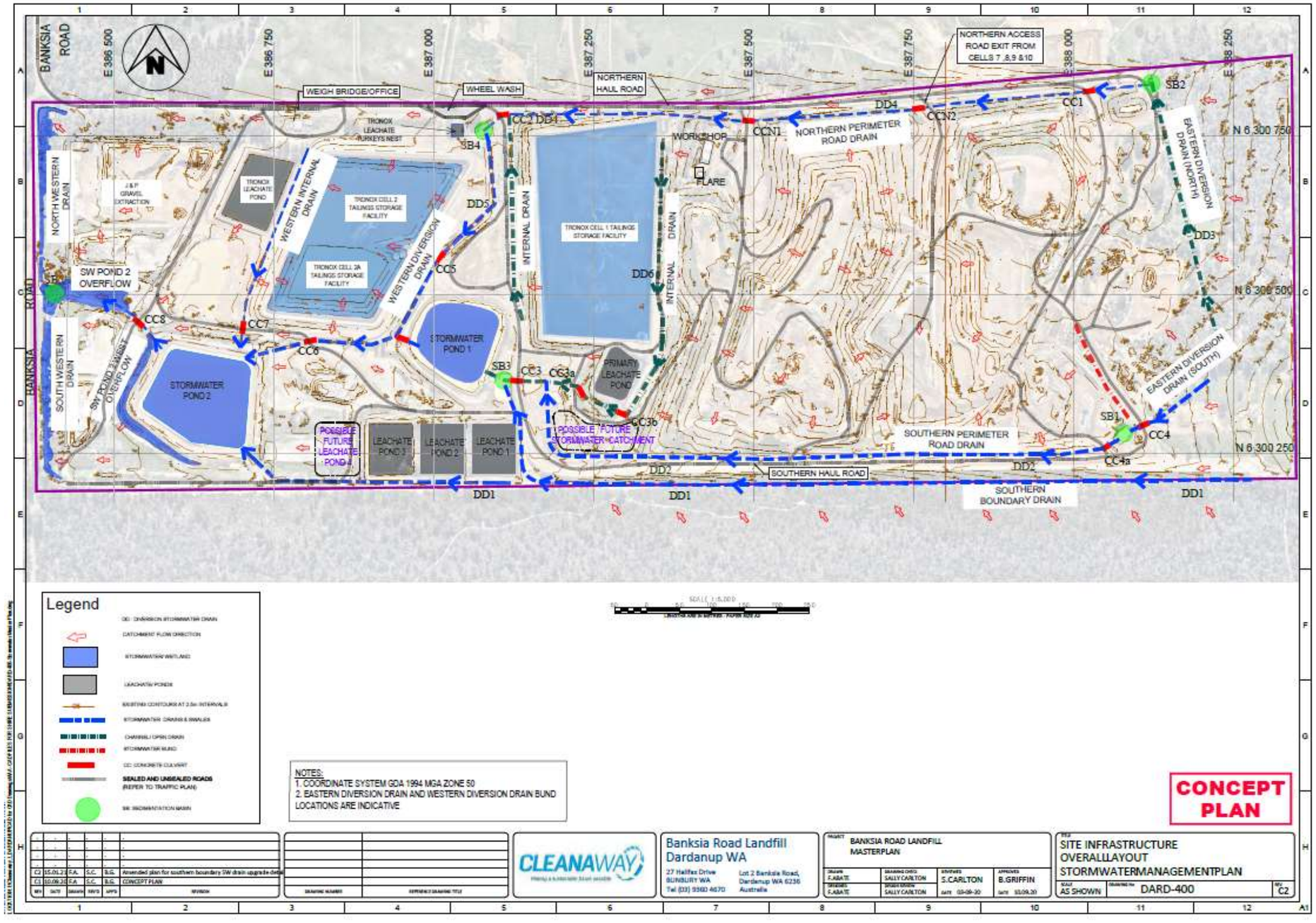
The excised extractive industry operation is defined by the coordinates in Table 29.

Table 29: Extractive Industry boundary coordinates

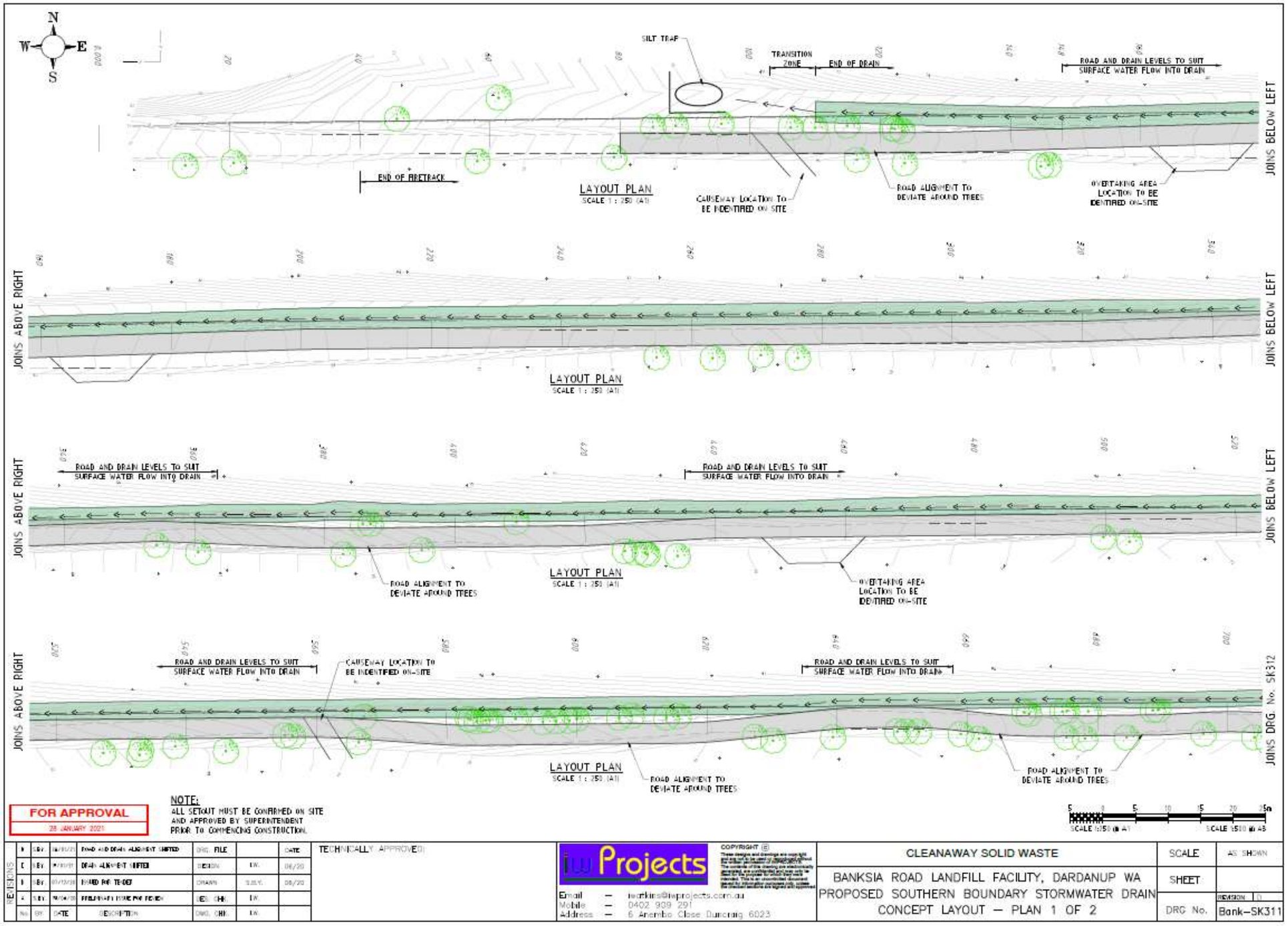
Easting	Northing	Zone
115.77814	-33.43114	*GDA 2020*
115.77811	-33.42659	*GDA 2020*
115.78116	-33.42665	*GDA 2020*
115.78034	-33.42811	*GDA 2020*
115.77930	-33.42932	*GDA 2020*
115.77840	-33.43109	*GDA 2020*
115.77863	-33.43083	*GDA 2020*

Schedule 3: Plans

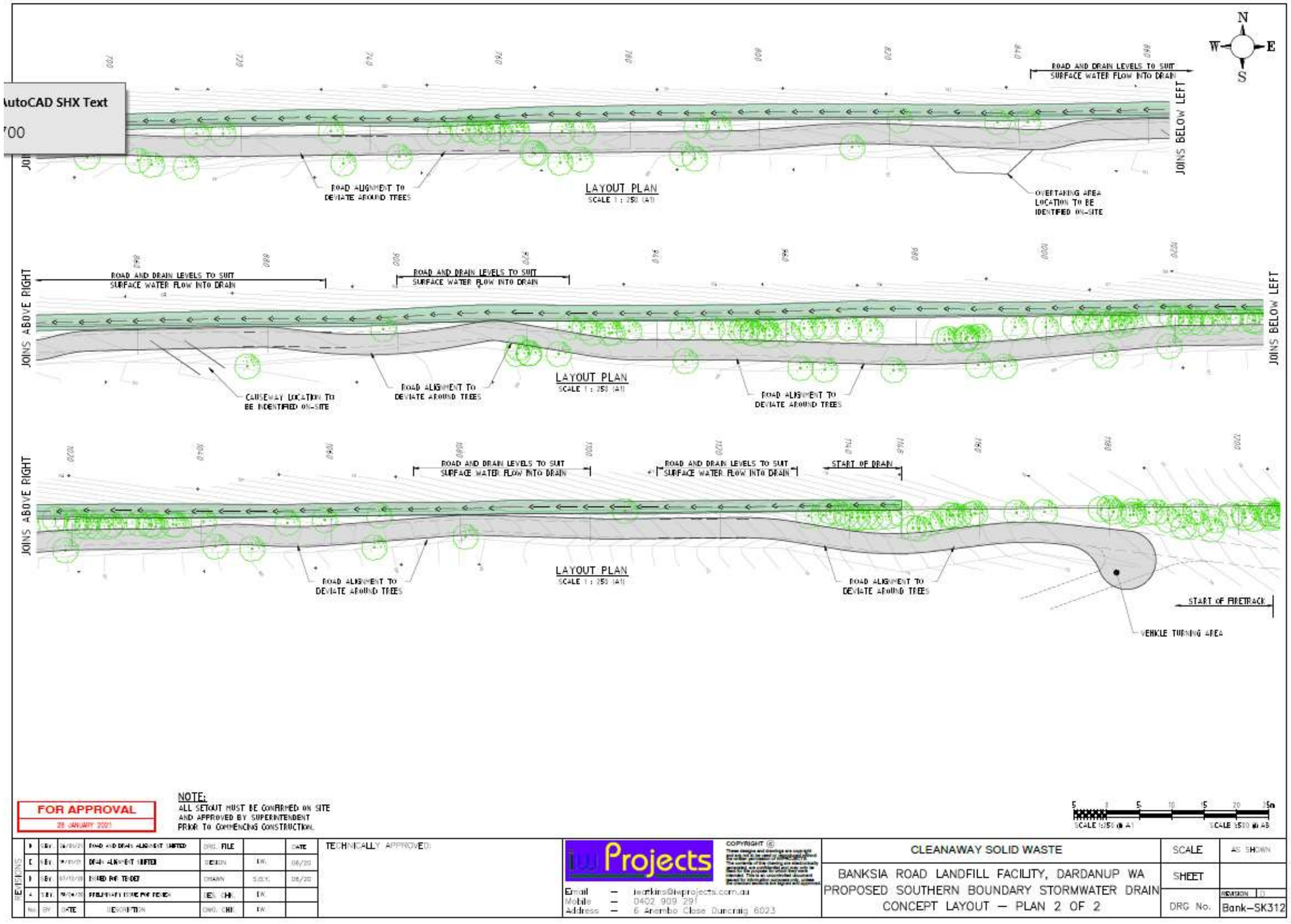
Plan 1: Proposed stormwater management layout



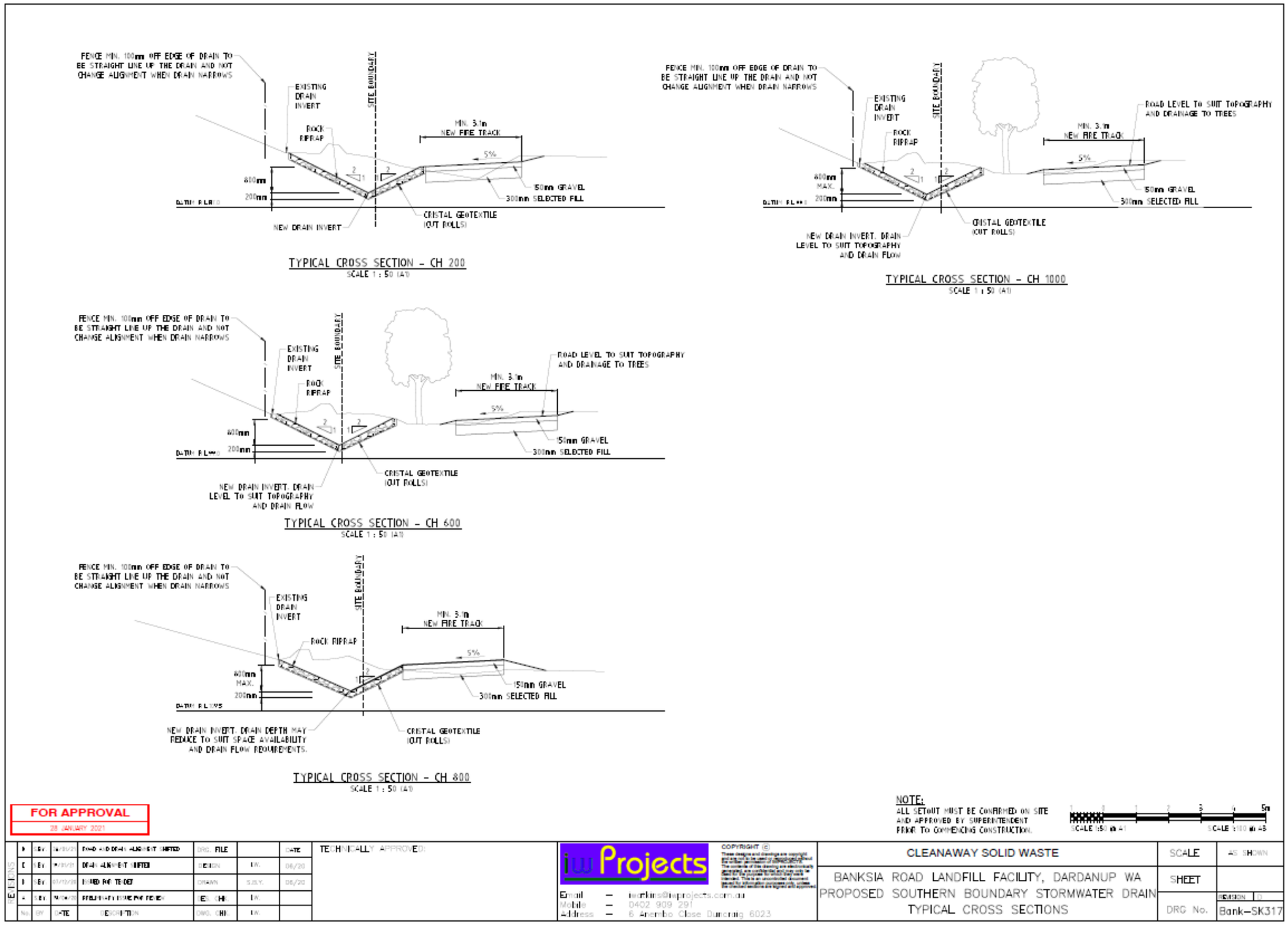
Plan 1A: Poposed southern boundary stormwater management drain layout



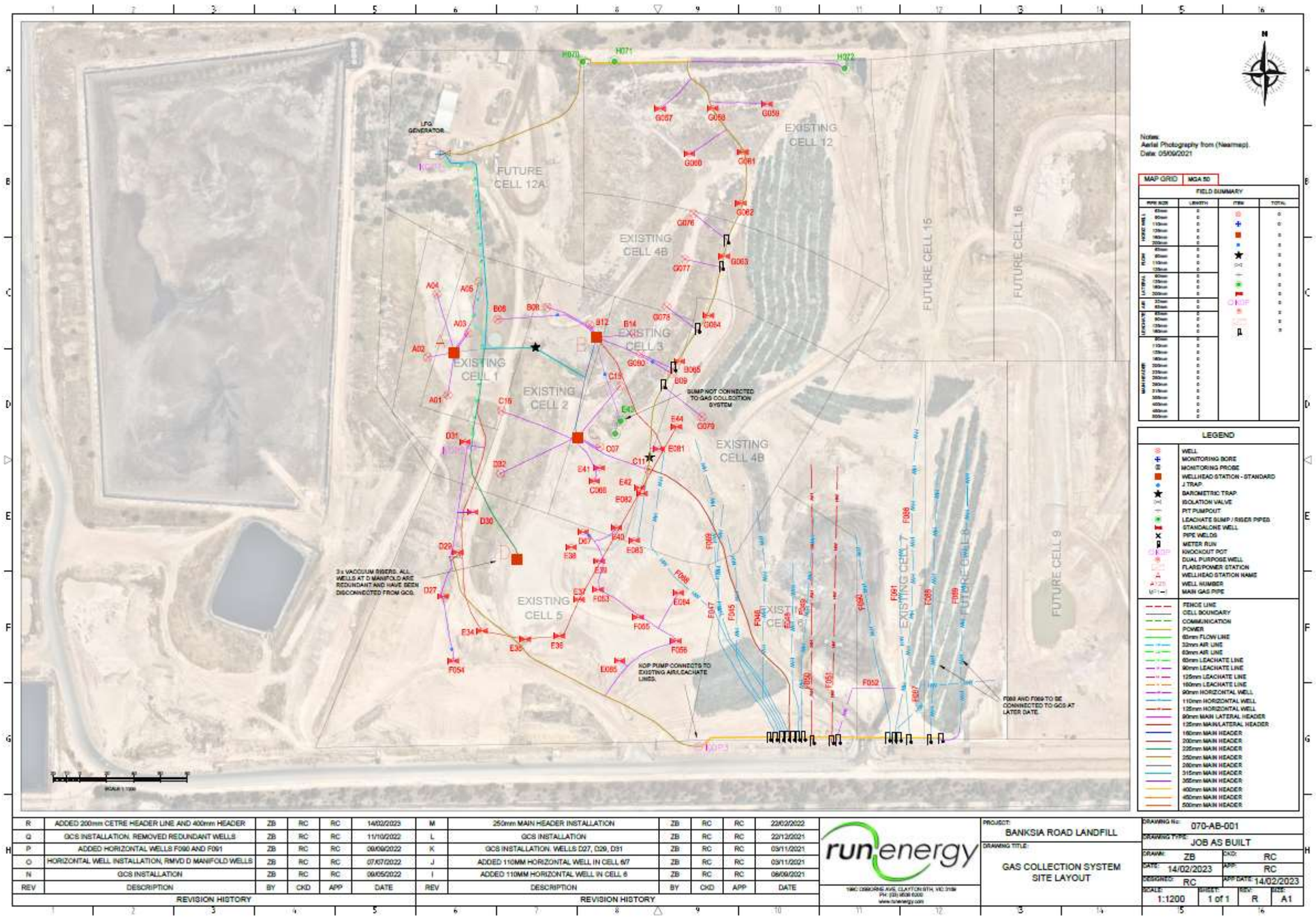
Plan 1B: Poposed southern boundary stormwater management drain layout



Plan 2: Poposed southern boundary stormwater management drain typical cross sections



Plan 3: As built landfill gas collection system plans



REV	DESCRIPTION	BY	CKD	APP	DATE
R	ADDED 200mm CETRE HEADER LINE AND 400mm HEADER	ZB	RC	RC	14/02/2023
Q	GCS INSTALLATION. REMOVED REDUNDANT WELLS	ZB	RC	RC	11/10/2022
P	ADDED HORIZONTAL WELLS F090 AND F091	ZB	RC	RC	09/09/2022
O	HORIZONTAL WELL INSTALLATION, RMVD D MANIFOLD WELLS	ZB	RC	RC	07/07/2022
N	GCS INSTALLATION	ZB	RC	RC	09/05/2022

REVISION HISTORY

REV	DESCRIPTION	BY	CKD	APP	DATE
M	250mm MAIN HEADER INSTALLATION	ZB	RC	RC	22/02/2022
L	GCS INSTALLATION	ZB	RC	RC	22/12/2021
K	GCS INSTALLATION. WELLS D27, D29, D31	ZB	RC	RC	03/11/2021
J	ADDED 110MM HORIZONTAL WELL IN CELL 6/7	ZB	RC	RC	03/11/2021
I	ADDED 110MM HORIZONTAL WELL IN CELL 6	ZB	RC	RC	08/09/2021

REVISION HISTORY

runenergy
1WC OSBORNE AVE, CLAYTON STH, VIC 3168
PH: (03) 9538 6300
www.runenergy.com

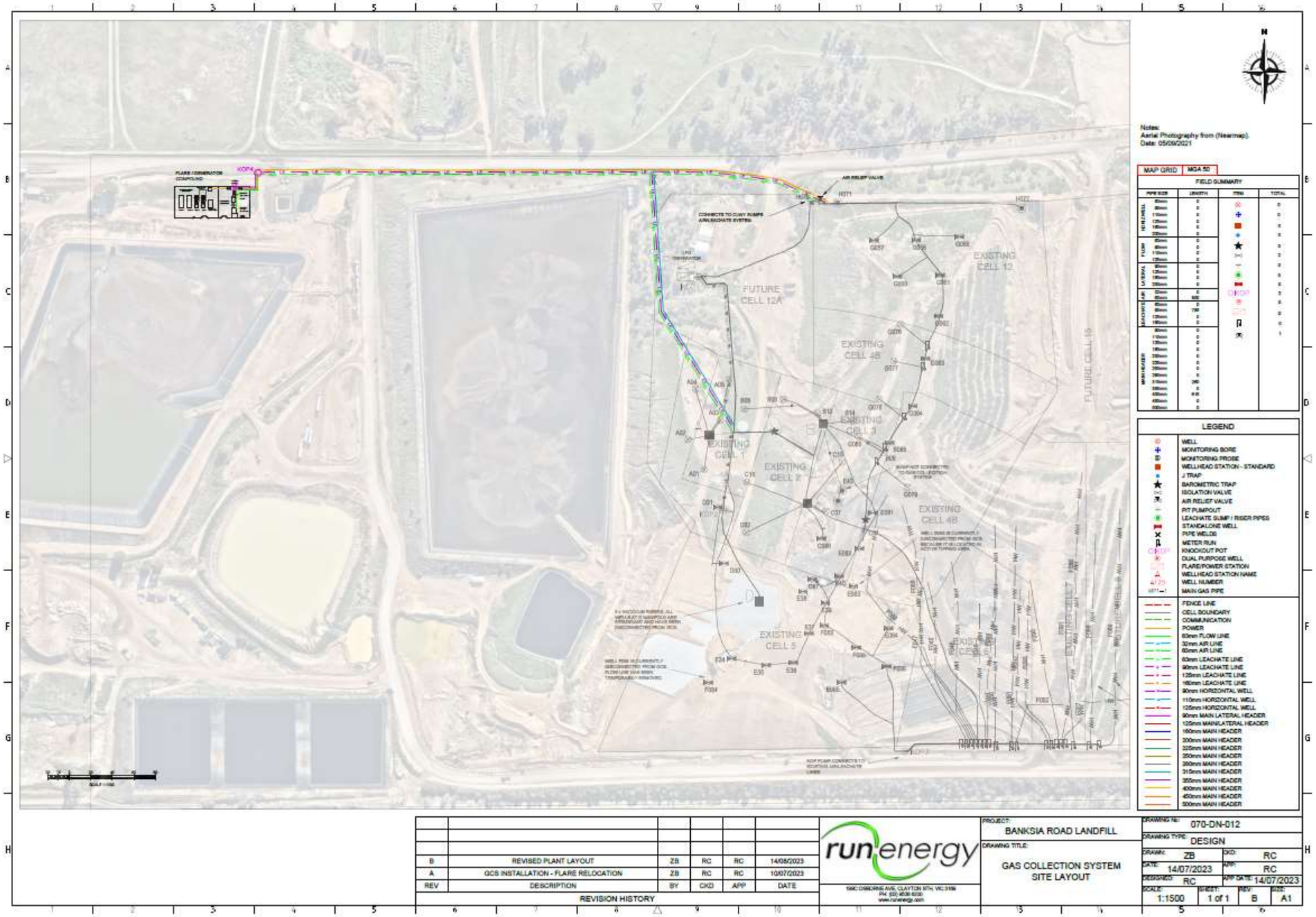
PROJECT: BANKSIA ROAD LANDFILL
DRAWING TITLE: GAS COLLECTION SYSTEM SITE LAYOUT

DRAWING No.: 070-AB-001
DRAWING TYPE: JOB AS BUILT
DRAWN: ZB
CKD: RC
DATE: 14/02/2023
APP: RC
DESIGNED: RC
APP DATE: 14/02/2023
SCALE: 1:1200
SHEET: 1 of 1
REV: R
SIZE: A1

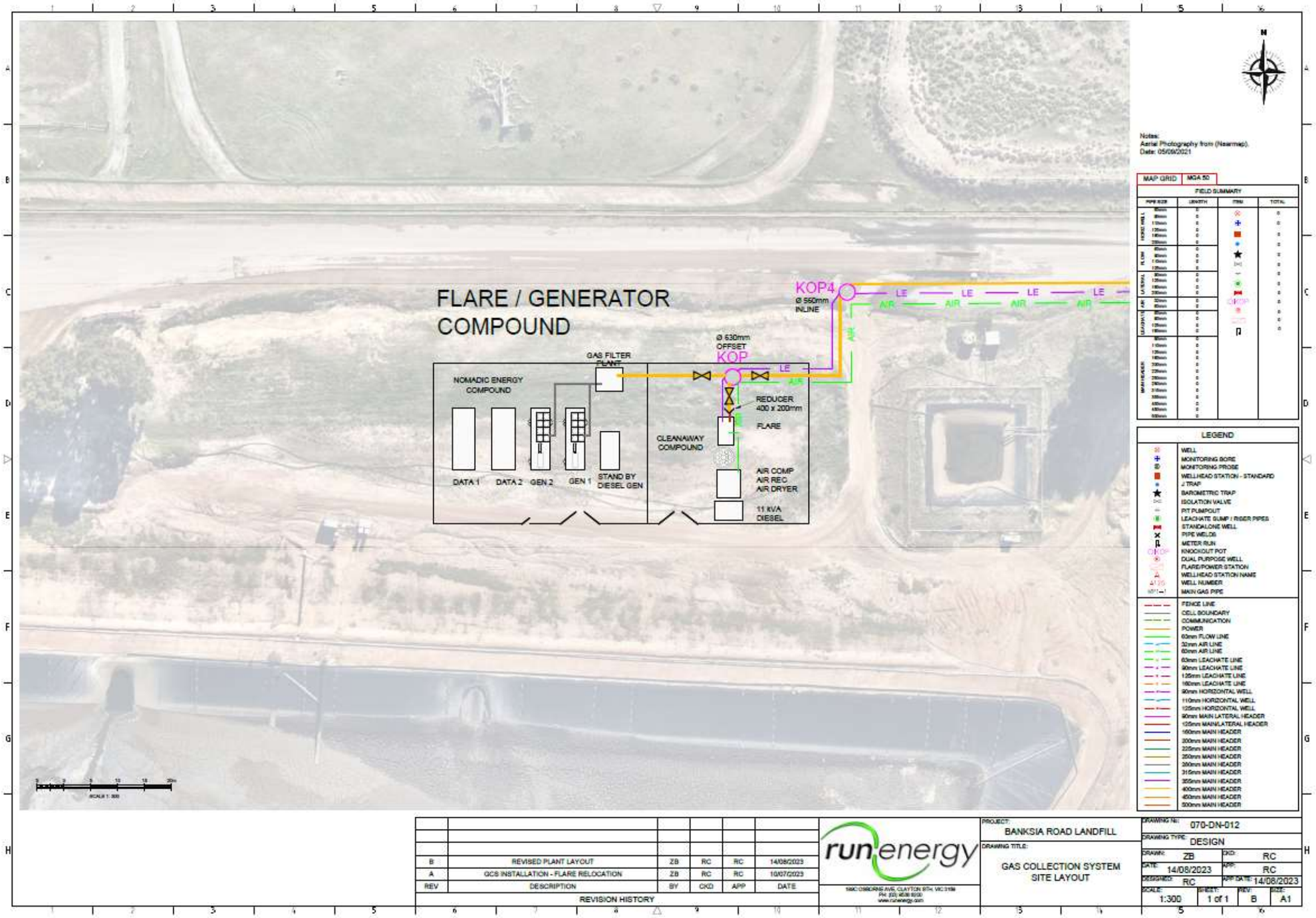
L8904/2015/1 (Date amended: 8 July 2025)

Application number: APP-0028995

Plan 4: As built landfill gas collection system plans with location of flare station and landfill gas coveyance infrastructre



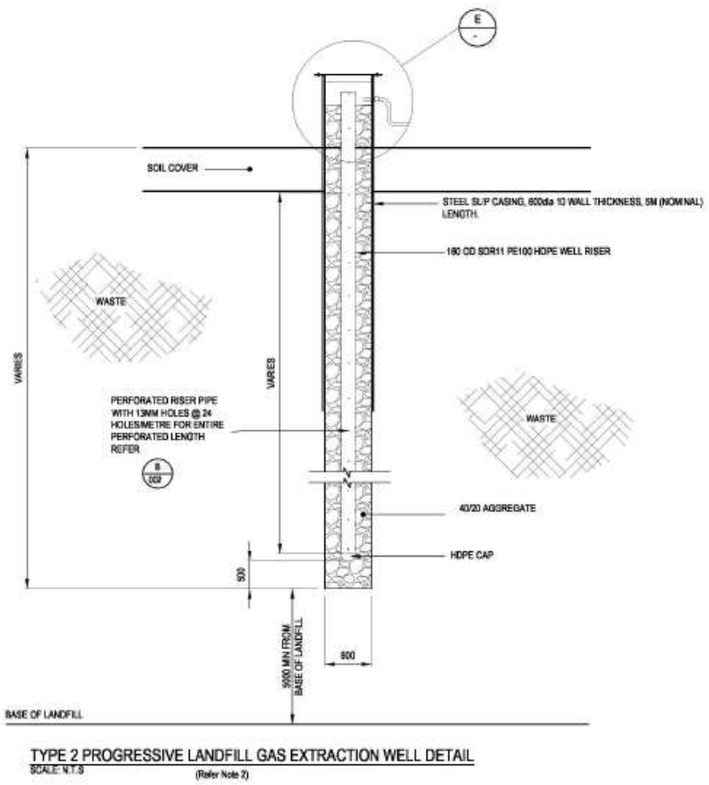
Plan 5: Landfill flare station compotents



Plan 6: General landfill gas collection system – Temporary well head construction details

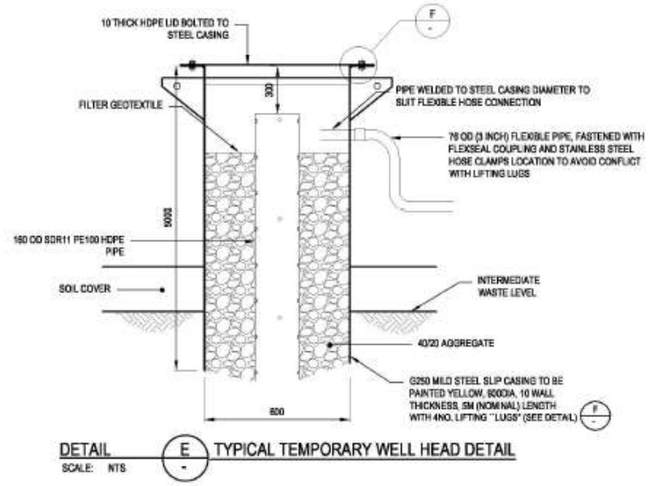
L8904/2015/1 (Date amended: 8 July 2025)

Application number: APP-0028995

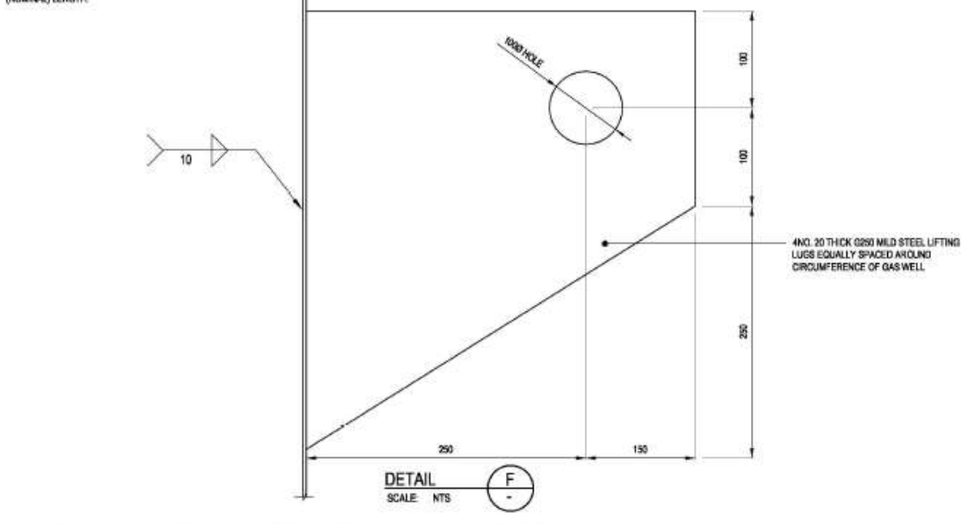


TYPE 2 PROGRESSIVE LANDFILL GAS EXTRACTION WELL DETAIL
SCALE: N.T.S (Refer Note 2)

REMINDER: CLIENT TO ADVISE WHICH WELLS WILL BE EXTENDED AND REFER THEM TO TYPE 2 WELLS.



DETAIL E TYPICAL TEMPORARY WELL HEAD DETAIL
SCALE: NTS



DETAIL F
SCALE: NTS

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

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REV	DESCRIPTION	CAD	CHK	DATE
1	DRAFT FOR CLIENT REVIEW	KMJA	SFP	15.01.20
2	FINAL	KMJA	SFP	31.01.20

DESIGNED	SFP	Jan.20
DRAWN	KMJA	Jan.20
DESIGN CHECKED		
DRAWING CHECKED		

DRAWING STATUS: TENDER ISSUE

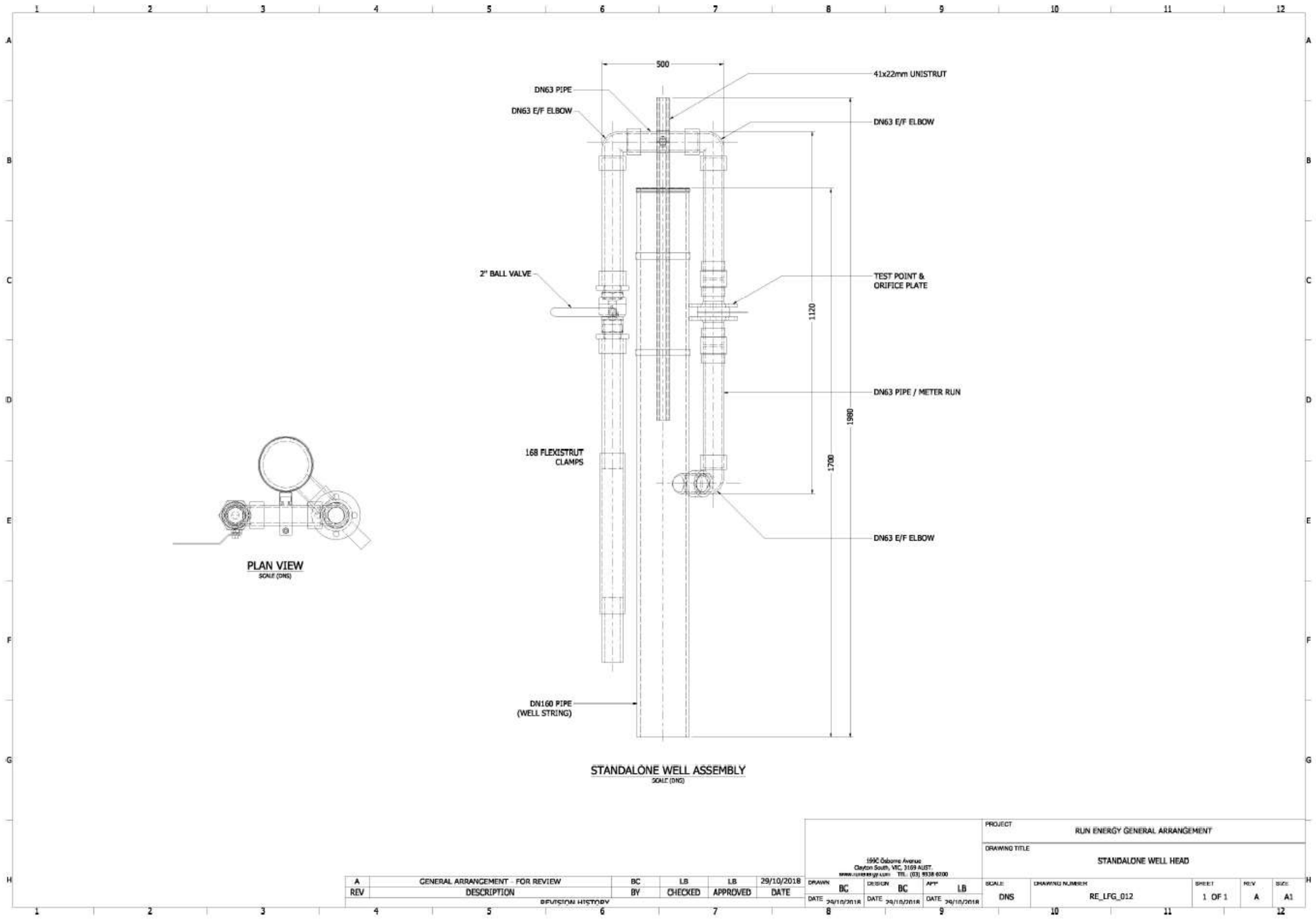
NOT FOR CONSTRUCTION

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION PURPOSES UNLESS SIGNED AS APPROVED

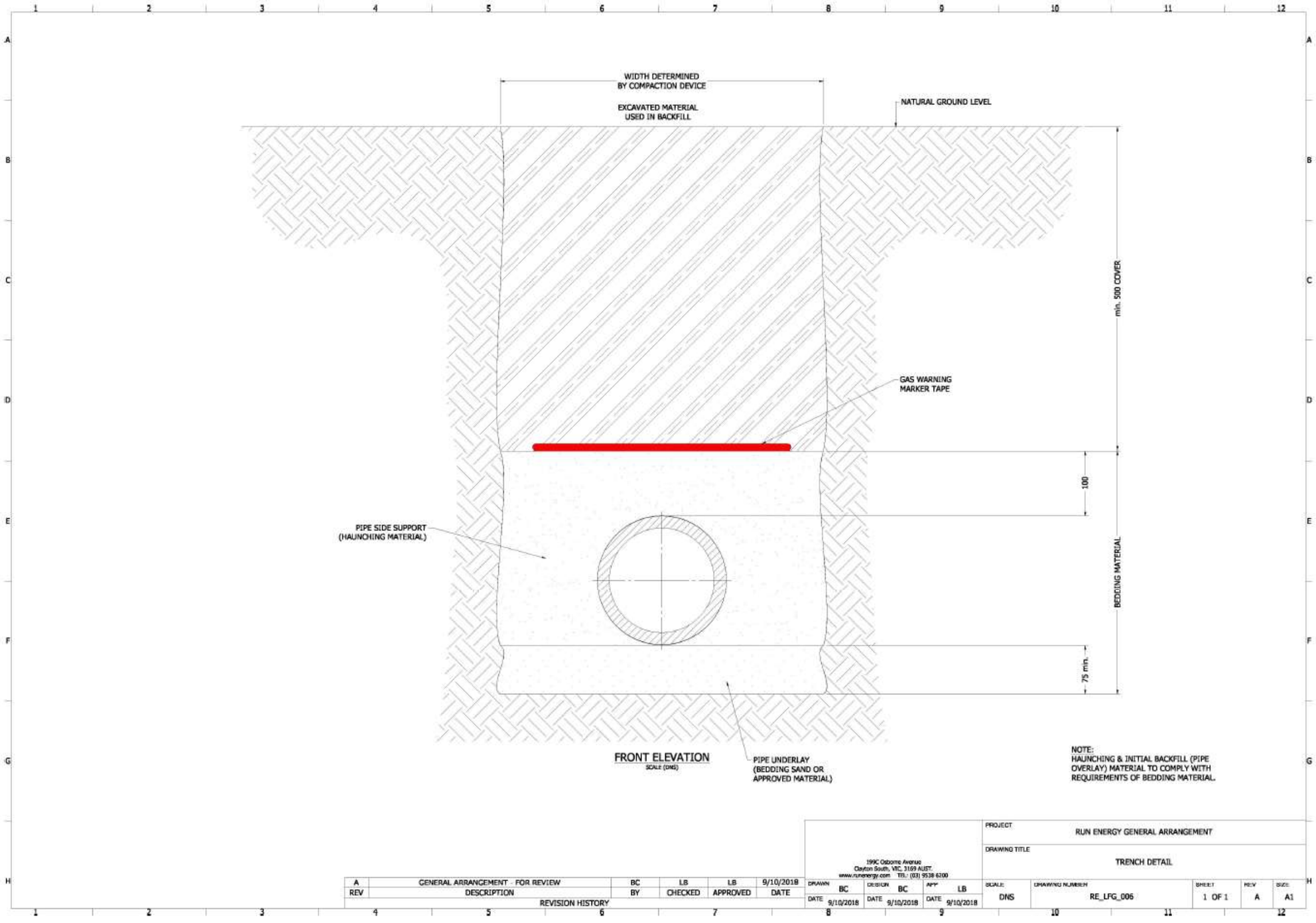
APPROVED DATE

CLIENT CLEANAWAY SOLID WASTE PTY LTD.
PROJECT BANKSIA LANDFILL
TITLE LFG MANAGEMENT SYSTEM DETAILED DESIGN
VERTICAL GAS WELL DETAILS SHEET 2
SCALE (A3) AS SHOWN DWG No. 1003307.7000-07 REV 2

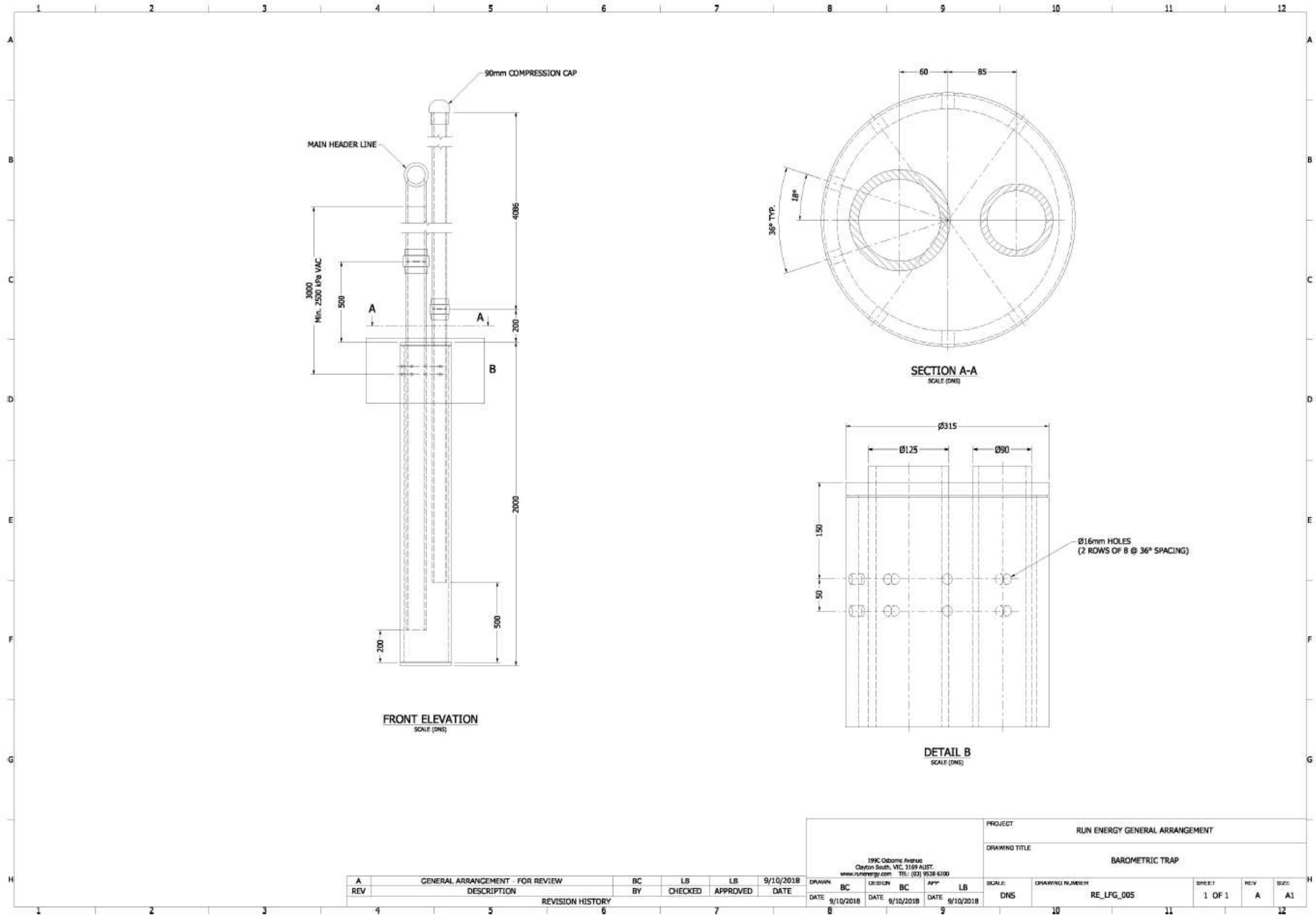
Plan 6A: General landfill gas collection system – Stand alone well head construction details



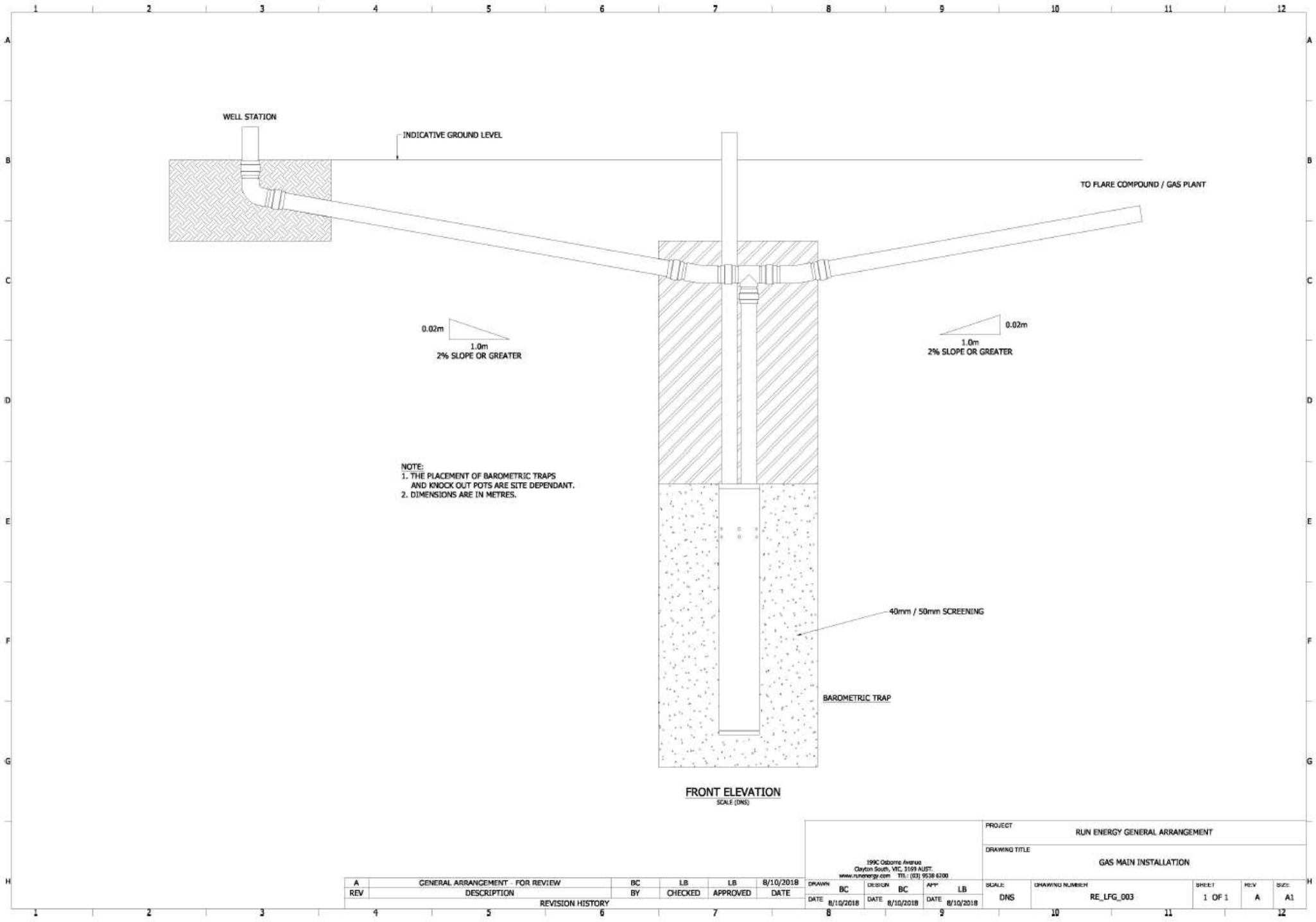
Plan 6B: General landfill gas collection system – Trench details



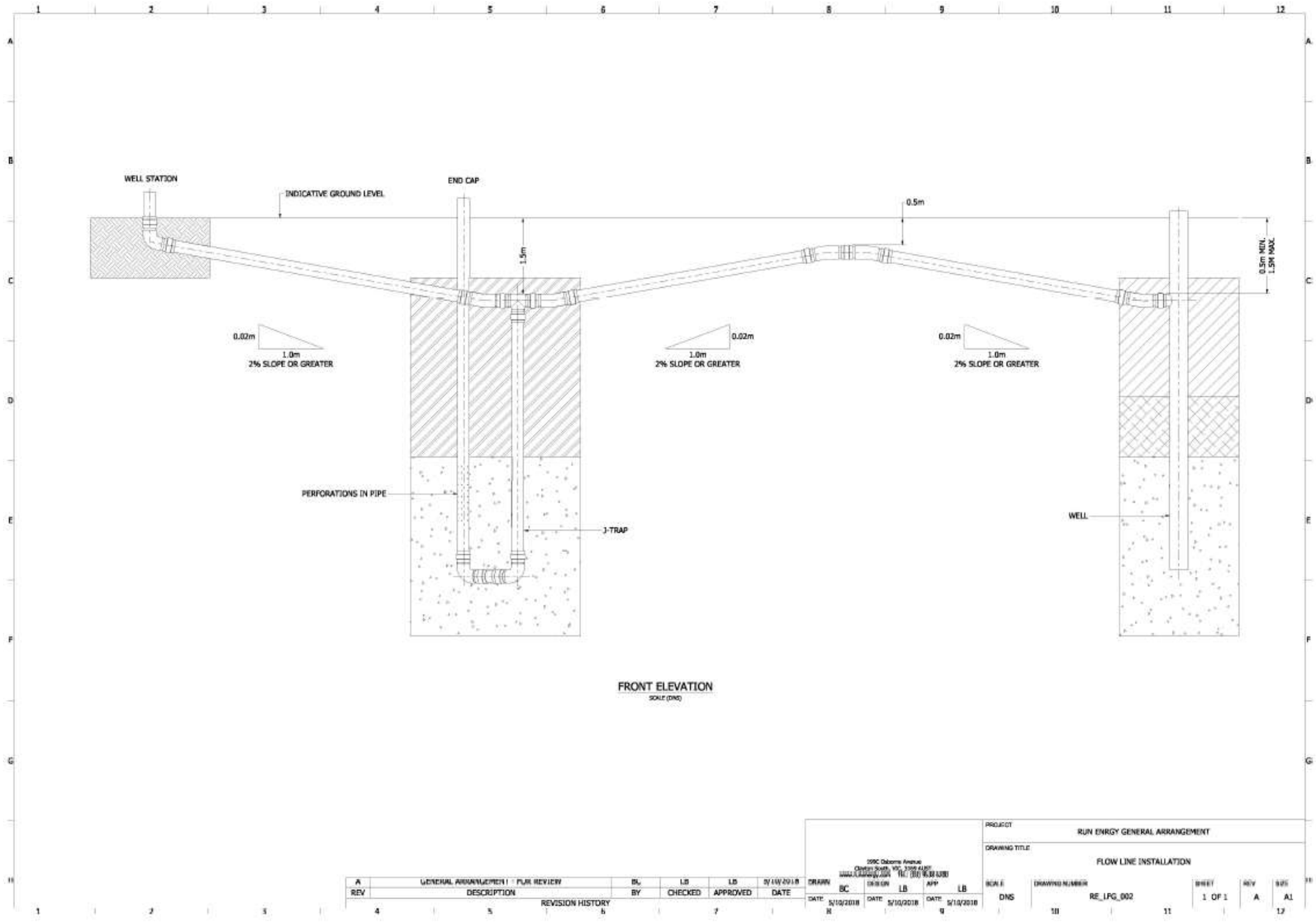
Plan 6C: General landfill gas collection system – Barometric trap construction details



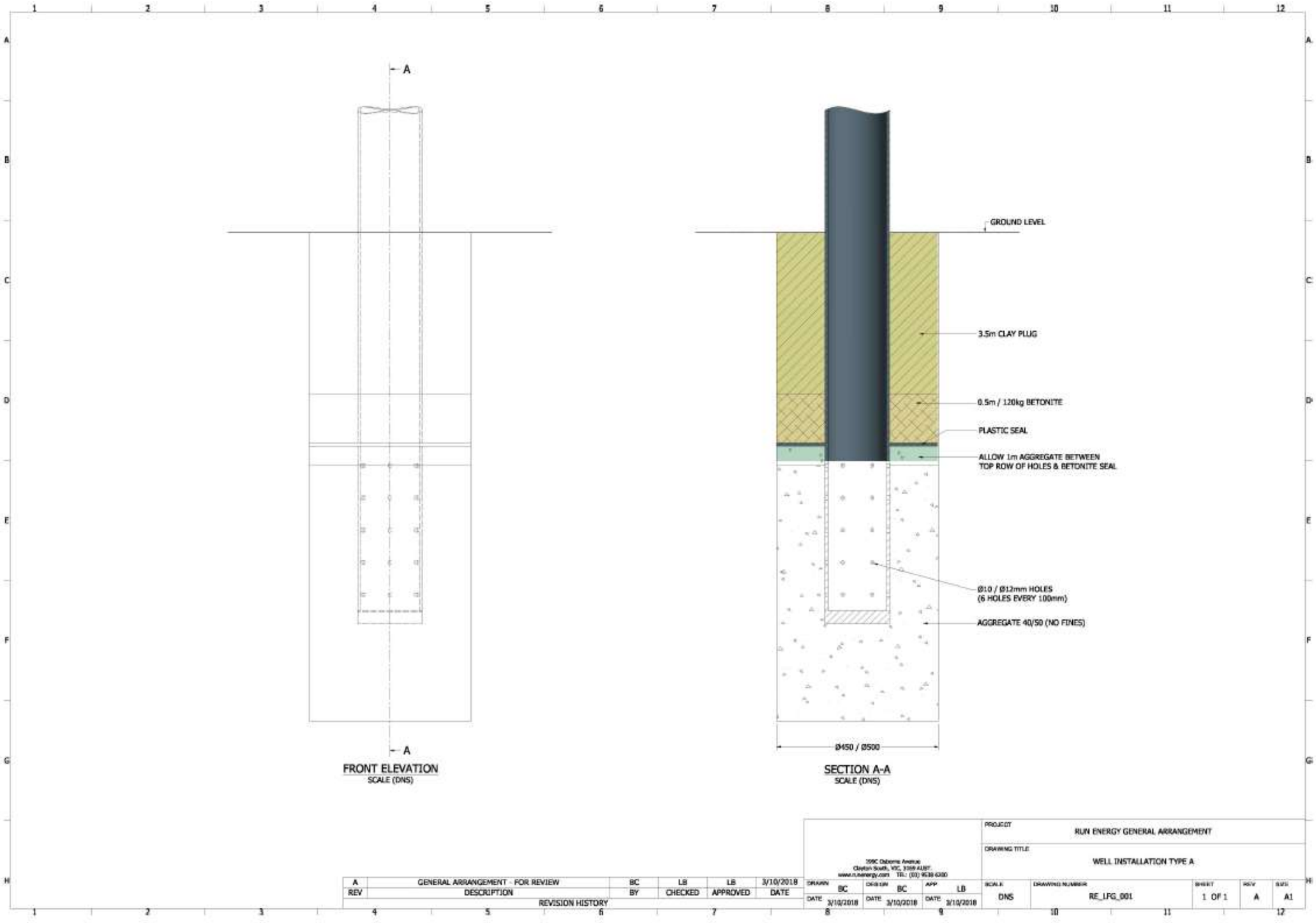
Plan 6D: General landfill gas collection system – Gas maininstallation construction details



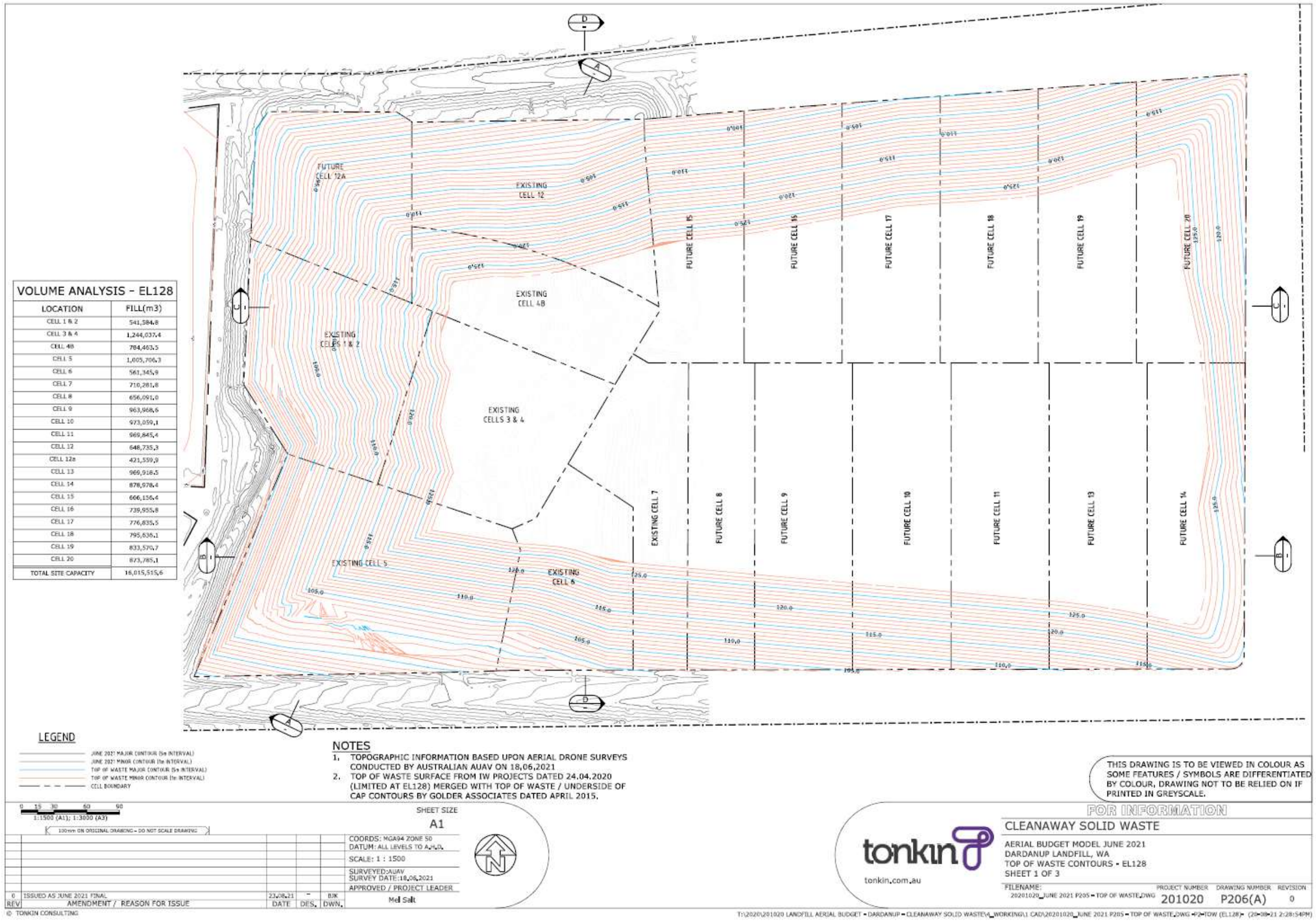
Plan 6E: General landfill gas collection system – Flow line installation construction details



Plan 6F: General landfill gas collection system – Well installation (Type A) construction details

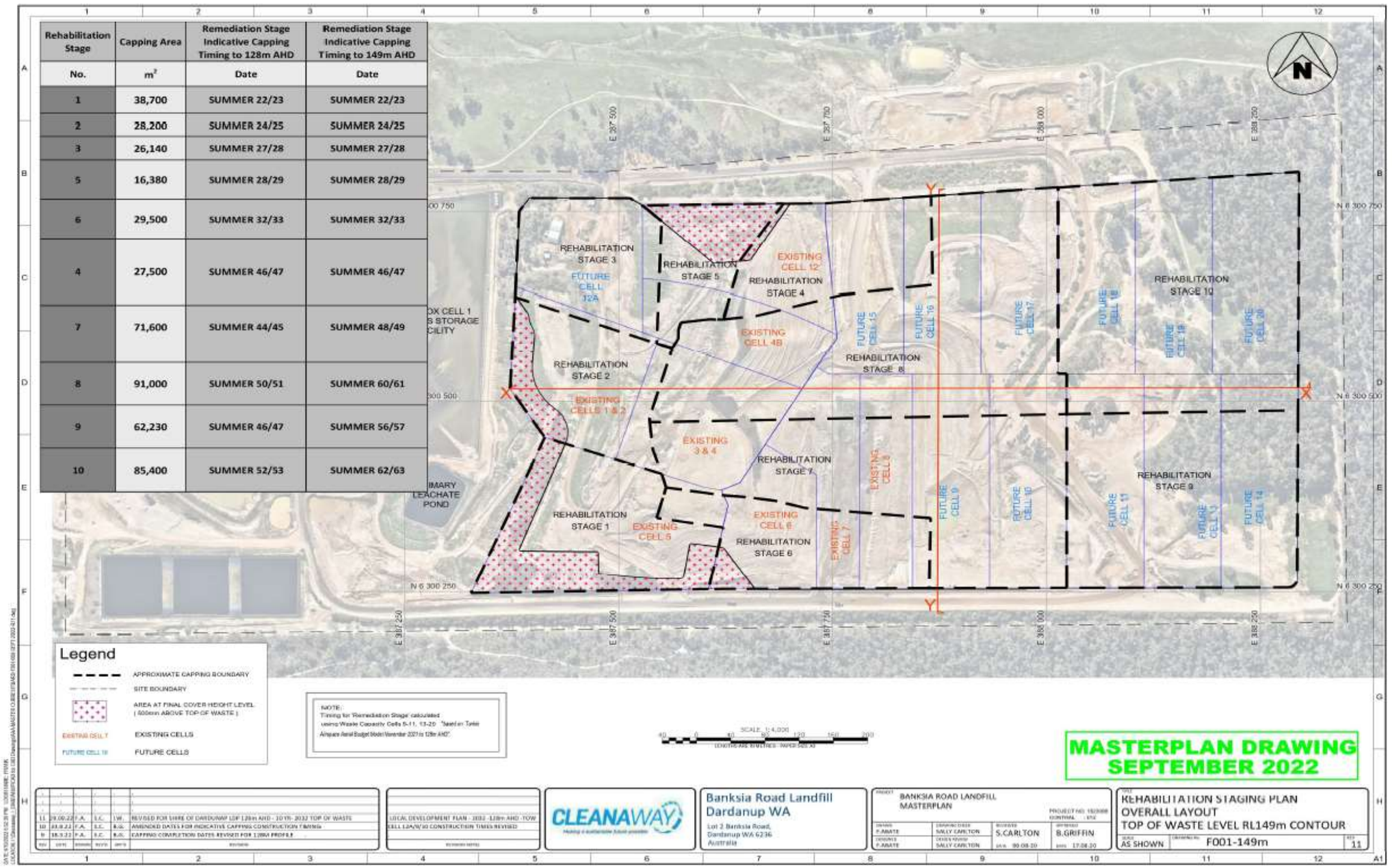


Plan 7: Final landfill contour plan

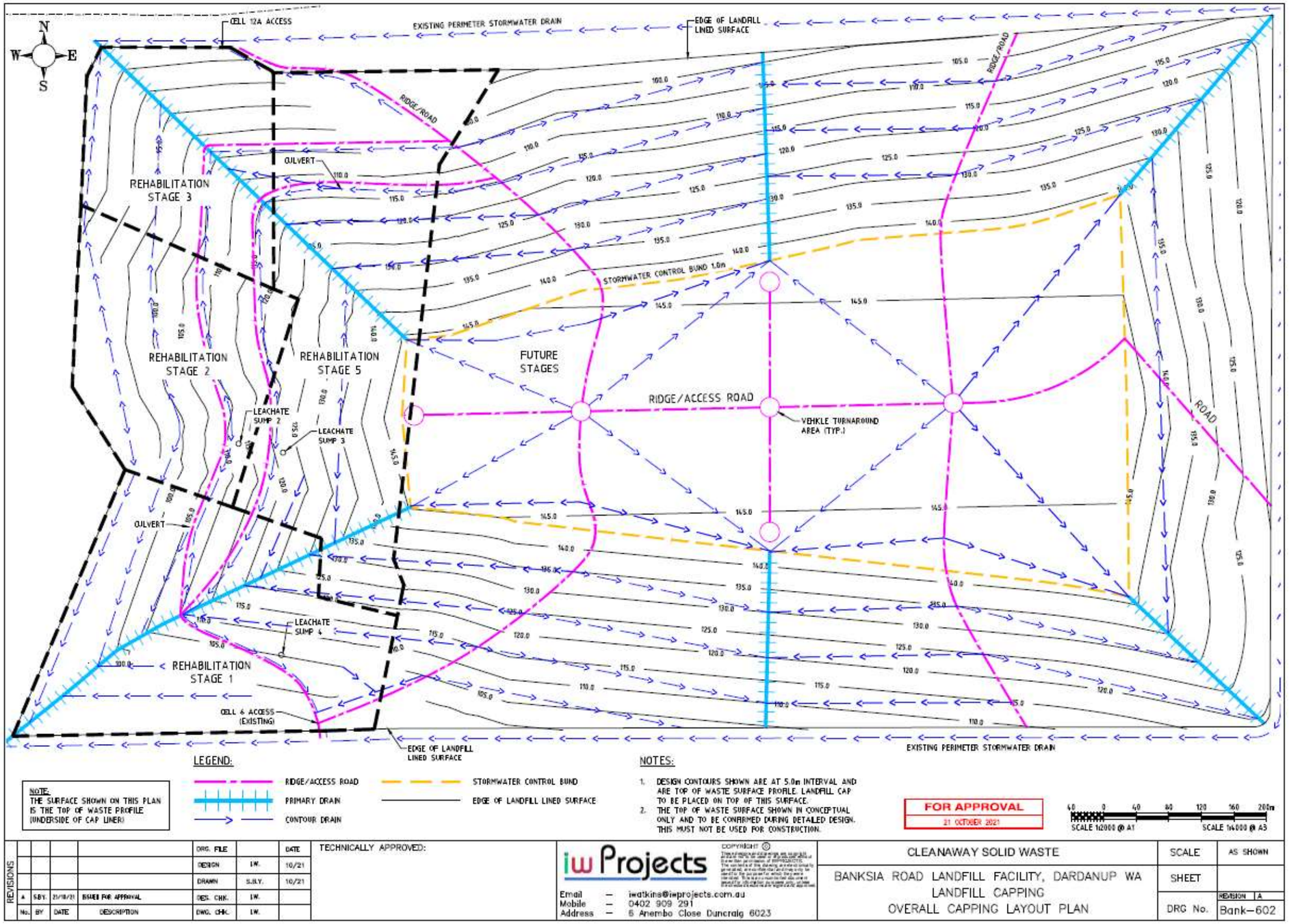


Plan 8: Rehabilitation staging plan

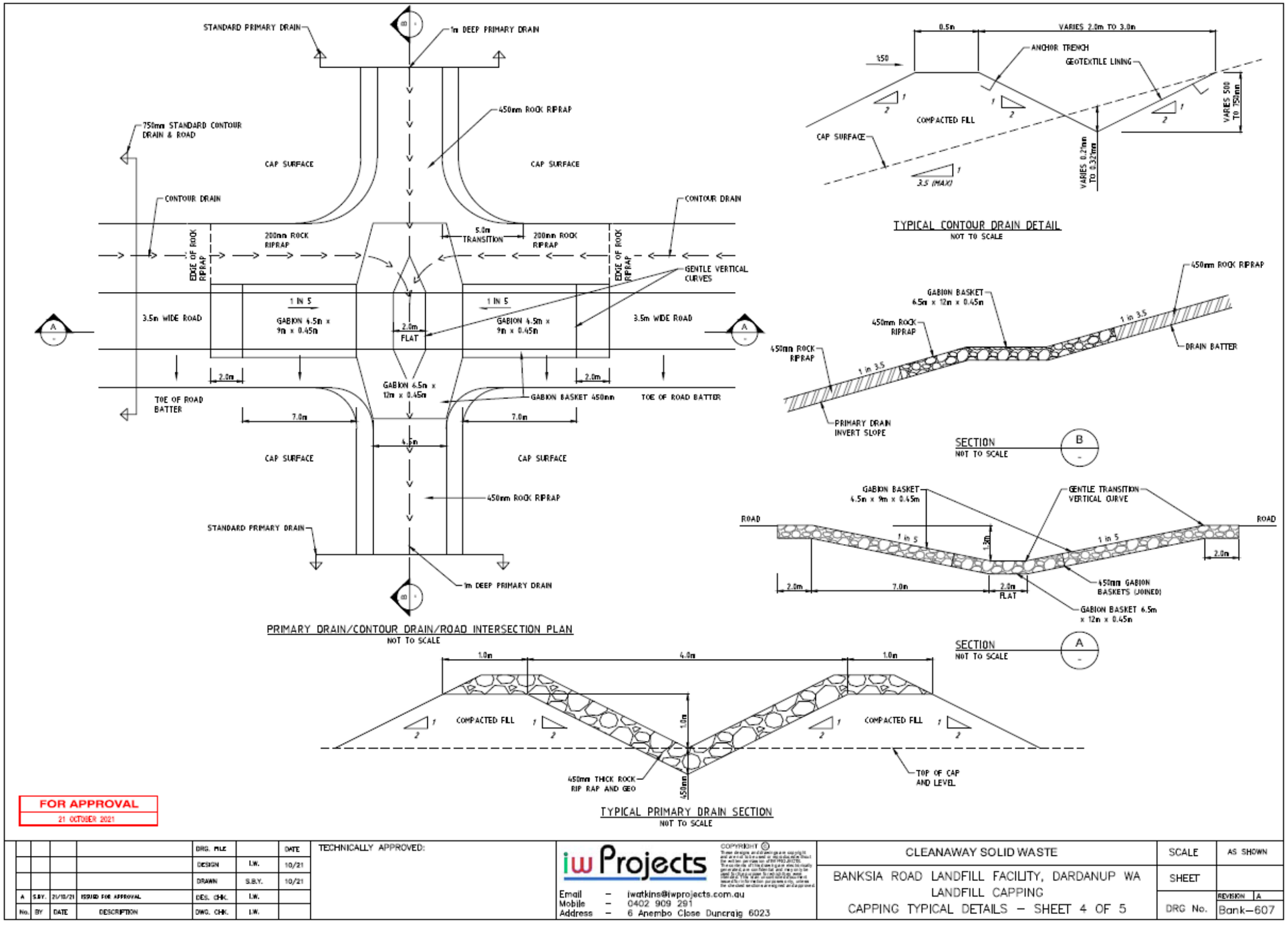
Rehabilitation Stage	Capping Area	Remediation Stage Indicative Capping Timing to 128m AHD	Remediation Stage Indicative Capping Timing to 149m AHD
No.	m^2	Date	Date
1	38,700	SUMMER 22/23	SUMMER 22/23
2	28,200	SUMMER 24/25	SUMMER 24/25
3	26,140	SUMMER 27/28	SUMMER 27/28
5	16,380	SUMMER 28/29	SUMMER 28/29
6	29,500	SUMMER 32/33	SUMMER 32/33
4	27,500	SUMMER 46/47	SUMMER 46/47
7	71,600	SUMMER 44/45	SUMMER 48/49
8	91,000	SUMMER 50/51	SUMMER 60/61
9	62,230	SUMMER 46/47	SUMMER 56/57
10	85,400	SUMMER 52/53	SUMMER 62/63



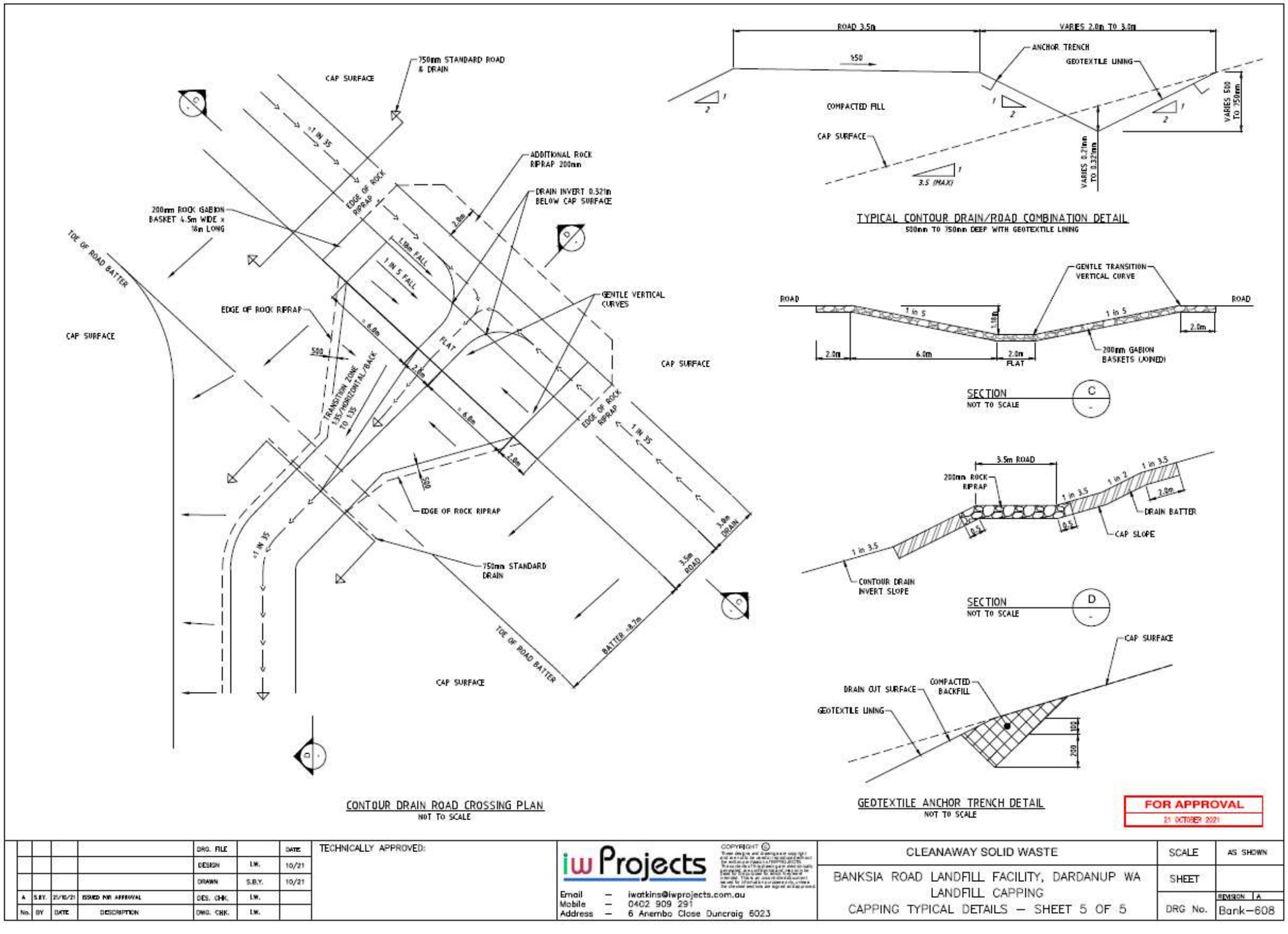
Plan 9: Stage 1, 2 and 5 Capping – Overview of stormwater infrastructure



Plan 10: Stage 1, 2 and 5 Capping – Cross section of typical stormwater drains (1)



Plan 11: Stage 1, 2 and 5 Capping – Cross section of typical stormwater drains (2)



Appendix 1: TDS Cell 1 Capping Construction and Installation Requirements

GENERAL FILL REQUIREMENTS

Material Property – General Fill	Minimum	Maximum	Test	Minimum Test Frequency - Source
Particle Size Distribution	-	50 mm	AS1289 3.6.1	3 per source or material type Or minimum 1 test per 2,500 m3 (as excavated / stockpiled)
· Maximum Particle size · Soil content passing 75 mm sieve · Soil content passing 26.6mm · Soil content passing 0.075mm sieve	98% 90% 15%	- - -		
Moisture Content	3% (dry) of OMC	3% (wet) of OMC	AS1289.5.1.1 or AS1289.5.7.1	
Emerson Class	≥4	-	AS1289.3.8.1	
Atterberg limits	-	-		

COMPACTION STANDARD FOR GENERAL EARTHWORKS

Fill material	Minimum layer thickness	Maximum layer thickness	Compaction Standard (minimum)
General Fill – first layer	1000 mm	1100 mm (first layer)	Track rolling with dozer
Following layers	300 mm	500 mm	Track rolling with dozer, minimum four (4) passes

SELECT FILL MATERIAL PROPERTIES

Material Property – Select Fill	Value	Test	Minimum Test Frequency - Source
% fines (<0.075 mm)	≥40%	AS1289 3.6.1	2 per source or material type
Plasticity index	≥20%	AS1289 3.2.1, 3.3.1	
Maximum particle size	2.36 mm	AS1289 3.6.1	
Emerson Class	≥4	AS1289.3.8.1	
Coefficient of Permeability at OMC and SMCC of 95%	≤ 5x10-8m/s	AS1289 6.7.1	

MATERIAL PROPERTIES FOR HIGH STRENGTH GEOTEXTILE

Property	Test method	Value
Tensile strength (MD/CD)	AS3706.2	≥ 100 kN/m (MARV)
Weight	AS3706.1	≥ 500 g/m2 (MARV)
CBR burst strength	AS3706.4	≥ 15 kN (MARV)

MATERIAL PROPERTIES FOR CUSHION GEOTEXTILE

Property	Test method	Value
Mass per unit area	AS 3706.1	≥ 1,900 g/m²
Wide Strip Tensile Strength (MD/CMD)	AS 3706.2 / ASTM D 4595	≥ 52 kN/m
Trapezoidal Tear	AS 3706.3	≥ 1,200 N
CBR Burst Strength	AS 3706.4	≥ 10,000 N
Grab Tensile Strength	AS 3706.2	≥ 4,000 N

MARV = Minimum Average Roll Value representing a confidence level of 97.5% of test results meeting the required value.

PHYSICAL PROPERTIES FOR SMOOTH LLDPE GEOMEMBRANE LINER

Physical property	**Test method**	**Criteria (minimum average roll value)**
		Smooth-textured
Thickness	ASTM D5994	1.5 mm
Lowest individual roll thickness (any of the 10 values)		1.35 mm
Lowest individual roll thickness (8 of the 10 values)		1.4 mm
Density (min)	ASTM D1505	0.92 g/cm3
Density (max)	ASTM D1505	0.939 g/cm3
2% modulus (max)	ASTM D5323	<840%
Axi-symmetric Break Resistance Strain	ASTM D5617	≥30%
Carbon Black Content (range)	ASTM D4218	2 – 3%
Carbon Black Dispersion (rating)	ASTM D5596	90 % Cat. 1 or 2 10% Cat 3
Tensile Properties (each direction): -Strength at Break -Break Elongation	ASTM D6693 Type IV	≥21 kN/m ≥250%
Tear Resistance	ASTM D1004	≥200 N
Puncture Resistance	ASTM D4833	≥400 N
Oxidative Induction Time (OIT): Standard OIT and High Pressure OIT	ASTM D8117 / ASTM D3895 ASTM D5885	≥100 min ≥400 min
Oven Aging at 85°C – High Pressure Oxidative Induction Time	ASTM D5721 ASTM D5885	60% retained after 90 days

Appendix 2: Construction Quality Assurance Testing Requirements

CONSTRUCTION QUALITY ASSURANCE TESTING REQUIREMENTS FOR GEOTEXTILES

Property	Standard	Frequency
Wide strip tensile strength	AS 3706.2 / ASTM D4595	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Grab tensile strength	AS 3706.2b	
CBR (California bearing ratio) burst strength	AS 3706.4	

CONSTRUCTION QUALITY CONTROL TESTING – SELECT FILL

Test	Test Method	Frequency	
		Delivered / in Stockpile	**During Construction**
Geometrics – horizontal and vertical position	-	Not applicable	Survey
Moisture content	AS1289.5.1.1 or AS1289.5.7.1	Not applicable	Greater of: 1 test per layer per material type per 2,500 m^2 OR 1 test per 500m^3
Dry density	AS1289.5.8.1 AS1289.5.1.1 or AS1289.5.7.1	Not applicable	

CONSTRUCTION QUALITY CONTROL TESTING – GEOMEMBRANE LINER

Physical Property	Test Method	Minimum Test Frequency	
		Source (Manufacturer)	**Delivered (CQA Conformance)**
Thickness	ASTM D5199 (smooth) ASTM D5994 (textured)	Per roll	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Lowest individual roll thickness	ASTM D5199 (smooth) ASTM D5994 (textured)	Per roll	N/A
Asperity height (Textured geomembrane only)	ASTM D7466	Second roll or each roll if not in production sequence	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Density	ASTM D1505 or D 792	Every 90,000kg	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Melt Flow Index	ASTM D1238	One test per resin type or manufacturing run or geomembrane type (whichever results in the greatest number of tests)	N/A

Physical Property	Test Method	Minimum Test Frequency	
		Source (Manufacturer)	**Delivered (CQA Conformance)**
• Tensile Properties • (each direction): • Strength at Yield • Strength at Break • Yield Elongation • Break Elongation	ASTM D6693 Type IV	Every 9,000kg of two tests	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum
Puncture Resistance	ASTM D4833	Every 20,000kg	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Tear Resistance	ASTM D1004	Every 20,000kg	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
2% modulus	ASTM D5323	One test per manufacturing run	2 tests per manufacturing run
Axi-symmetric break resistance	ASTM D5617		
Carbon Black Content (range)	ASTM D1603	Every 9,000kg	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests
Carbon Black Dispersion (rating)	ASTM D5596	Every 20,000kg	1 test per 5,000 m2, including the first and last rolls (based on production order): minimum of two tests.

Physical Property	Test Method	Minimum Test Frequency	
		Source (Manufacturer)	Delivered (CQA Conformance)
Oxidative Induction Time (OIT): Standard OIT and High Pressure OIT	ASTM D3895 ASTM D5885	One test per resin type or manufacturing run or geomembrane type (whichever results in the greatest number of tests)	1 test per 10,000 m2, or resin type or manufacturing run (whichever results in the greatest number of tests), including the first and last rolls (based on production order): minimum of two tests.
Oven Aging at 85°C - High Pressure Oxidative Induction Time	ASTM D5721 ASTM D5885		

CONSTRUCTION QUALITY CONTROL TESTING – GEOMEMBRANE LINER WELD TESTING SUMMARY

Item	Property	Standard	Frequency
Start-up test weld	Welding equipment	-	Checked daily at start of works, whenever the welding equipment is shut off for more than 1 hour, after significant changes in weather conditions, and once for every 4 hours of continuous seaming operations.
	Weld conditions	-	Test weld strips, minimum 1.5 m continuous seam, required whenever equipment or temperature fluctuations are experienced
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.
	Off-site; weld seam strength in peel and shear	ASTM D6392	Every 150 m if fusion weld, every 120 m if extrusion weld

Item	Property	Standard	Frequency
Non-destructive weld testing	-	Air pressure test, ASTM D5820 Vacuum box test, ASTM 5641	All seams over full length

PHYSICAL PROPERTIES FOR FIELD SEAMS IN GEOMEMBRANE

Property	Units	LLDPE	
		Fusion	Fusion
Shear Strength	N/25 mm	> 525	> 525
Shear Elongation	%	> 50	> 50
Peel Strength	N/25 mm	>398	>340

Note 1: Strength requirements are listed for a 25 mm wide specimen. The Superintendent shall check the die cutter to ensure the specimen width is 25 mm otherwise the strength requirements shall be adjusted to suit the actual die width.

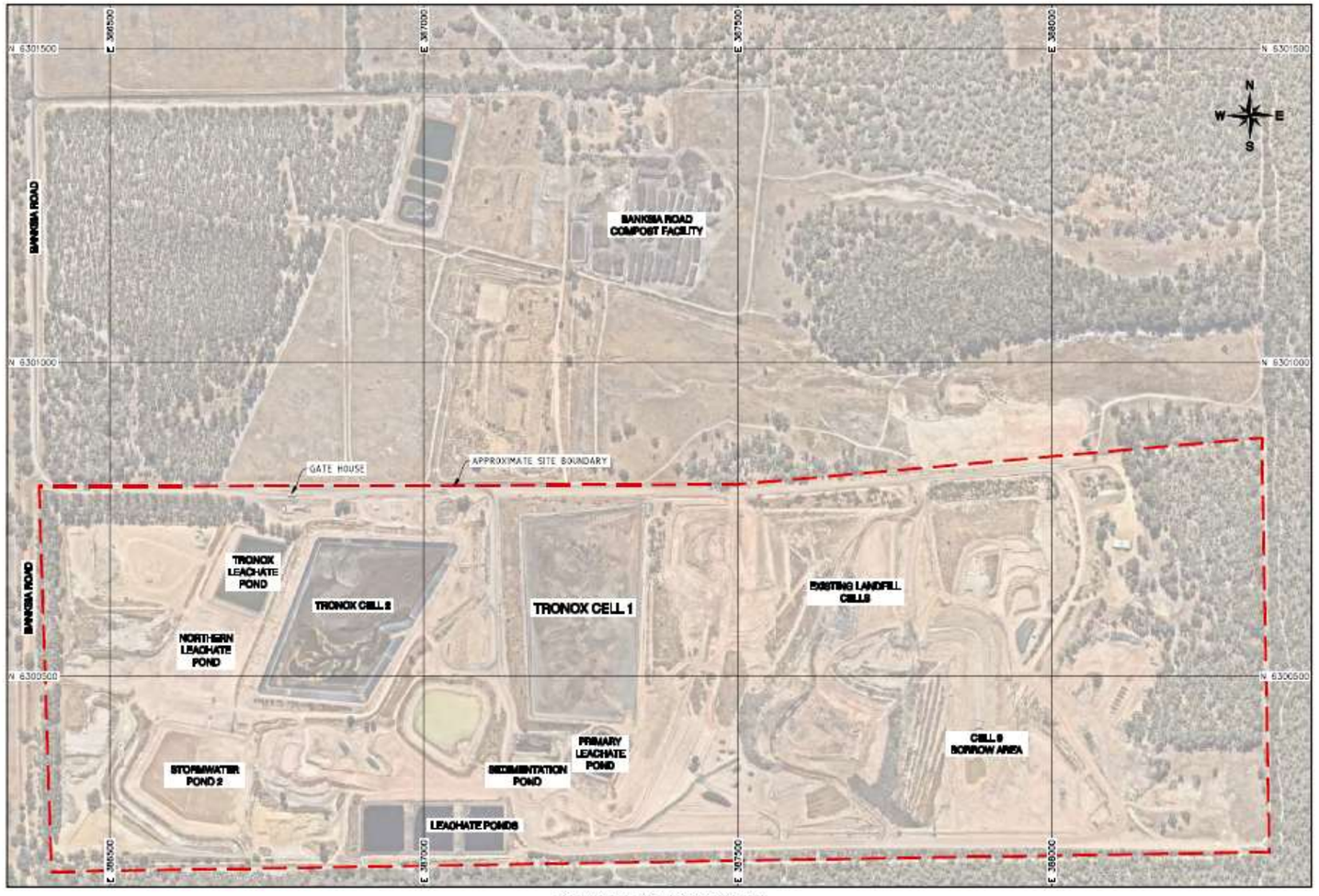
Note 2: The field tensiometer test speed should be set at 500mm/min for testing LLDPE.

Appendix 3: Capping plans

Drawing number	Title
123169.S01-000	Locality Plan and Drawing List
123169.S01-001	Site Overview
123169.S01-002	Existing Conditions and Stormwater Management
123169.S01-003	Site Preparation
123169.S01-004	Stage 1 Earthworks Contours
123169.S01-005	Stage 2 Geosynthetic Capping System Layout
123169.S01-006	Top of Cap (Stage 3) Plan
123169.S01-012	Stage 1 Earthworks Sections
123169.S01-013	Top of Cap Sections
123169.S01-014	Typical Details 1
123169.S01-015	Typical Details 2
123169.S01-016	Typical Details 3

CLEANAWAY SOLID WASTE PTY LTD

TRONOX CELL 1 DETAILED CAPPING DESIGN



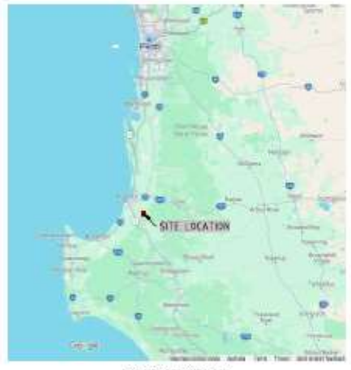
PLAN VIEW - PROJECT LOCATION

SCALE: 1:7,000

DRAWING LIST	
DRAWING NO.	DESCRIPTION
123169-S01-000	LOCALITY PLAN AND DRAWING LIST
123169-S01-001	SITE OVERVIEW
123169-S01-002	EXISTING CONDITIONS AND STORMWATER MANAGEMENT
123169-S01-003	SITE PREPARATION
123169-S01-004	STAGE 1 EARTHWORKS CONTOURS
123169-S01-005	STAGE 2 GEOSYNTHETIC CAPPING SYSTEM LAYOUT
123169-S01-006	TOP OF CAP PLAN
123169-S01-007	DRAINAGE LAYOUT PLAN
123169-S01-008	-
123169-S01-009	-
123169-S01-010	-
123169-S01-011	-
123169-S01-012	STAGE 1 EARTHWORKS SECTIONS
123169-S01-013	TOP OF CAP SECTIONS
123169-S01-014	TYPICAL DETAILS 1
123169-S01-015	TYPICAL DETAILS 2
123169-S01-016	TYPICAL DETAILS 3

SURVEY NOTES:

1.- GRID COORDINATE SYSTEM IN USE MGA 94 Z56.
HEIGHT DATUM AHD
2.- IMAGE SUPPLIED FOR CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)



LOCALITY PLAN

SCALE: NTS

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No.	DESCRIPTION	DATE	DRAWN	CHECKED	APPRD
B	DRAWING LIST UPDATED	03.09.24	SP	LB	DD
A	ISSUED FOR INFORMATION	02.07.24	SP	LB	DD

SCALE: 1/F,000
JOB No.: 140169.01
DATE: 02.07.24
DESIGN: DD
DRAWN: SP
CHECKED: DD
APPROVED: DD

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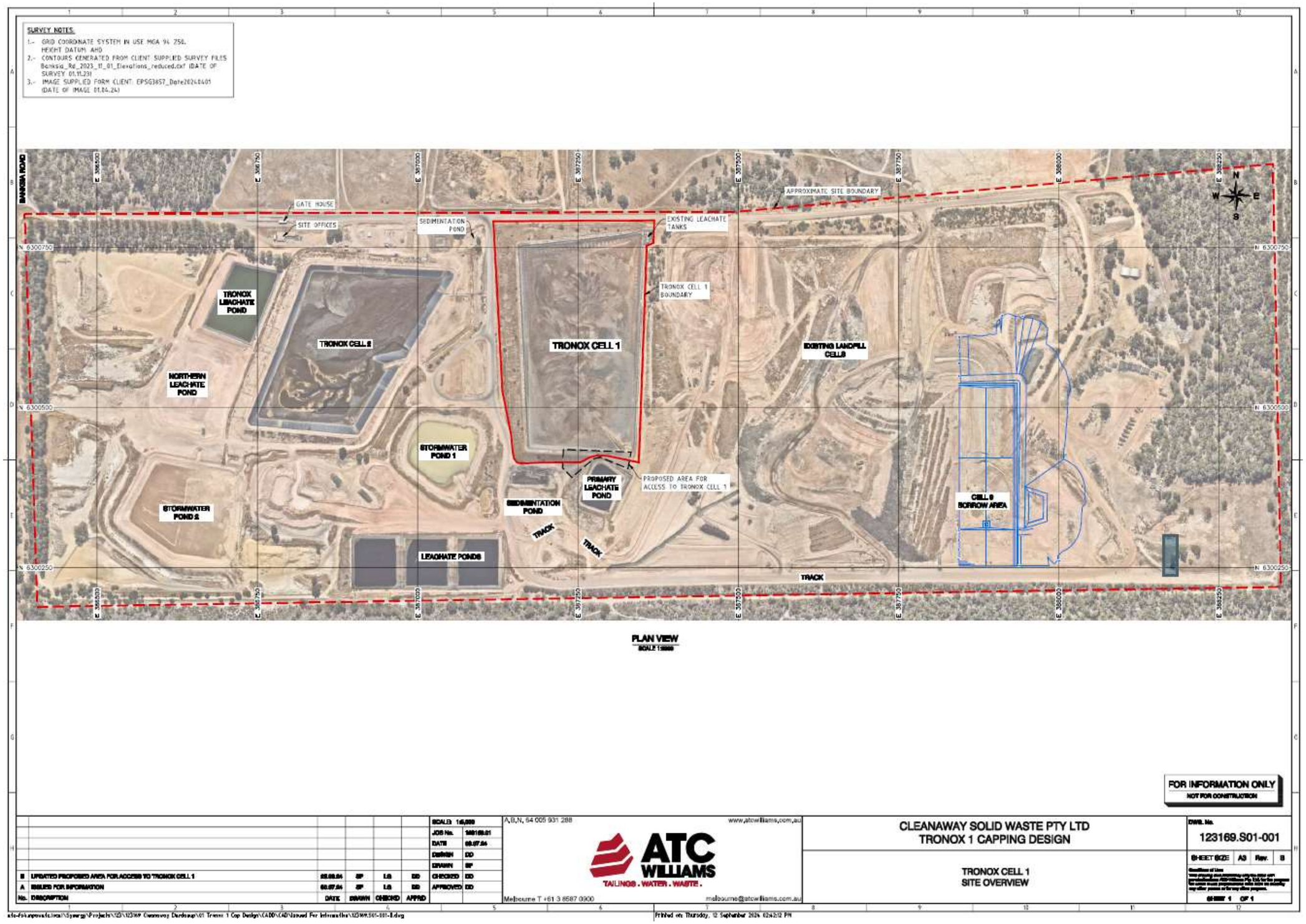
TRONOX 1 CAPPING DESIGN

TRONOX CELL 1
LOCALITY PLAN AND DRAWING LIST

DWG. No.: 123169.S01-000
SHEET SIZE: A3 Rev.: B
SHEET 1 OF 1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HEIGHT DATUM: AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES
Banksia_Rd_2023_11_01_Elevations_reduced.txt (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FORM CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
BANKSIA ROAD
GATE HOUSE
SITE OFFICES
SEDIMENTATION POND
EXISTING LEACHATE TANKS
APPROXIMATE SITE BOUNDARY
TRONOX LEACHATE POND
TRONOX CELL 2
TRONOX CELL 1
TRONOX CELL 1 BOUNDARY
EXISTING LANDFILL CELLS
NORTHERN LEACHATE POND
STORMWATER POND 1
PRIMARY LEACHATE POND
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
CELL 8 BORROW AREA
STORMWATER POND 2
SEDIMENTATION POND
LEACHATE PONDS
TRACK
TRACK
TRACK
N
S
E
W
PLAN VIEW
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
B UPDATED PROPOSED AREA FOR ACCESS TO TRONOX CELL 1 SF LS DD
A ISSUED FOR INFORMATION 08.07.24 SF LS DD
No. DESCRIPTION DATE DRAWN CHECKED APPRD
SCALE 1:6,000
JOB No. 123169.01
DATE 08.07.24
DRAWN DD
CHECKED SF
APPROVED DD
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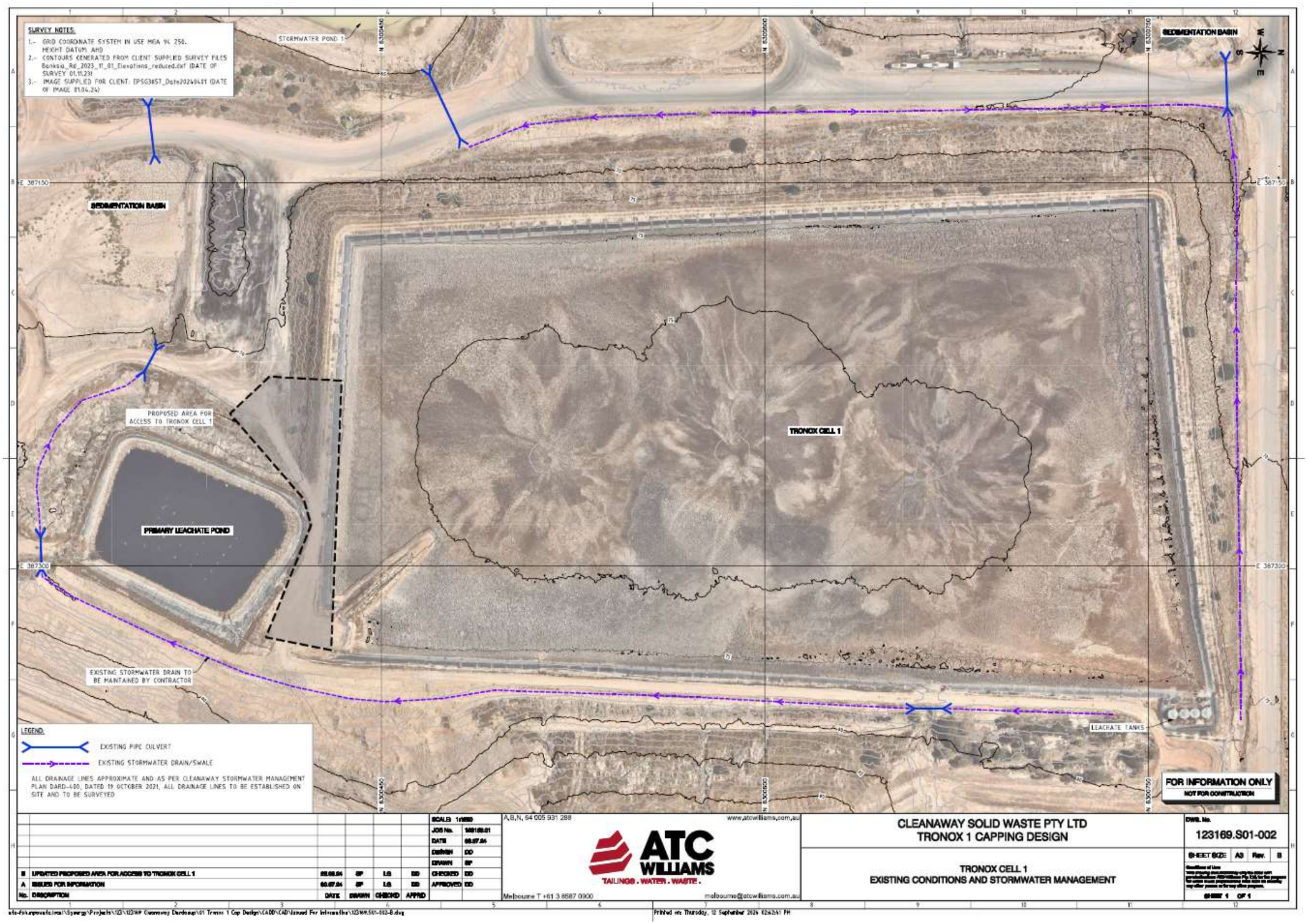
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
SITE OVERVIEW
DWG. No.
123169.S01-001
SHEET SIZE A3 Rev. B
SHEET 1 OF 1


SURVEY NOTES:
1.- GRID COORDINATE SYSTEM IN USE MGA 94 250.
HEIGHT DATUM AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES
Banksia_Rd_2023_11_01_Elevations_reduced.txt (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FOR CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
STORMWATER POND 1
SEDIMENTATION BASIN
SEDIMENTATION BASIN
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
TRONOX CELL 1
PRIMARY LEACHATE POND
EXISTING STORMWATER DRAIN TO BE MAINTAINED BY CONTRACTOR
LEACHATE TANKS
LEGEND
EXISTING PIPE CULVERT
EXISTING STORMWATER DRAIN/SWALE
ALL DRAINAGE LINES APPROXIMATE AND AS PER CLEANAWAY STORMWATER MANAGEMENT PLAN DARD-400, DATED 19 OCTOBER 2021. ALL DRAINAGE LINES TO BE ESTABLISHED ON SITE AND TO BE SURVEYED
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
B UPDATED PROPOSED AREA FOR ACCESS TO TRONOX CELL 1 SF LS DD
A ISSUED FOR INFORMATION SF LS DD
No. DESCRIPTION DATE DRAWN CHECKED APPRD
SCALE 1:1500
JOB No. 123169.01
DATE 09.07.24
DSIGN DD
DRAWN SF
CHECKED DD
APPROVED DD
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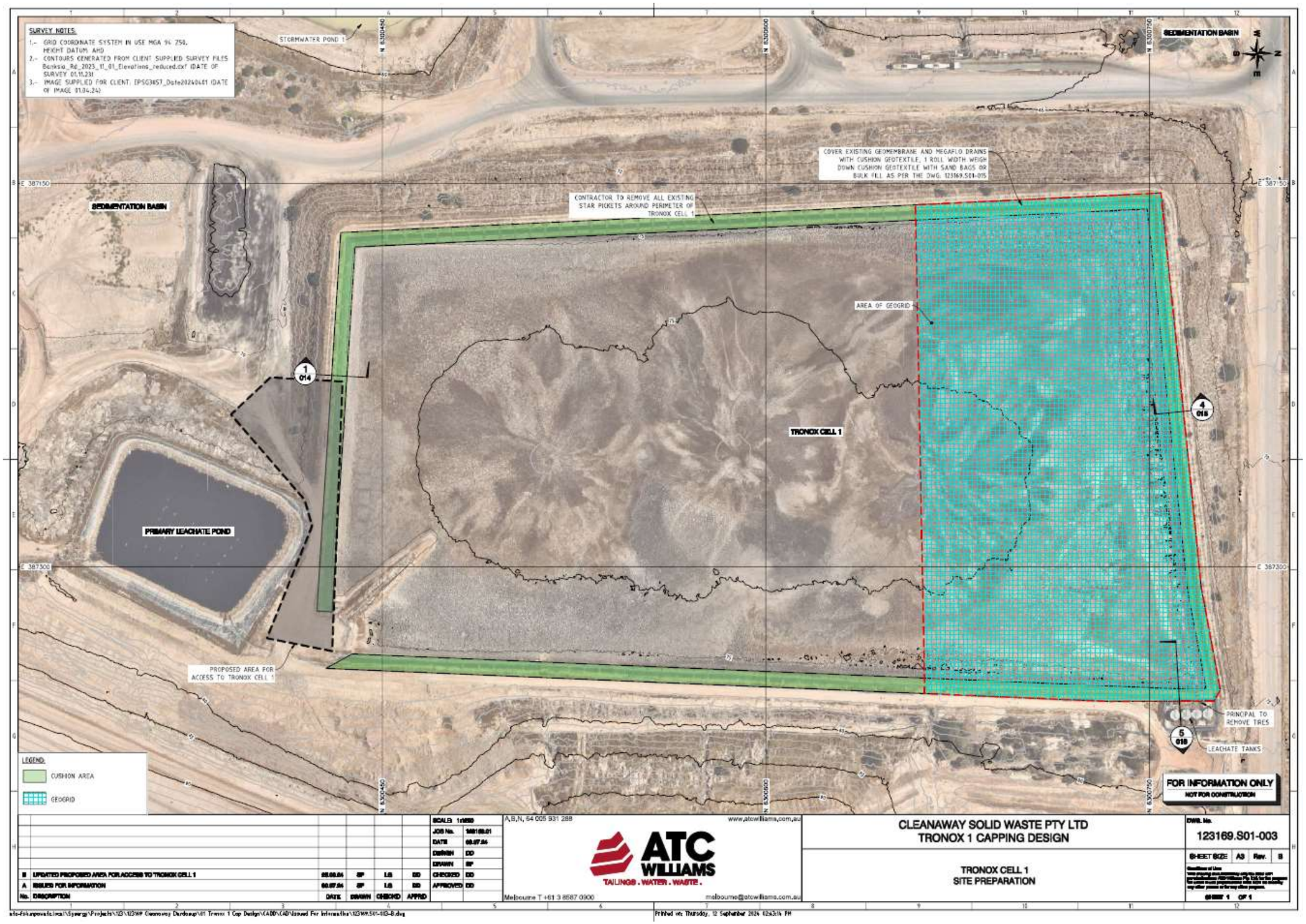
CLEANAWAY SOLID WASTE PTY LTD
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
EXISTING CONDITIONS AND STORMWATER MANAGEMENT
DWG. No. 123169.S01-002
SHEET SIZE A3 Rev. B
SHEET 1 OF 1


SURVEY NOTES:
1.- GRID COORDINATE SYSTEM IN USE MGA 94 Z50, HEIGHT DATUM AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES Banksia_Rd_2023_11_01_Elevations_reduced.dxf (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FOR CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
STORMWATER POND 1
SEDIMENTATION BASIN
SEDIMENTATION BASIN
COVER EXISTING GEOMEMBRANE AND MEGAFLO DRAINS WITH CUSHION GEOTEXTILE, 1 ROLL WIDTH WEIGH DOWN CUSHION GEOTEXTILE WITH SAND BAGS OR BULK FILL AS PER THE DWG. 123169.S01-015
CONTRACTOR TO REMOVE ALL EXISTING STAR PICKETS AROUND PERIMETER OF TRONOX CELL 1
AREA OF GEOGRID
TRONOX CELL 1
PRIMARY LEACHATE POND
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
PRINCIPAL TO REMOVE TYRES
LEACHATE TANKS
LEGEND
CUSHION AREA
GEOGRID
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
B UPDATED PROPOSED AREA FOR ACCESS TO TRONOX CELL 1 SP LS DD
A ISSUED FOR INFORMATION SP LS DD
SCALE: 1:1000
JOB No. 123169.01
DRAWN SP
CHECKED DD
APPROVED DD
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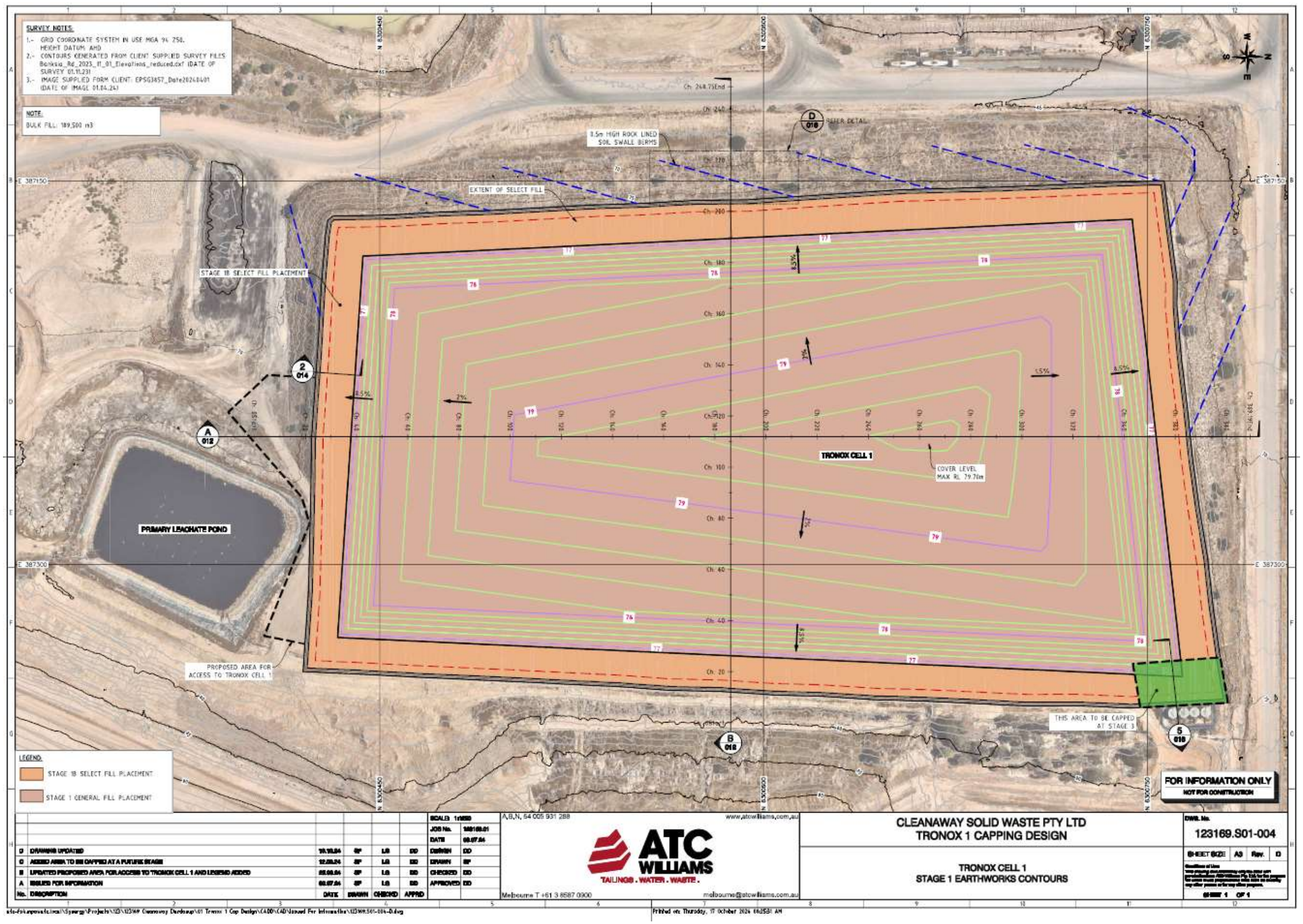
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
SITE PREPARATION
DWG. No. 123169.S01-003
SHEET SIZE A3 Rev. B
SHEET 1 OF 1


SURVEY NOTES:
1.- GRID COORDINATE SYSTEM IN USE MGA 94 Z50.
HEIGHT DATUM AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES
Banksia_Rd_2023_11_01_Elevations_reduced.dxf (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FORM CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
NOTE:
BULK FILL: 189,500 m3
3.5m HIGH ROCK LINED SOIL SWALE BERMS
EXTENT OF SELECT FILL
STAGE 1B SELECT FILL PLACEMENT
TRONOX CELL 1
COVER LEVEL MAX RL 79.70m
PRIMARY LEACHATE POND
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
THIS AREA TO BE CAPPED AT STAGE 3
LEGEND
STAGE 1B SELECT FILL PLACEMENT
STAGE 1 GENERAL FILL PLACEMENT
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NOT FOR CONSTRUCTION
CLEANAWAY SOLID WASTE PTY LTD
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
STAGE 1 EARTHWORKS CONTOURS
123169.S01-004
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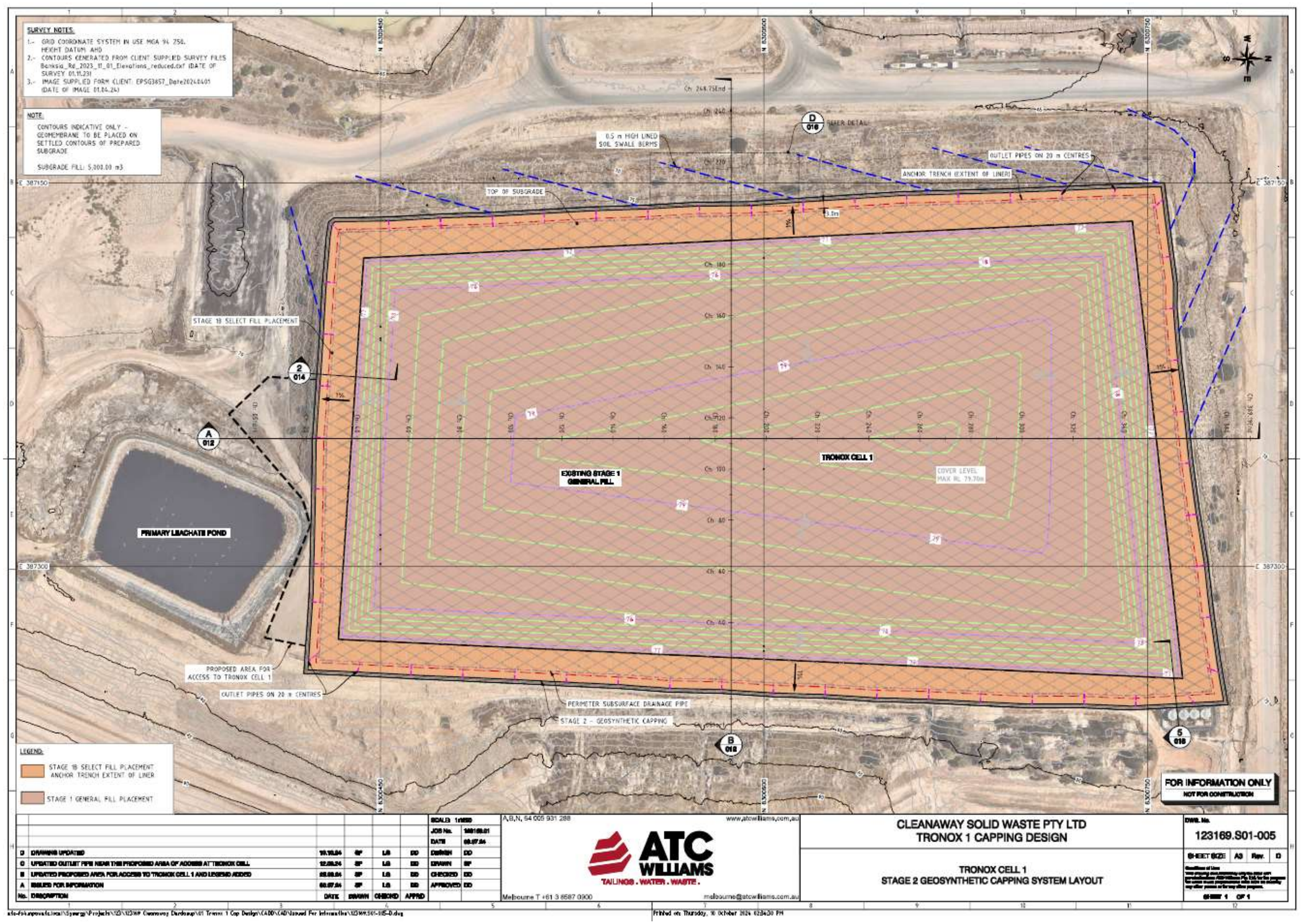
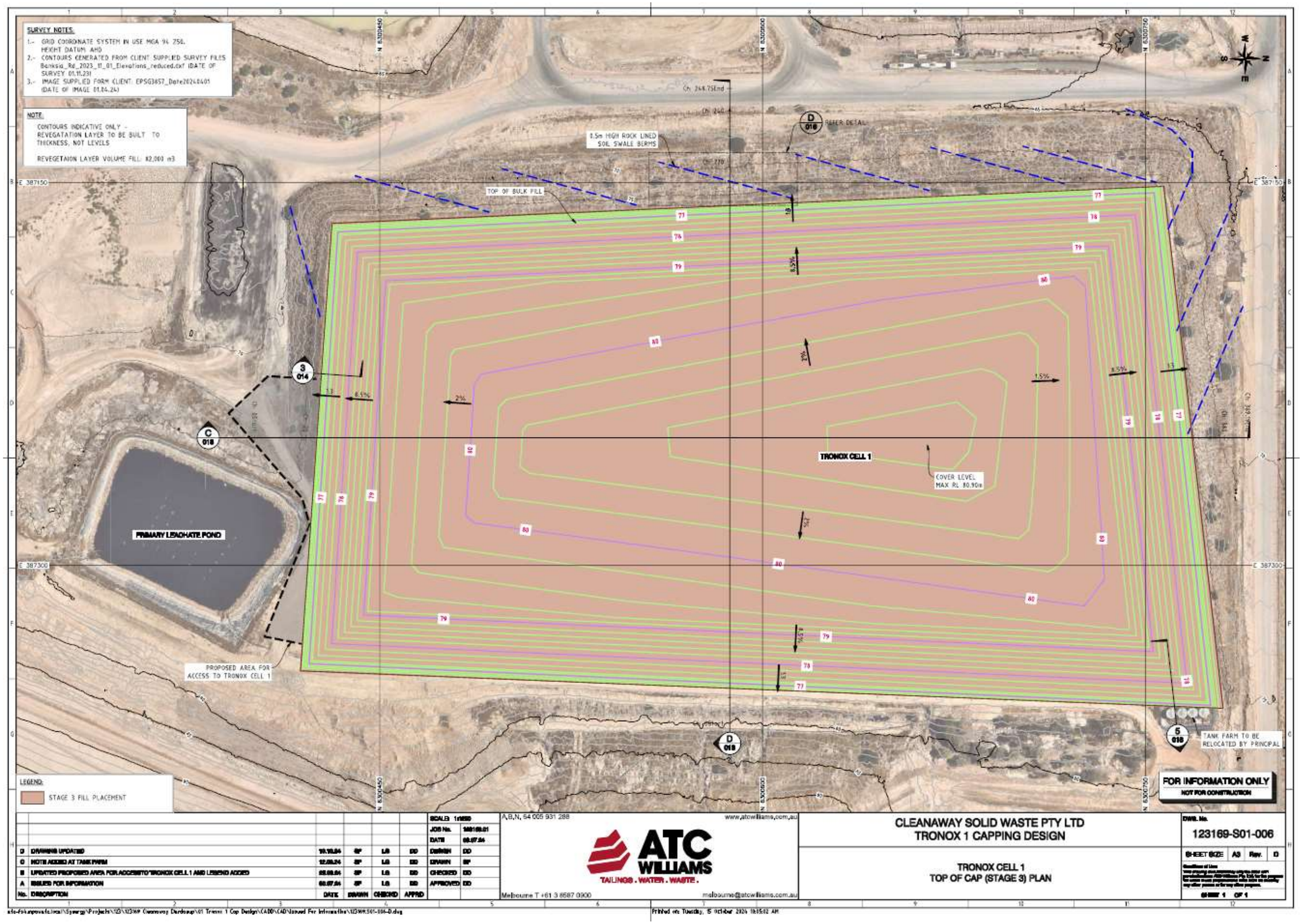

SURVEY NOTES:
1.- GRID COORDINATE SYSTEM IN USE MGA 94 750.
HEIGHT DATUM: AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES
Banksia_Rd_2023_11_01_Elevations_reduced.txt (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FORM CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
NOTE:
CONTOURS INDICATIVE ONLY - GEOMEMBRANE TO BE PLACED ON SETTLED CONTOURS OF PREPARED SUBGRADE
SUBGRADE FILL: 5,303.00 m3
0.5 m HIGH LINED SOIL SWALE BERMS
TOP OF SUBGRADE
ANCHOR TRENCH (EXTENT OF LINER)
OUTLET PIPES ON 20 m CENTRES
STAGE 1B SELECT FILL PLACEMENT
TRONOX CELL 1
EXISTING STAGE 1 GENERAL FILL
COVER LEVEL MAX RL 79.70m
PRIMARY LEACHATE POND
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
OUTLET PIPES ON 20 m CENTRES
PERIMETER SUBSURFACE DRAINAGE PIPE
STAGE 2 - GEOSYNTHETIC CAPPING
LEGEND:
STAGE 1B SELECT FILL PLACEMENT ANCHOR TRENCH EXTENT OF LINER
STAGE 1 GENERAL FILL PLACEMENT
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
CLEANAWAY SOLID WASTE PTY LTD
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
STAGE 2 GEOSYNTHETIC CAPPING SYSTEM LAYOUT
123169.S01-005
ATC WILLIAMS
TAILINGS . WATER . WASTE .


SURVEY NOTES:
1.- GRID COORDINATE SYSTEM IN USE MGA 94 750.
HEIGHT DATUM: AHD
2.- CONTOURS GENERATED FROM CLIENT SUPPLIED SURVEY FILES
Banksia_Rd_2023_11_01_Elevations_reduced.txt (DATE OF SURVEY 01.11.23)
3.- IMAGE SUPPLIED FORM CLIENT: EPSG3857_Date20240401 (DATE OF IMAGE 01.04.24)
NOTE:
CONTOURS INDICATIVE ONLY - REVEGATATION LAYER TO BE BUILT TO THICKNESS, NOT LEVELS
REVEGETAION LAYER VOLUME FILL: 82,000 m3
8.5m HIGH ROCK LINED SOIL SWALE BERMS
REFER DETAIL
TOP OF BULK FILL
TRONOX CELL 1
COVER LEVEL MAX RL 80.90m
PRIMARY LEACHATE POND
PROPOSED AREA FOR ACCESS TO TRONOX CELL 1
TANK FARM TO BE RELOCATED BY PRINCIPAL
LEGEND:
STAGE 3 FILL PLACEMENT
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
D DRAWING UPDATED
C NOTE ADDED AT TANK FARM
B UPDATED PROPOSED AREA FOR ACCESS TO TRONOX CELL 1 AND LEGEND ADDED
A ISSUED FOR INFORMATION
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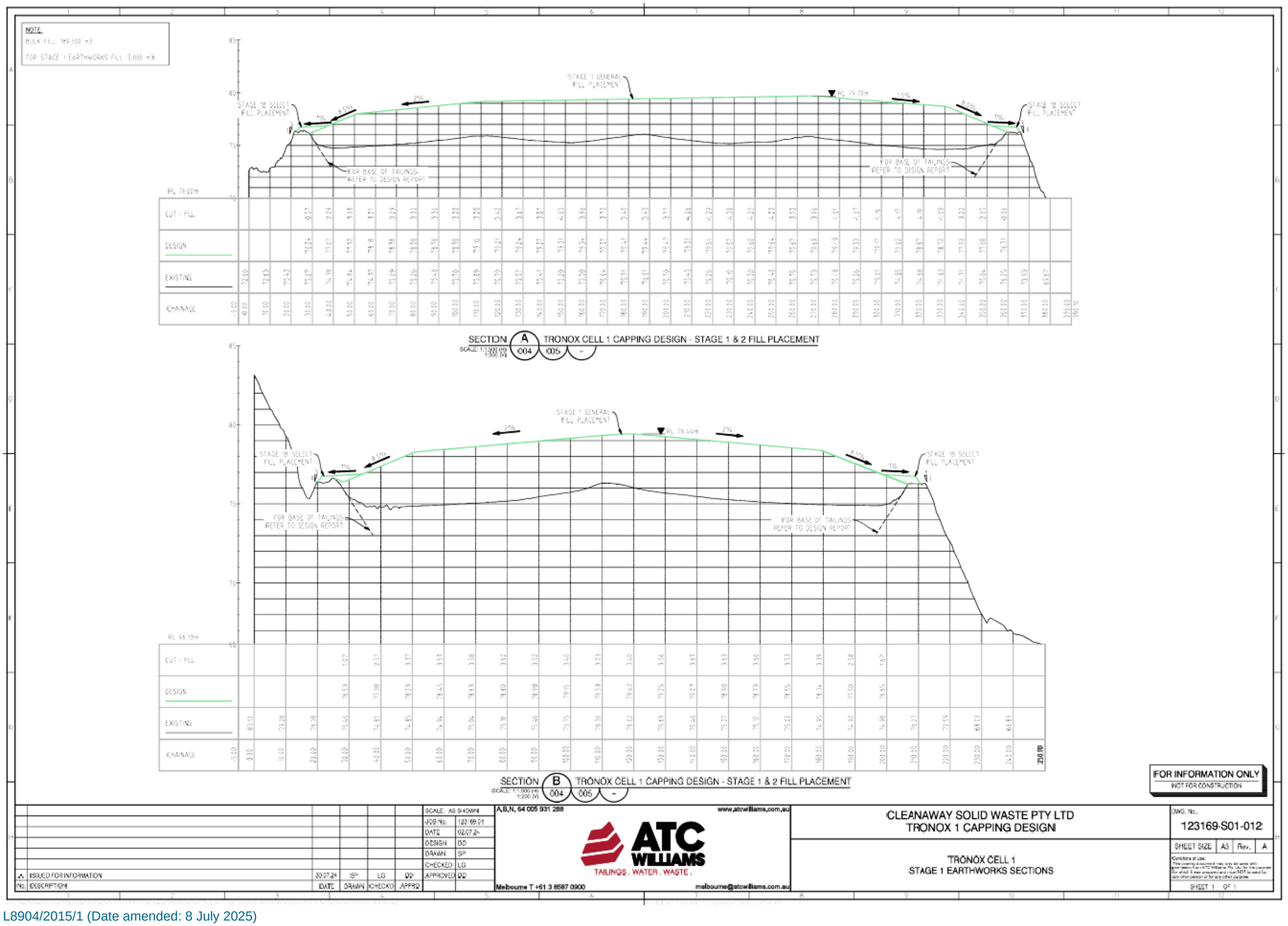
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
TOP OF CAP (STAGE 3) PLAN
123169-S01-006


NOTE:
BULK FILL: 189,500 m3
TOP STAGE 1 EARTHWORKS FILL: 5,000 m3
STAGE 1 GENERAL FILL PLACEMENT
STAGE 1B SELECT FILL PLACEMENT
FOR BASE OF TAILINGS REFER TO DESIGN REPORT
RL 79.70m
RL 79.03m
CUT - FILL
DESIGN
EXISTING
CHAINAGE
SECTION A TRONOX CELL 1 CAPPING DESIGN - STAGE 1 & 2 FILL PLACEMENT
SCALE: 1:1,000 (H) 1:200 (V)
004
005
STAGE 1 GENERAL FILL PLACEMENT
RL 79.44m
STAGE 1B SELECT FILL PLACEMENT
FOR BASE OF TAILINGS REFER TO DESIGN REPORT
RL 66.13m
CUT - FILL
DESIGN
EXISTING
CHAINAGE
SECTION B TRONOX CELL 1 CAPPING DESIGN - STAGE 1 & 2 FILL PLACEMENT
SCALE: 1:1,000 (H) 1:200 (V)
004
005
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ISSUED FOR INFORMATION
30.07.24
SP
LG
DD
SCALE: AS SHOWN
JOB No. 123169.01
DATE 02.07.24
DESIGN DD
DRAWN SP
CHECKED LG
APPROVED DD
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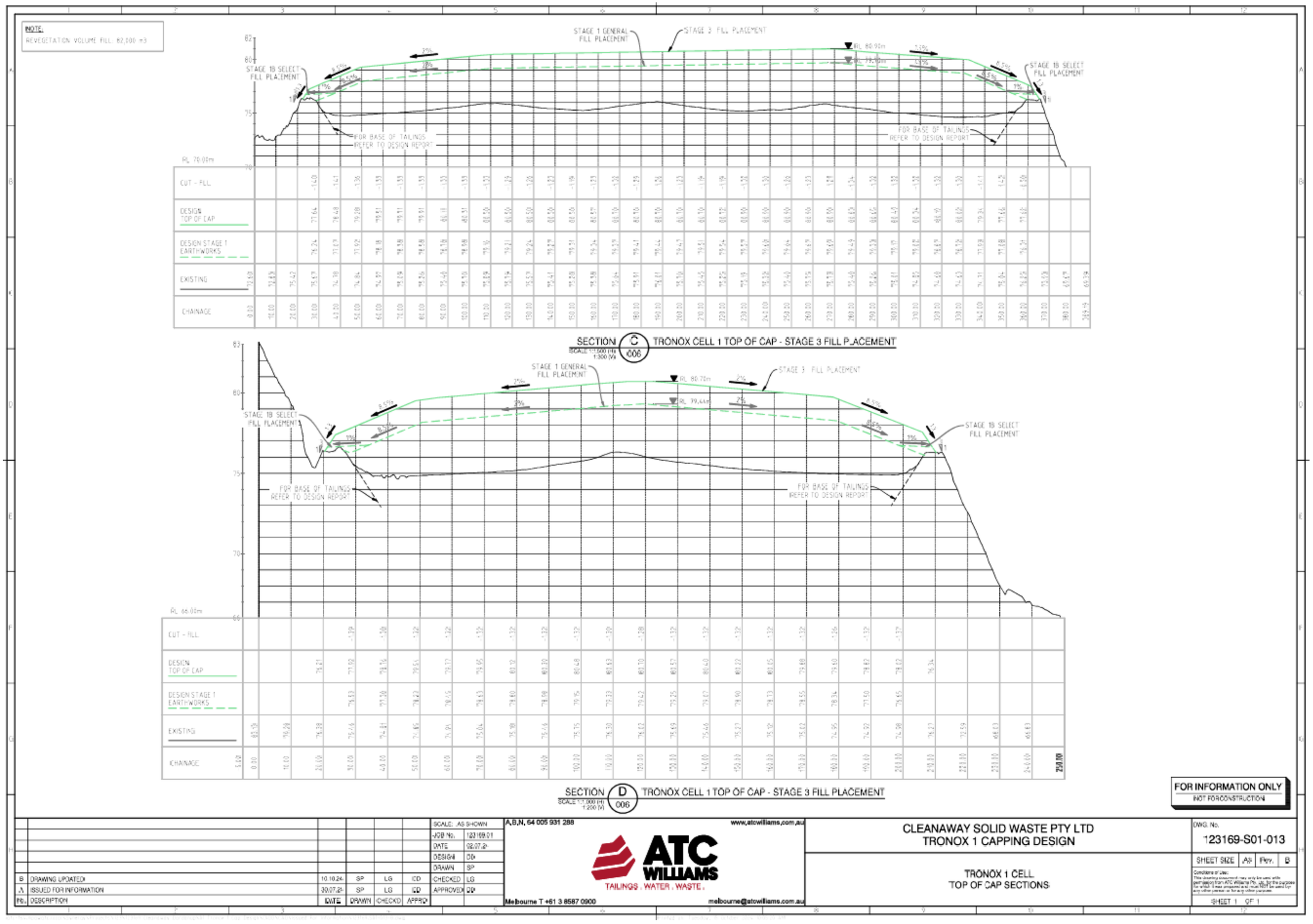
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
STAGE 1 EARTHWORKS SECTIONS
DWG. No. 123169-S01-012
SHEET SIZE A3
Rev. A
SHEET 1 OF 1


NOTE:
REVEGETATION VOLUME FILL: 82,000 m3
STAGE 1 GENERAL FILL PLACEMENT
STAGE 3 FILL PLACEMENT
STAGE 1B SELECT FILL PLACEMENT
FOR BASE OF TAILINGS REFER TO DESIGN REPORT
RL 80.70m
RL 79.44m
CUT - FILL
DESIGN TOP OF CAP
DESIGN STAGE 1 EARTHWORKS
EXISTING
CHAINAGE
SECTION C 006
TRONOX CELL 1 TOP OF CAP - STAGE 3 FILL PLACEMENT
RL 66.08m
SECTION D 006
TRONOX CELL 1 TOP OF CAP - STAGE 3 FILL PLACEMENT
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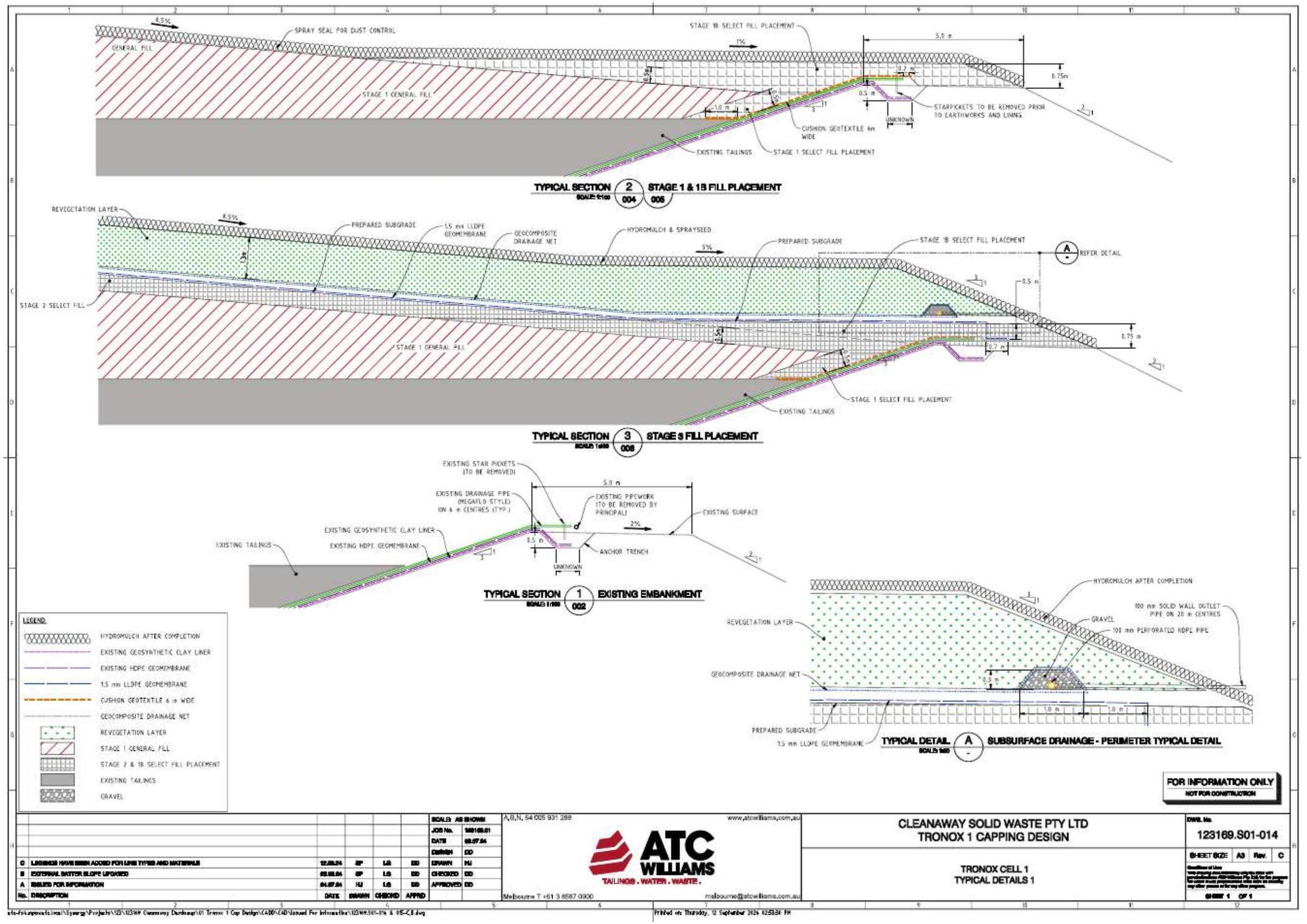
TRONOX 1 CAPPING DESIGN
TRONOX 1 CELL
TOP OF CAP SECTIONS
DWG. No.
123169-S01-013
SHEET SIZE A3
Rev. B
SHEET 1 OF 1
B DRAWING UPDATED 10.10.24 SP LG ICD
A ISSUED FOR INFORMATION 30.07.24 SP LG ICD


SPRAY SEAL FOR DUST CONTROL
GENERAL FILL
STAGE 1 GENERAL FILL
STAGE 1B SELECT FILL PLACEMENT
CUSHION GEOTEXTILE 4m WIDE
EXISTING TAILINGS
STAGE 1 SELECT FILL PLACEMENT
STARPICKETS TO BE REMOVED PRIOR TO EARTHWORKS AND LINING
UNKNOWN
TYPICAL SECTION 2 STAGE 1 & 1B FILL PLACEMENT
REVEGETATION LAYER
PREPARED SUBGRADE
1.5 mm LLDPE GEOMEMBRANE
GEOCOMPOSITE DRAINAGE NET
HYDROMULCH & SPRAYSEED
STAGE 2 SELECT FILL
REFER DETAIL
TYPICAL SECTION 3 STAGE 2 FILL PLACEMENT
EXISTING STAR PICKETS (TO BE REMOVED)
EXISTING DRAINAGE PIPE (MEGAFLO STYLE) ON 6 m CENTRES (TYP.)
EXISTING PIPEWORK (TO BE REMOVED BY PRINCIPAL)
EXISTING SURFACE
EXISTING GEOSYNTHETIC CLAY LINER
EXISTING HDPE GEOMEMBRANE
ANCHOR TRENCH
TYPICAL SECTION 1 EXISTING EMBANKMENT
LEGEND
HYDROMULCH AFTER COMPLETION
EXISTING GEOSYNTHETIC CLAY LINER
EXISTING HDPE GEOMEMBRANE
1.5 mm LLDPE GEOMEMBRANE
CUSHION GEOTEXTILE 4 m WIDE
GEOCOMPOSITE DRAINAGE NET
REVEGETATION LAYER
STAGE 1 GENERAL FILL
STAGE 2 & 1B SELECT FILL PLACEMENT
EXISTING TAILINGS
GRAVEL
HYDROMULCH AFTER COMPLETION
100 mm SOLID WALL OUTLET PIPE ON 20 m CENTRES
100 mm PERFORATED HDPE PIPE
TYPICAL DETAIL A SUBSURFACE DRAINAGE - PERIMETER TYPICAL DETAIL
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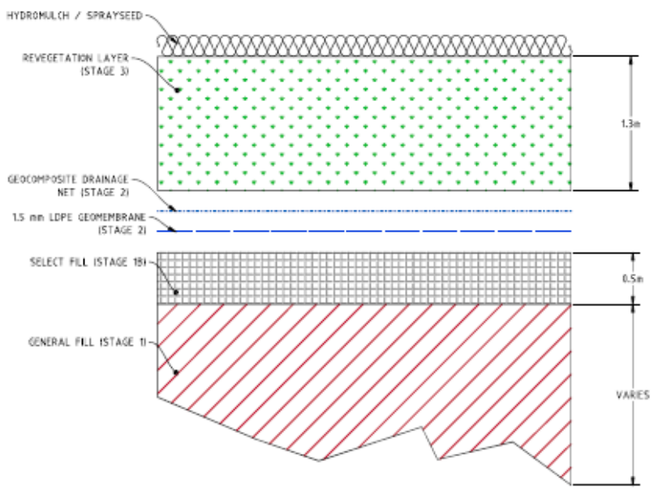
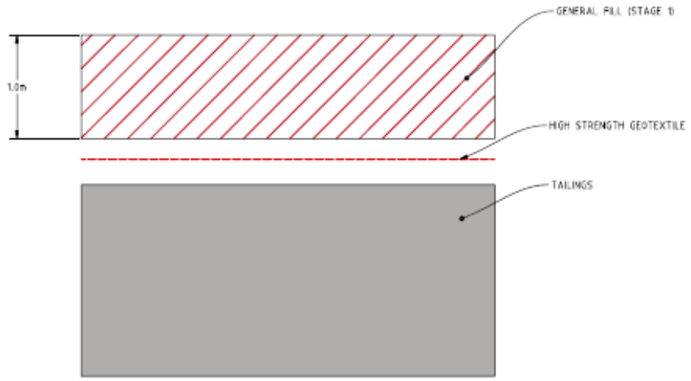
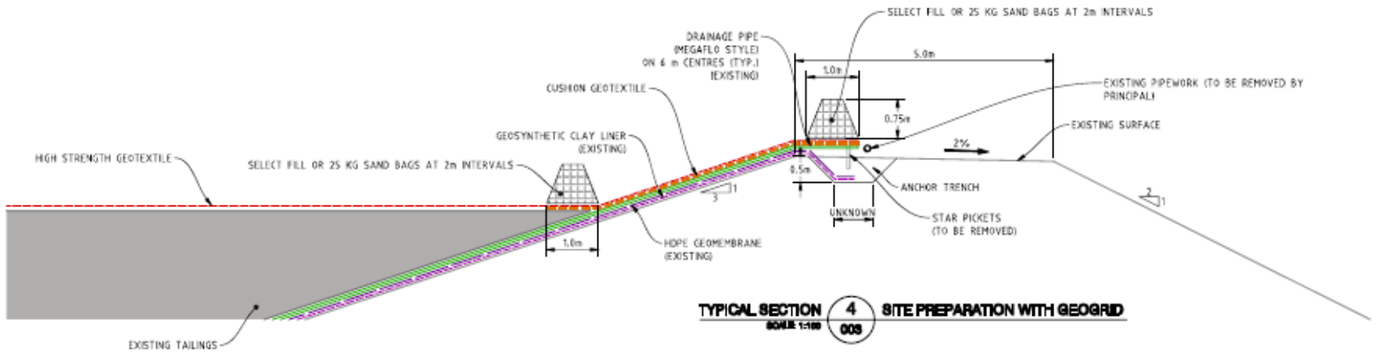
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
TYPICAL DETAILS 1
DWG. No. 123169.S01-014
SHEET SIZE A3 Rev. C



TYPICAL COVER DETAILS



TYPICAL GEOGRID DETAILS



TYPICAL SECTION 4 SITE PREPARATION WITH GEOGRID

LEGEND:

- HYDROMULCH AFTER COMPLETION
- EXISTING GEOSYNTHETIC CLAY LINER
- EXISTING HDPE GEOMEMBRANE
- 1.5 mm LLDPE GEOMEMBRANE
- CUSHION GEOTEXTILE 6 m WIDE
- GEOCOMPOSITE DRAINAGE NET
- HIGH STRENGTH GEOTEXTILE
- REVEGETATION LAYER
- STAGE 1 GENERAL FILL
- STAGE 2 & 1B SELECT FILL PLACEMENT
- EXISTING TAILINGS
- GRAVEL

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No.	DESCRIPTION	DATE	DRAWN	CHECKED	APPRD
B	LEGENDS HAVE BEEN ADDED FOR LINE TYPES AND MATERIALS	12.09.24	SF	LG	DD
A	ISSUED FOR INFORMATION	04.07.24	HJ	LG	DD

SCALE: AS SHOWN
JOB No. 123169.01
DATE 09.07.24
DESIGN DD
DRAWN HJ
CHECKED DD
APPROVED DD

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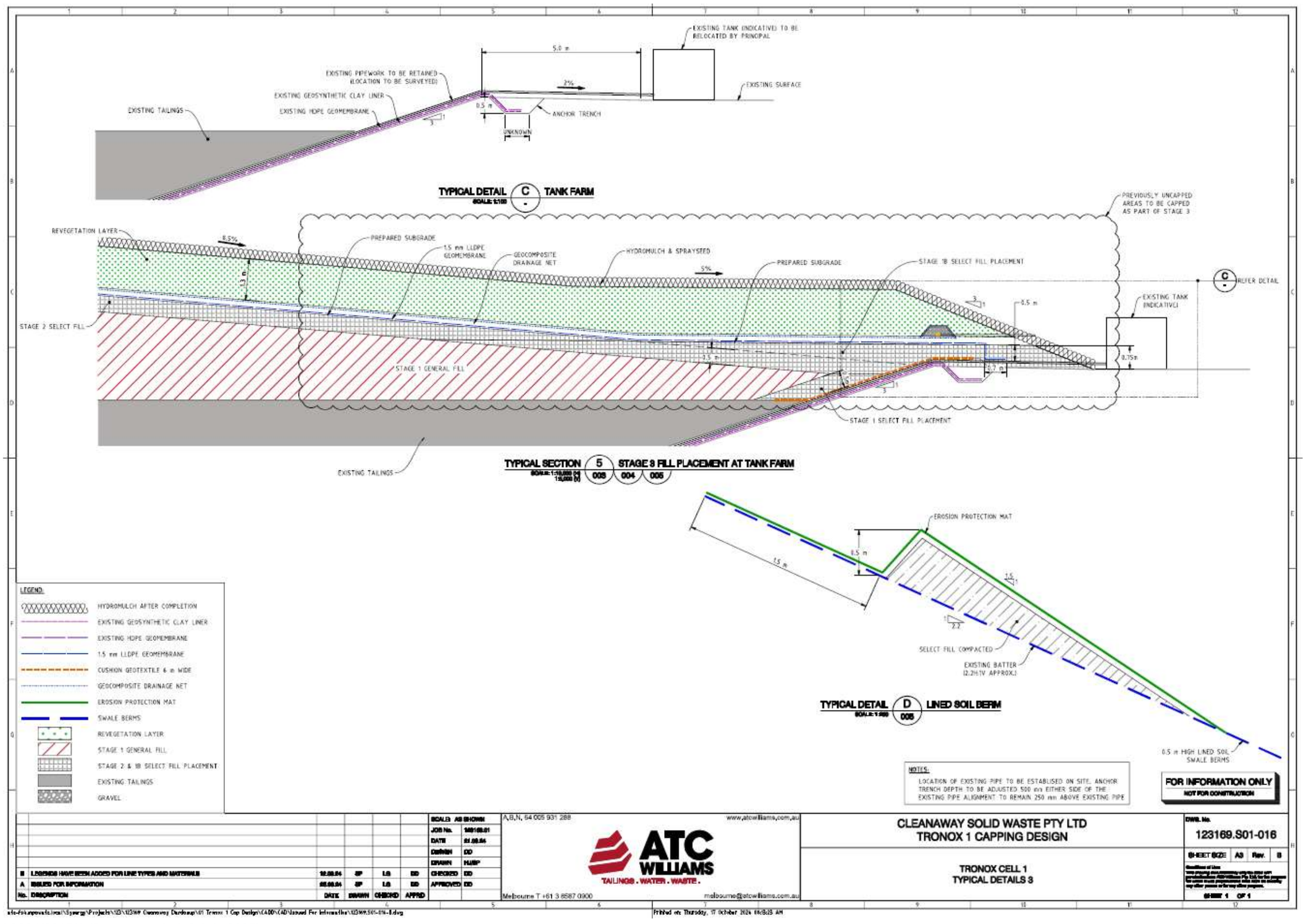
CLEANAWAY SOLID WASTE PTY LTD
TRONOX 1 CAPPING DESIGN

TRONOX CELL 1
TYPICAL DETAILS 2

DWG. No. 123169.S01-015
SHEET SIZE A3 Rev. B
SHEET 1 OF 1


EXISTING TANK INDICATIVE) TO BE RELOCATED BY PRINCIPAL
5.0 m
EXISTING PIPEWORK TO BE RETAINED (LOCATION TO BE SURVEYED)
EXISTING GEOSYNTHETIC CLAY LINER
EXISTING HDPE GEOMEMBRANE
EXISTING TAILINGS
2%
0.5 m
ANCHOR TRENCH
UNKNOWN
EXISTING SURFACE
TYPICAL DETAIL C TANK FARM
REVEGETATION LAYER
8.5%
PREPARED SUBGRADE
1.5 mm LLDPE GEOMEMBRANE
GEOCOMPOSITE DRAINAGE NET
HYDROMULCH & SPRAYSEED
5%
PREPARED SUBGRADE
STAGE 1B SELECT FILL PLACEMENT
PREVIOUSLY UNCAPPED AREAS TO BE CAPPED AS PART OF STAGE 3
REFER DETAIL
EXISTING TANK INDICATIVE)
0.5 m
0.75 m
0.7 m
STAGE 2 SELECT FILL
1.3 m
STAGE 1 GENERAL FILL
3.5 m
STAGE 1 SELECT FILL PLACEMENT
EXISTING TAILINGS
TYPICAL SECTION 5 STAGE 3 FILL PLACEMENT AT TANK FARM
EROSION PROTECTION MAT
0.5 m
1.5 m
SELECT FILL COMPACTED
EXISTING BATTER (2.2H:1V APPROX.)
TYPICAL DETAIL D LINED SOIL BERM
0.5 m HIGH LINED SOIL SWALE BERMS
LEGEND:
HYDROMULCH AFTER COMPLETION
EXISTING GEOSYNTHETIC CLAY LINER
EXISTING HDPE GEOMEMBRANE
1.5 mm LLDPE GEOMEMBRANE
CUSHION GEOTEXTILE 6 m WIDE
GEOCOMPOSITE DRAINAGE NET
EROSION PROTECTION MAT
SWALE BERMS
REVEGETATION LAYER
STAGE 1 GENERAL FILL
STAGE 2 & 1B SELECT FILL PLACEMENT
EXISTING TAILINGS
GRAVEL
NOTES:
LOCATION OF EXISTING PIPE TO BE ESTABLISED ON SITE. ANCHOR TRENCH DEPTH TO BE ADJUSTED 500 mm EITHER SIDE OF THE EXISTING PIPE ALIGNMENT TO REMAIN 250 mm ABOVE EXISTING PIPE
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
B LEGENDS HAVE BEEN ADDED FOR LINE TYPES AND MATERIALS 16.09.24 SP LG DD
A ISSUED FOR INFORMATION 05.09.24 SP LG DD
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SCALE AS SHOWN
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CHECKED DD
APPROVED DD
A,B,N, 54 005 931 288
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CLEANAWAY SOLID WASTE PTY LTD
TRONOX 1 CAPPING DESIGN
TRONOX CELL 1
TYPICAL DETAILS 3
DWG. No. 123169.S01-016
SHEET SIZE A3 Rev. B
SHEET 1 OF 1

Appendix 4: Landfill acceptance criteria for Special Waste Type 3

Landfill Class		Landfill Acceptance Criteria	
		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.