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	DER2015/001648-1
Duration	03/08/2015 to 02/08/2035
Date of amendment	17 December 2019
Premises details	Banksia Road Putrescible Landfill Banksia Road CROOKED BROOK WA 6236 Legal description - Lot 2 on Deposited Plan 65861

Prescribed premises category description (Schedule 1, *Environmental Protection Regulations 1987*)	**Assessed design capacity**
Category 61: Liquid waste facility - premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	353,000 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 17 December 2019, by:

Stephen Checker
Digitally signed by Stephen Checker
Date: 2019.12.17 13:42:40 +08'00'

Steve Checker
MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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Introduction

This Introduction is not part of the Licence conditions.

DWER's industry licensing role
The Department of Environment Regulation (DWER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DWER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DWER has responsibilities under Part V of the *Environmental Protection Act 1986* (EP Act) for the licensing of prescribed premises. Through this process DWER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DWER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the EP Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the EP Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link: http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the EP Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer provide a defence under section 74A of the EP Act in accordance with DWER's *Fact Sheet: Licenses Ceasing to have Effect due to Non-Payment of Fees* (available at https://www.der.wa.gov.au/our-work/licences-and-works-approvals/publications).

Ministerial conditions
If your Premises has been assessed under Part IV of the EP Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
Cleanaway Solid Waste Pty Ltd (Licence Holder) operates the existing Class III Banksia Road Putrescible Landfill Site located at Lot 2 on Plan 65861, Banksia Road, Crooked Brook in Western Australia (Premises) under approval of the Division 3, Part V of the *Environmental Protection Act 1986* (EP Act) Licence L8904/2015/1 (Licence).

The Licence Holder submitted a Licence amendment application (Application) under Division 3, Part V of the EP Act on 14 September 2016 for the construction of three new Class III landfill cells, the commencement of a phytocapping trial on the existing landfill cell 5 and associated landfill access road and stormwater control works.

The Decision Document presents an assessment of the Application and a review of the existing regulatory controls for the prescribed activities undertaken at the Premises. The assessment is undertaken with regards to the potential risks to the environment and public health from potential emissions, discharges and risk events that may result in environmental harm arising from the construction and operation of prescribed activities at the Premises.

The assessment of the potential risk events from the existing operations and those proposed in the Application at the Premises has been undertaken with due consideration of a number of factors that are set out in the Decision Document

Based on the assessment of existing operations at the Premises the Delegated Officer has determined to grant an amended Licence and approval to undertake the existing operations subject to the specified controls.

Based on the assessment of the Application for the Premises the Delegated Officer has determined to grant an amended Licence and approval to construct the new landfill cells 6, 7 and 8 subject to the specified controls. Subject to the Licence Holder demonstrating compliance with the specified regulatory controls the operations of the new landfill cells 6, 7 and 8 will be granted approval. Approval to operate will be granted subject to specified controls commensurate to the risk posed by potential risk events at the Premises.

The Delegated Officer has determined to grant an amended Licence and approval to undertake a phytocap trial on part of landfill cell 5 subject to the specified controls.

The licences and works approvals granted for the Premises since 13/11/1998 are:

Instrument log		
Instrument	**Granted**	**Description**
W2548/1998/1	13/11/1998	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.

W2895/1999/1	29/11/1999	Second works approval issued as the first approval expired prior to issue of development approval.
L7439/1998/1	14/06/2000	First licence issued to authorise landfilling operations as a Class II landfill.
L7439/1998/2	6/06/2001	Licence reissued.
L7439/1998/3	1/07/2002	Licence reissued.
L7439/1998/4	23/06/2003	Licence reissued.
L7439/1998/4	8/06/2004	Licence reissued.
L7439/1998/5	23/05/2005	Licence reissued, including upgrade of landfill classification to Class III. Decision was appealed and subsequently dismissed by the Minister for Environment. First non-annual licence (3 years).
L7439/1998/5	19/10/2006	Licence transferred to Transpacific Waste Management.
L7439/1998/6	5/06/2008	Licence reissued. Issued for 3 years.
L7439/1998/7	23/03/2009	Licence amendment regarding construction of cell 4 without a works approval. Licence version updated to reflect ILS.
L7439/1998/7	8/10/2010	Ministerial licence amendment regarding disposal of TWM septage sludge (Appeal 337 of 2009).
W4760/2010/1	9/12/2010	Works approval for construction of cell 5.
L7439/1998/8	3/06/2011	Licence reissued. Issued for 3 years.
W5096/2012/1	9/02/2012	Works approval for construction of MIC cell.
W5124/2012/1	1/03/2012	Works approval for construction of new leachate ponds.
L7439/1998/8	15/11/2012	Licence amendment regarding perimeter fencing requirements.
W5096/2012/1	15/11/2012	Works approval amendment to allow staged completion of MIC cell.
W5301/2012/1	1/02/2013	Installation of landfill gas collection and flare
L7439/1998/8	22/02/2013	Licence amendment to authorise use of MIC cell.
W5546/2013/1	23/01/2014	Works approval for construction of cell #4B.
L7439/1998/9	29/05/2014	Licence reissued. Converted to REFIRE format.
W5748/2014/1	29/01/2015	Works approval for construction of cell 12 and leachate evaporation pond 3
L8904/2015/1	3/08/2015	Licence issued due to L7439/1998/9 ceasing to have effect.
L8904/2015/1	22/10/2015	Licence amendment to authorise operation of leachate evaporation pond 3, constructed under W5748
L8904/2015/1	5/05/2016	Licence amendment to: • change company name; • authorise operation of cell 12 constructed under W5748; and • address stormwater upgrades
L8904/2015/1	21/07/2016	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 TWM Processed Septage to 3,000 tonnes per annual period.
L8904/2015/1	13/04/2017	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.
L8904/2015/1	2/02/2018	Amendment Notice 1 to reflect the completion of cell 6 construction and authorise its use.
L8904/2015/1	18/02/2019	Amendment Notice 2 for a new Cristal pigment waste cell and Cristal Pond under Category 61
L8904/2015/1	25/06/2019	Amendment Notice 3 to authorise the use of CC2 and Cristal pond constructed under Amendment Notice 2.

L8904/2015/1	17/12/2019	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.

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'Acceptance Criteria' has the meaning defined in Landfill Definitions;

'ACM' means asbestos containing material and has the meaning defined in the Department of Heath 2009, *Guidelines for Assessment, Remediation and Management of Asbestos Contaminated Sites, Western Australia*;

'Active Landfill Area' means the area of the Premises granted approval for the burial of waste, as labelled 'Active Landfill Area' in Map 1 in Schedule 1 of the Licence;

'AHD' means the Australian height datum;

'Anniversary date' means 31 December of each year;

'Annual Audit Compliance Report' means a report in a format approved by the CEO as presented by the Licence Holder or as specified by the CEO from time to time and published on the Department's website;

'Annual Period' means a 12 month period commencing from 1 January until 31 December in each year;

'ARI' means average recurrence interval;

'AS 1289.5.1.1' 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*.

'AS 3798' means the Australian Standard AS 3798-2007, *Guidelines on Earthworks for Commercial and Residential Development*;

'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/NZS 5667.1' 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/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'Averaging Period' means the time over which a limit is measured or a monitoring result is obtained;

'CC2' refers to the proposed Cristal pigment slurry disposal cell whose construction and resulting structure will be divided two stages, in the areas labelled 'Cristal Cell 2 stage 1' and 'Cristal Cell 2 stage 2' in Plans 13 and 14 in Schedule 2 of the Licence;

'Cell 6' means the cell marked as 'Cell 6' in Schedule 2 to the Licence;

'CEO' means Chief Executive Officer;

'CEO' for the purpose of correspondence means;
Director General
Department Administering the Environmental Protection Act 1986
Locked Bag 10
JOONDALUP DC WA 6919
Email: 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.

'Cristal Pigment Slurry' means the process residue from the Cristal Pigment Australia Ltd Kemerton Titanium Dioxide Processing Plant located at Lot 1 on Diagram 73196, Wellesley, Western Australia and Australind Finishing Plant located at part of Lot 350 on Plan 72934, Australind, Western Australia;

'**Cristal Pond'** refers to the proposed pond for the collection and storage of leachate (underdrainage and supernatant water) collected from the MIC Cell and CC2, labelled 'Cristal Pond' in Plans 13 and 14 in Schedule 2 of the Licence;

'**Cristal Pond and CC2 Works'** means the construction of the Cristal Pond and CC2 stage 1 and stage 2 as detailed in Condition 1.3.4, Table 1.3.3 and depicted in Plans 13 and 14 in Schedule 2 of the Licence.

'Condition' means a condition to which this Licence is subject under Section 62 of the EP Act, and as set out in this Licence;

'Contaminated Solid Waste' has the meaning defined in Landfill Definitions;

'Condition' means a condition to which this Licence is subject under section 62 of the EP Act;

'Department' means the department established under Section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Division 3 Part V of the EP Act.

'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;

'Environmental Acoustic Assessment' means *Environmental Acoustic Assessment' 24762-2-19122-02, Herring Storer Acoustics, September 2019*, as submitted to DWER on 20 September 2019.

'EP Act' means the *Environmental Protection Act 1986;*

'Hardstand' means a surface with a permeability of 10^{-9} metres/second or less;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'Landfill Cell Works' means the construction of landfill cells 6, 7 and 8 as detailed in Condition 1.3.1, Table 1.3.1 and depicted in the Plans 1 through 8 in Schedule 2 of the Licence.

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time.

'Licence' means this Licence numbered L8904/2015/1 and issued under the EP Act;

'Licence Holder' means the occupier of the Premises being the person or organisation to whom this Licence has been granted, as specified at the front of this Licence.

'**MIC Cell'** refers to the Cristal Pigment Slurry disposal cell and labelled MIC cell on the Premises Map in Schedule 1;

'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' means the Premises to which this Licence applies, as specified at the front of this Licence and as labelled 'Prescribed Premises boundary' in the Map in Schedule 1 of the Licence;

'Putrescible Waste' has the meaning defined in Landfill Definitions;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'Six Monthly' means the 2 inclusive periods from 1 April to 30 September and 1 October to 31 March in the following year;

'Spadeable' has the meaning defined in Landfill Definitions;

'Special Waste Type 1' has the meaning defined in Landfill Definitions;

'Special Waste Type 2' has the meaning defined in Landfill Definitions;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'TWM Processed Septage' means the semi-dry fibrous residue produced from dewatering septage waste at the Total Waste Management Pty Ltd premises located at Part of Lot 278 on Plan 3033123, Welshpool, Western Australia; and

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.2 Stormwater Conditions

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

(a) stormwater must not be directed into the Active Landfill Area, MIC Cell, CC2, Cristal Pond or any leachate containment infrastructure;

(b) 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;

(c) the infrastructure depicted in Plan 11 of Schedule 2 and specified in Column 1 of Table 1.2.1 must meet or exceed the specifications in Column 2 of Table 1.2.1 for the infrastructure in each row of Table 1.2.1; and

(d) any departure from the specifications in Table 1.2.1 and Plan 11 of Schedule 2 must not increase the risk to public health, public amenity or the environment.

Table 1.2.1: Stormwater management system specifications

Column 1 Infrastructure	Column 2 Specifications (design and construction)
Stormwater ponds and spillways	(a) Sized to accommodate a 1 in 100 year ARI rainfall event. (b) A freeboard of 0.5 m is maintained in the Secondary Stormwater Dam.
Eastern area stormwater diversion	(c) Sized to accommodate a 1 in 100 year ARI rainfall event. (d) Minimum 0.5m high bund with adjacent channel 1 m wide and 0.5 m deep.
Western stormwater bund	(e) Minimum height of 1 m.
Northern boundary drains	(f) None specified.
Southern boundary drains	(g) Sized to accommodate a 1 in 100 year ARI rainfall event.
Sediment traps, drains, bunds and culverts	(h) Sized to accommodate a 1 in 20 year ARI rainfall event.

1.2.2 The Licence Holder must submit a stormwater management system compliance document to the CEO by 1 May 2017, following the construction of the stormwater management system.

1.2.3 The stormwater management system compliance document required by Condition 1.2.2 must:

(a) describe the extent of the stormwater management system;

(b) certify that the stormwater management system was constructed in accordance with Condition 1.2.1;

(c) contain as constructed plans of the stormwater management system; 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.

1.3 Construction Conditions

1.3.1 The Licence Holder must undertake the Landfill Cell Works and ensure that the infrastructure specified in Column 1 of Table 1.3.1 meet or exceed the specifications in Column 2 of Table 1.3.1 for the infrastructure in each row of Table 1.3.1.

1.3.2 The Licence Holder must not depart from the specifications in Table 1.3.1 except:
(a) where such departure is minor in nature and does not materially change or affect the infrastructure; or
(b) where such departure does not increase risks to public health, public amenity or the environment;
and all other Conditions in this Licence are still satisfied.

Table 1.3.1: Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
1(A): Landfill cells 6, 7 and 8 footprint	Landfill cells 6, 7 and 8 must comprise of footprints and profiles in accordance with the following physical controls and limits: **(a)** Cell 6 must have a floor level, excluding the leachate sump, no lower than 81 mAHD as defined by the Plans 1 and 2 in Schedule 2 of the Licence. **(b)** Cell 7 must have a floor level, excluding the leachate sump, no lower than 82 mAHD as defined by the Plans 1 and 3 in Schedule 2 of the Licence. **(c)** Cell 8 must have a floor level, excluding the leachate sump, no lower than 82.5 mAHD as defined by the Plans 1 and 4 in Schedule 2 of the Licence. **(d)** the amalgamated landfill cells (6, 7, 8 and previously constructed landfill cells 1-5 and 12) must be constructed 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. **(e)** internal landfill cell wall batters must be no steeper that 1V:2.5H. **(f)** liners and anchor trenches for liners components must be as defined by the Plans 5 and 6 in Schedule 2 of the Licence. **(g)** perimeter stormwater bunds must be established around the entire landfill cells.
1(B): Landfill cells 6, 7 and 8 earthworks	Landfill cells 6, 7 and 8 must comprise of earthworks and sub-base preparation for landfill cells 6, 7 and 8, bunds and storm water ponds in accordance with the following physical controls and limits: **(a)** all areas of fill compacted to a minimum of 95% Standard Maximum Dry Density in accordance with AS 1289.5.1.1. **(b)** fill compacted in layers >100 mm and <300 mm. **(c)** finished levels of fill within ±25 mm of the design levels. **(d)** earthworks inspected, approved and reported on by a geotechnical engineer in accordance with AS 3798, including final construction quality assurance. **(e)** level 1 geotechnical testing, as per AS 3798, for all landfill cell floor and wall earth works.
1(C): Landfill cells 6, 7 and 8 floor and embankment treatment	Landfill cells 6, 7 and 8 must comprise of floor and embankment treatment in accordance with the following physical controls and limits: **(a)** a minimum 3% fall of the landfill cell floor towards the leachate collection sumps. **(b)** where fill is required, replacement fill must be placed, moisture conditioned, compacted, tested and inspected in accordance with Infrastructure item 1(B). **(c)** all surfaces must be steel drum rolled prior to installation of geosynthetic/ HDPE composite liner. **(d)** all surfaces must have no irregularities >40 mm deep over a 3 m section and no irregularities >10 mm deep over a 20 mm section.
1(D): Landfill cells 6, 7 and 8 liner tie-in	Landfill cells 6, 7 and 8 must comprise of a complete landfill liner tie-in by excavating to any adjoining landfill cell liners and tie-in of the cell liner must be undertaken as defined by Plan 6 in Schedule 2 of the Licence allowing no leachate to seep between the liners.
2(A): Landfill cells 6, 7 and 8 liner general	Landfill cells 6, 7 and 8 must comprise of an engineered geosynthetic/ HDPE composite liner with leachate collection system that incorporates an overall design: **(a)** to achieve a maximum seepage rate of 10 L/ hectare/ day. **(b)** to ensure a maximum leachate head of 300 mm on the landfill cell floor liner system, excluding the leachate collection sump. **(c)** consistent with Plans 5, 6, 7 and 8 in Schedule 2 of the Licence.

Table 1.3.1: Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
2(B): Landfill cells 6, 7 and 8 geosynthetic clay liner	**(a)** Landfill cells 6, 7 and 8 must comprise a geosynthetic clay liner (GCL) overlying the cell floor and embankment in accordance with the following physical controls and limits: **(i)** GCL must cover the entire cell floor and wall up to the perimeter bund anchor trench. **(ii)** GCL must comprise of a reinforced, dry bentonite encapsulated by two geotextile layers. **(iii)** no GCL must be placed during rainfall events, on wet subbase or left exposed overnight. **(iv)** GCL panels must be placed such that the overlapping of panels results in the down gradient panel sitting beneath the up gradient panel. **(v)** GCL panels must be placed with no damage. **(vi)** GCL panel overlaps must be a minimum of: • 300 mm for longitudinal overlap; • 500 mm for end of roll overlap; and • 1500 mm for cell wall overlap in conjunction with an anchor trench. **(vii)** GCL roll end joins on side slopes of landfill cells must be anchor trenched as depicted in Plan 5 and in Schedule 2 of the Licence. **(b)** GCL liners must meet the material specifications defined in Table 1 of Schedule 3 in the Licence and undergo the minimum material construction quality assurance testing defined in Table 2 of Schedule 3 in the Licence.
2(C): Landfill cells 6, 7 and 8 high density polyethylene liner	Landfill cells 6, 7 and 8 must comprise a high density polyethylene (HDPE) geomembrane overlying the GCL in accordance with the following physical controls and limits: **(a)** HDPE must cover the entire GCL layer. **(b)** HDPE must be placed with no damage. **(c)** HDPE must be 2 mm thick (subject to variations defined in Table 3 of Schedule 3 in the Licence). **(d)** HDPE panel overlaps must be a minimum of 75 mm. **(e)** Where anchor trenching is required, HDPE on the side slopes of landfill cells must be anchor trenched as depicted in Plans 5 and 6 in Schedule 2 of the Licence. **(f)** HDPE must meet the material specifications defined in Table 3 of Schedule 3 in the Licence and undergo the minimum material construction quality assurance defined in Table 5 of Schedule 3 in the Licence. **(g)** HDPE welds must meet the minimum average weld properties defined in Table 4 of Schedule 3 in the Licence.
2(D): Landfill cells 6, 7 and 8 cushion geotextile liner	Landfill cells 6, 7 and 8 must comprise a cushion geotextile overlying the HDPE in accordance with the following physical controls and limits: **(a)** geotextile must cover the entire HDPE layer. **(b)** geotextile must be 100% polyester or polypropylene (excluding UV resistant additives). **(c)** geotextile must be placed with no damage. **(d)** geotextile must meet the material specifications defined in Table 6 of Schedule 3 in the Licence and undergo the minimum material construction quality assurance defined in Table 7 of Schedule 3 in the Licence. **(e)** geotextile panel overlap must be a minimum of 150 mm. **(f)** geotextile on side slopes of landfill cells are to be anchor trenched as depicted in Plans 5 and 6 in Schedule 2 of the Licence. **(g)** geotextile must be exposed to ambient sunlight for a maximum of 4 years.

<table>
<tr><th colspan="2">Table 1.3.1: Works specifications</th></tr>
<tr><th>Column 1
Infrastructure</th><th>Column 2
Specifications (design and construction)</th></tr>
<tr><td>3(A): Landfill cells 6, 7 and 8 leachate collection system pipework</td><td>Landfill cells 6, 7 and 8 must comprise a leachate collection system that includes leachate collection pipework in accordance with following physical controls and limits:
(a) pipework must overly the geotextile covering the entire landfill cell floor.
(b) pipework must be installed a maximum of two weeks after the geotextile is placed.
(c) pipework must be installed as depicted in Plan 7 in Schedule 2 of the Licence.
(d) pipework must have a minimum 1% gradient fall towards the leachate collection sump.
(e) pipework must ensure drainage of leachate is adequate to achieve a maximum 300 mm leachate head above the landfill cell floor liner, excluding the leachate collection sump.
(f) pipework must include:
(i) a central leachate pipeline with a diameter of 250 mm.
(ii) a leachate extraction point that can facilitate camera and blockage clearing equipment.
(iii) leachate collection pipework spaced at a maximum distance at any point of 30 metres within the landfill cell floor.</td></tr>
<tr><td>3(B): Landfill cells 6, 7 and 8 leachate collection system drainage material</td><td>Landfill cells 6, 7 and 8 must comprise a leachate collection system that includes leachate drainage material (aggregate) in accordance with the following physical controls and limits:
(a) aggregate must overly all leachate collection pipework.
(b) aggregate must cover the entire landfill cell floor.
(c) aggregate must progressively cover the entire cushion geotextile layer along the cell walls in accordance with in infrastructure item 4 listed in Table 1.3.1 in the Licence.
(d) aggregate must be installed a maximum of two weeks after the cushion geotextile is installed.
(e) aggregate must be placed in 300 mm thick layers of ‘minus 37.5 mm bluemetal’ that conforms to within ± 5% of the following size grades:
<table><tr><th>Sieve size (mm)</th><th>Percentage (%) passing through</th></tr><tr><td>37.5</td><td>100</td></tr><tr><td>26.5</td><td>70-100</td></tr><tr><td>≤13.75</td><td>0-5</td></tr></table>(f) placement of aggregate must not result in damage to the integrity of the leachate collection pipework, cushion geotextile, HDPE geomembrane or geosynthetic clay liner.</td></tr>
<tr><td>3(C): Landfill cells 6, 7 and 8 leachate collection system separation geotextile</td><td>Landfill cells 6, 7 and 8 must comprise a leachate collection system that includes a separation geotextile in accordance with the following physical controls and limits:
(a) geotextile must overly and cover all leachate drainage material.
(b) geotextile must progressively cover the entire leachate drainage material along cell walls.
(c) must be a non-woven geotextile.</td></tr>
</table>

Table 1.3.1: Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
3(D): Landfill cells 6, 7 and 8 leachate collection system sump	Landfill cells 6, 7 and 8 must comprise a leachate collection system that includes a leachate collection sump in accordance with the following physical controls and limits: **(a)** all leachate arising within a landfill cell must be directed to the leachate collection sump. **(b)** the sump must be located at the lowest point at base of landfill cell. **(c)** the sump must be located as depicted in Plan 1, Plan 2, Plan 7 and Plan 8 in Schedule 2 of the Licence. **(d)** the sump must be designed to ensure a maximum leachate head of 300 mm is present on the landfill cell floor liner system. **(e)** the sump must have the engineered geosynthetic/ HDPE composite liner welded to the 'box shutter lid' as depicted in Plan 8 in Schedule 2 of the Licence. **(f)** the sump must have an access point and leachate extraction pump.
4: Landfill cells 6, 7 and 8 liner progressive installation of leachate collection system	Landfill cells 6, 7 and 8 must progressively construct a leachate collection system overlying the engineered geosynthetic/ HDPE composite liner that meets the following physical controls and limits for the landfill cell walls: **(a)** leachate drainage material and separation geotextile must be progressively installed in lifts not exceeding 4.5 m vertically. **(b)** liner joins and overlaps, with variations for slide slopes, must be installed as depicted in Plans 5 and 6 in Schedule 2 of the Licence. **(c)** no waste must be placed against the cell wall until construction has taken place in accordance with the infrastructure items 1(A), 1(B), 1(D), 2(A), 2(B), 2(C), 2(D), 3(B), 3(C) and 3(D) listed in Table 1.3.1 in the Licence.
5: Landfill cells 6, 7 and 8 construction quality assurance	Landfill cells 6, 7 and 8 must comprise a leachate collection system overlying the engineered geosynthetic/ HDPE composite liner in accordance with the following construction quality assurance practices throughout construction: **(a)** all damage to any liner materials must be fully repaired. **(b)** Level 1 inspection and testing as per AS 3798 for the following: **(i)** completion of removal of topsoil; **(ii)** placing of imported or cut material; **(iii)** compaction and adding/ removal of moisture; **(iv)** trenching and backfilling; **(v)** test rolling; and **(vi)** testing. **(c)** compaction testing as per AS 1289.5.1.1. **(d)** GCL, HDPE and geotextile liner component testing as referred to in Infrastructure items 2(B)(b), 2(C)(f) and 2(D)(d) of Table 1.3.1 in the Licence. **(e)** an independent third party must verify construction quality assurance of the GCL in Infrastructure item 2(B)(b) and HDPE in 2(C)(f) Infrastructure item of Table 1.3.1 in the Licence. **(f)** post liner construction leachate drainage layer leak detection testing. **(g)** all quality control testing, unless specified otherwise, shall be carried out by a laboratory holding current NATA accreditation for all test methods referred to or required.
6: Landfill cells 6, 7 and 8 stormwater management	The storm water management system for the construction and operation of landfill cells 6, 7 and 8 must: **(a)** be consistent with stormwater management required by Condition 1.2.1 of the Licence. **(b)** ensure all excavation and construction earthworks control stormwater using drains, bunds and the grading of surfaces. **(c)** ensure stormwater arising within the excavations for landfill cells 6, 7 and 8 is directed to temporary stormwater ponds, sized to accommodate a 1 in 100 year, 24-hour storm event (132 mm).

1.3.3 The Licence Holder must undertake the landfill cell 5 phytocap trial and ensure that the infrastructure specified in Column 1 of Table 1.3.2 meet or exceed the specifications in Column 2 of Table 1.3.2 for the infrastructure in each row of Table 1.3.2.

Table 1.3.2: Landfill cell 5 phytocap trial specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
Landfill cell 5 phytocap trial	The landfill liner phytocap trail must occur on the existing landfill cell 5 in accordance with the following physical controls and limits: **(a)** an overall design bound by the physical limitations defined within Plans 9 and 10 in Schedule 2 of the Licence. **(b)** a design that aims to achieve a maximum cap leakage rate of 7.5 L/ha/day. **(c)** a minimum cover of 300mm Clean Fill must be maintained over the previously landfilled waste below the phytocap trial plots. **(d)** the excavation of a 200 m^2 section of the temporary cap down to the waste surface for the phytocap trial must include: **(i)** the construction of a 2 m high HDPE lined lysimeter, forming a fully HDPE lined open top box free of imperfections and deformities; **(ii)** the void subsequently being filled with 2 m deep layer of Clean Fill and instrumentation to gather data on the hydraulic performance of the soil layer; **(iii)** moisture sensors placed at nominal depths below the surface of 0.2 m, 0.5 m, 0.9 m, 1.4 m and 1.9 m; and **(iv)** the phytocap layer being planted. **(e)** an adjacent non-lined (no lysimeter) 200 m^2 section of the existing temporary cap must be planted for comparison.

1.3.4 The Licence Holder must undertake the Cristal Pond and CC2 Works and ensure that the infrastructure specified in Column 1 of Table 1.3.3 meet or exceed the specifications in Column 2 of Table 1.3.3 for the infrastructure in each row of Table 1.3.3.

1.3.5 The Licence Holder must not depart from the specifications in Table 1.3.3 except:
(a) where such departure is minor in nature and does not materially change or affect the infrastructure; or
(b) where such departure does not increase risks to public health, public amenity or the environment;
and all other Conditions in this Licence are still satisfied.

Table 1.3.3: Cristal Pond and CC2 Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
1: Phased construction	Construction will be completed in three phases which will require separate commissioning as follows: (a) Phase 1: complete the Cristal pond (earthworks, liner and associated return water system); (b) Phase 2: bulk earthworks for CC2, and completion of CC2 stage 1 (including composite lining system, concrete works, decant infrastructure and slurry delivery pipelines); and (c) Phase 3: completion of CC2 stage 2 (including composite lining system and slurry delivery pipelines).
2: Overall arrangement Cristal Pond	The Cristal Pond must be constructed to meet the arrangement shown in Plan 14 of Schedule 2, and must: (a) Have holding capacity of at least 19,000m^3; (b) Be adequately sized to contain a 1 in 20 (5%) ARI rainfall event plus the

Table 1.3.3: Cristal Pond and CC2 Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
	90th percentile wet season while maintaining an additional 0.5m freeboard (total freeboard of at least 1.0m above the maximum operating level); (c) Be lined with HDPE / geosynthetic clay layer (GCL) composite liner consistent with infrastructure item 5; (d) Achieve a minimum separation distance of 2 metres from its lowest floor level to the highest seasonal groundwater table; (e) Have upstream and downstream batter face angles not steeper than 1V:3H (18°); (f) Include a return water system which enables the receipt of supernatant water and rainfall collected from the surface of the MIC cell and CC2 via the decant water system (infrastructure item 7), leachate underdrainage from CC2 via the leachate collection system (infrastructure item 6), and any intercepted groundwater or seepage intercepted via the under-liner pressure relief system (infrastructure item 8); (g) Include a water recovery system which connects the Cristal pond to the existing MIC Leachate Pond and leachate storage tanks, enabling the transfer of the Cristal Pond contents for transfer off the Premises; (h) Include a new indicator tank linked to the existing leachate tanks, equipped with a float which is clearly visible from the Cristal Pigment slurry unloading position; (i) Have all visible pipelines associated with the return water system and the water recovery system able to be isolated with shut-off valves which are bunded; and (j) Automatic pumps with level sensors enable the automatic removal of supernatant water from the Cristal Pond to the existing MIC Cell Leachate Pond when maximum operating levels are reached.
3: Overall arrangement CC2	CC2 must be constructed to meet the arrangement shown in Plan 15 of Schedule 2 and must: (a) Be divided into two stages for construction and commissioning, as depicted in Plan 15 of Schedule 2; (b) Have a holding capacity 350,000m^3; (c) Be adequately sized to contain 1 in 100 (1%) ARI rainfall event while maintaining a 0.5m freeboard (total freeboard of at least 1.8m above the maximum operating level); (d) Achieve a minimum separation distance of 2 metres from its lowest floor level to the highest seasonal groundwater table; (e) Have upstream and downstream batter face angles not steeper than 1V:3H (18°); (f) Be lined with HDPE / geosynthetic clay layer (GCL) composite liner consistent with infrastructure item 5; (g) Include a dedicated concrete-lined and bunded unloading area for vehicles carrying Cristal pigment slurry fit for the purpose of preventing the possibility of spillage or overflow to the environment during unloading; (h) Include a slurry transfer system comprised of pipelines that can direct Cristal pigment slurry directly from the concrete unloading area to the perimeter of CC2 and into one of at least 5 spigots suitably located as shown in Plan 13 of Schedule 2, to distribute slurry that forms a beach within CC2 which gently slopes towards the western embankment (for supernatant water collection); (i) Include a leachate collection system consistent with infrastructure item 6;

Table 1.3.3: Cristal Pond and CC2 Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
	and (j) Include a decant water system consistent with infrastructure item 7.
4: CC2 and Cristal Pond earthworks	CC2 and the Cristal Pond must comprise of earthworks and sub-base preparation in accordance with the following physical controls and limits: (a) Foundation and embankment materials must be compacted to a minimum of 95% Standard Maximum Dry Density in accordance with AS 1289.5.1.1; (b) fill compacted in layers <300 mm; (c) all earthworks relating to the Cristal Pond and CC2 accompanied by level 1 geotechnical testing, as per AS 3798; and (d) all earthworks inspected, approved and reported on by a geotechnical engineer, including final construction quality assurance.
5: CC2 and Cristal Pond composite liner system	The Cristal Pond and CC2 must be constructed to include a composite lining system that meets the following specifications: (a) Consists of a high density polyethylene (HDPE) geomembrane overlying a geosynthetic clay layer (GCL), over a layer of compacted subgrade; (b) The lining systems described in (a) cover the entire floor and internal walls of the Cristal Pond and CC2, up to the backfill anchor trench, as shown in Plan 19 and Plan 20 of Schedule 2; (c) The base of CC2 also includes an under-liner pressure relief system and an over-liner drainage collection system (refer to infrastructure items 6 and 8 for further detail); (d) The HDPE geomembrane layer is at least 2mm thick, and manufactured from virgin first-quality polyethylene resin with a minimum density of 0.932g/cm^3 and shall not contain more than 2% clean recycled polymer by weight; (e) The HDPE geomembrane layer and all joins are fit for purpose, placed without damage, and with panel overlaps of at least 75mm; (f) The GCL layer comprises at least 2 layers of geotextile encapsulating and needle punched across a layer of dry bentonite (layer comprising at least 80% activated sodium bentonite by weight), and is thermally locked; (g) The GCL layer and all joins are fit for purpose, placed without damage, and with panel overlaps of at least 300mm; and (h) Design seepage rate through basal lining systems does not exceed 10L/ha/day (0.365L/m^2/year).
6: CC2 leachate collection system	The CC2 composite lining system is overlain by a leachate collection system to enable the collection of leachate from the base of CC2 for transfer to the MIC Cell Leachate Pond (linked to the Cristal Pond), and must adhere to the following: (a) Comprise geotextile wrapped 90mm perforated plastic pipes embedded within a 400mm sand filtration layer which is protected by a 100mm layer of drainage aggregate (as shown in Plan 22 of Schedule 2); (b) All sand used in the filtration layer with particle size between 0.075mm to 35mm; (c) All aggregate used in the drainage aggregate layer has a particle size not exceeding 100m; (d) Perforated leachate collection pipes are arranged in rows over the base of CC2 stage 1 and CC2 stage 2 composite liners as shown in Plan 21 of Schedule 2, with adjacent rows positioned no greater than 25m apart; (e) Leachate is gravity fed to two sumps (one in CC2 stage 1 and one CC2

Table 1.3.3: Cristal Pond and CC2 Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
	stage 2) each fitted with pumps able to transfer 7.2m^3 of leachate per hour to the MIC Cell Leachate Pond; and (f) All visible pipelines are able to be isolated with shut-off valves which are bunded.
7: CC2 decant water system	CC2 must include a decant water system to enable the collection and transfer of supernatant water and rainfall that collects on the surface of CC2 as follows: (a) A submersible centrifugal pump with a floating intake system and a capacity of 125m^3/hr is positioned as shown in Plan 13 of Schedule 2 to collect supernatant water and rainwater from the surface of CC2 and transfer it to the Cristal Pond; (b) The capacity of the pump and pipeline infrastructure is sufficient to achieve a return rate of at least 110,000m^3 per annum, plus additional capacity for rainwater. (c) All visible pipelines are able to be isolated with shut-off valves which are bunded.
8: CC2 under-liner pressure relief	Under-liner pressure relief system to detect unexpected seepage and/or encroachment of groundwater levels under CC2 must: (a) Be comprised of an arrangement of perforated 110mm pipes in the base of CC2 stage 1 and CC2 stage 2, underneath the composite liner system, which direct any liquid captured to a sump within the geocomposite drainage zone in the eastern embankments of CC2 as shown in Plan 17 and Plan 18 of Schedule 2); and (b) A pump is installed in the sump which is fit for purpose to pump any liquid captured directly to the Cristal Pond, as shown in Plan 17 of Schedule 2.
9: Construction quality assurance	The construction of the Cristal Pond and CC2 and associated infrastructure must be undertaken in accordance with the following construction quality assurance practices: (a) All damage to any liner materials must be fully repaired (b) Level 1 inspection and testing as per AS 3798 for the following: (i) completion of removal of topsoil; (ii) placing of imported or cut material; (iii) compaction and adding/ removal of moisture; (iv) trenching and backfilling; (v) test rolling; and (vi) testing. (c) Compaction testing as per AS 1289.5.1.1; (d) Post liner construction leachate drainage layer leak detection testing; (e) an independent third party must verify construction quality assurance of the composite lining system of the Cristal Pond and CC2 as specified in Infrastructure Item 5 of Table 1.3.3 in the Licence; and (f) all quality control testing, unless specified otherwise, shall be carried out by a laboratory holding current NATA accreditation for all test methods referred to or required.
10: Storm water management	The storm water management system for the construction and operation of the Cristal Pond, CC2 stage 1 and CC2 stage 2 must: (a) be consistent with stormwater management required by Condition 1.2.1 of the Licence.

Table 1.3.3: Cristal Pond and CC2 Works specifications	
Column 1	**Column 2**
Infrastructure	**Specifications (design and construction)**
	(b) ensure all excavation and construction earthworks control stormwater using drains, bunds and the grading of surfaces. (c) ensure stormwater arising within the excavations is directed to stormwater pond/s sized to accommodate a 1 in 100 year, 24-hour storm event (132 mm). (d) Surface water management drains and culverts for the direction of storm water to the stormwater pond/s must be sized to accommodate a 1 in 20 ARI storm event or greater, without overtopping.

1.4 Premises operation

1.4.1 The Licence Holder must only accept waste on to the Premises if:
- (a) the waste is of a type listed in Column 1 of Table 1.4.1 and Table 1.4.2; and
- (b) the quantity of the waste type accepted is below any quantity limit listed in Column 2 of Table 1.4.1 and Table 1.4.2; and
- (c) the waste type meets any specification listed in Column 3 of Table 1.4.1 and Table 1.4.2 for the waste type in each row of Table 1.4.1 and Table 1.4.2.

Table 1.4.1: Liquid waste acceptance		
Column 1	**Column 2**	**Column 3**
Waste type	**Quantity limit**	**Specification**
Liquid waste	350 000 tonnes per annual period	(a) Cristal Pigment Slurry must be contained in sealed vessels and accepted for processing via sealed pipes directly from the vessels.
	3 000 tonnes per annual period	(b) Drill muds must be contained in sealed vessels.

Table 1.4.2: Solid waste acceptance		
Column 1	**Column 2**	**Column 3**
Waste type	**Quantity limit**	**Specification**
All waste types	303 000 tonnes per annual period	(a) All waste loads 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.
Contaminated Solid Waste Inert Waste Type 1 Inert Waste Type 2 Putrescible Waste Special Waste Type 1 Special Waste Type 2 TWM processed septage		(c) Contaminated Solid Waste must be supported by documentation that demonstrates compliance with the Acceptance Criteria for Class III landfills (d) All waste suspected of containing ACM or asbestos must be treated as being Special Waste Type 1. (e) All Special Waste Type 1 accepted at the Premises must be completely contained. (f) Acceptance of any waste must not result in the discharge of ACM or asbestos fibres. (g) No tyres are to be accepted.
Clean fill		None specified

1.4.2 The Licence Holder must ensure that where a waste type does not meet the Acceptance Criteria and waste type approved for acceptance in Condition 1.4.1, 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 and removed to an appropriately authorised facility as soon as practicable.

1.4.3 The Licence Holder must ensure that waste types set out in Column 1 of Table 1.4.3 and Table 1.4.4 accepted onto the Premises are only subjected to the process(es) set out in Column 2 of Table 1.4.3 and Table 1.4.4 and in accordance with any process limits described in Column 3 of Table 1.4.3 and Table 1.4.4 for the waste type in each row of Table 1.4.3 and Table 1.4.4.

Table 1.4.3: Waste processing – liquid waste

Column 1 Waste type	Column 2 Process(es)	Column 3 Process limits
Liquid waste	Receipt, handling, storage, treatment and disposal of waste	(a) Cristal Pigment Slurry only must only to be disposed of into the designated MIC cell or CC2, as depicted in Map 1 Schedule 1. Drill muds must be processed to a solid waste prior to landfilling by the following process: (b) temporarily stored in sealed vessels on a 200mm sacrificial sand layer within an active Class III landfill cell. (c) unloaded and treated on a Hardstand: (i) with bund walls that prevent the discharge of leachate from the Hardstand; and (ii) by mixing with shredded timber, compost, Clean Fill or other absorbent material to ensure a spadeable consistency; (d) demonstrated to achieve contaminant levels that comply with the Acceptance Criteria for Class III landfills, as demonstrated by the analysis of samples required by Condition 2.3.1; and (e) Disposed of via landfilling in accordance with Condition 1.4.3, Table 1.4.4.

Table 1.4.4: Waste processing – solid waste

Column 1 Waste type	Column 2 Process(es)	Column 3 Process limits
Clean Fill	Receipt, handling, storage, treatment and disposal of waste by landfilling	None specified.
Contaminated Solid Waste Drill muds (processed in accordance with Condition 1.4.3, Table 1.4.3(b) – (e)) Inert Waste Type 1 Inert Waste Type 2 Putrescible Waste Special Waste Type 2 TWM processed septage		(a) Waste must only be disposed of by burial to the Active Landfill Area or Cell 6. (b) All waste, except Special Waste Type 1, must be levelled in layers no greater than 0.5 m thick and compacted with a minimum 3 passes with the compacter. (c) Burning of waste is prohibited. (d) No tyres are to be landfilled.

Table 1.4.4: Waste processing – solid waste		
Column 1	**Column 2**	**Column 3**
Waste type	**Process(es)**	**Process limits**
Special Waste Type 1		(e) Waste must only be disposed of by burial to the Active Landfill Area or Cell 6. (f) Disposal must not result in the discharge of ACM or asbestos fibres. (g) Bulk loads of soil containing ACM or asbestos must be wet down during disposal, levelling and immediate burial. (h) Waste must not be compacted until covered in accordance with Condition 1.4.7, Table 1.4.8.

1.4.4 The Licence Holder must ensure that all cell(s) listed in Column 1 of Table 1.4.5 and Table 1.4.6 are maintained and operated to meet or exceed the specifications listed in Column 2 of Table 1.4.5 and Table 1.4.6 for the cell(s) listed in each row of Table 1.4.5 and Table 1.4.6.

Table 1.4.5: Liquid waste containment infrastructure	
Column 1	**Column 2**
Cell(s)	**Specifications**
MIC Cell and CC2	(a) Lined with an engineered geosynthetic/ HDPE composite liner free of leaks and defects. (b) Cristal Pigment Slurry must be maintained in a damp state. (c) All leachate must be directed to the MIC Cell Leachate Pond or the Cristal Pond. (d) All leachate pipes, gravity feeds and pumps must be free of blockage, leak and defect. (e) Daily inspections of the MIC Cell Leachate pond and the Cristal Pond leachate levels must be undertaken to ensure the maintenance of required freeboard levels; (f) Maintenance of at least 1m freeboard in the Cristal Pond at all times; (g) Maintenance of at least 1.8m freeboard in CC2 (stage 1 only) at all times; and (h) Maintenance of at least 1.7m freeboard in CC2 (stage 2) at all times

Table 1.4.6: Solid waste containment infrastructure	
Column 1	**Column 2**
Cell Number(s)	**Infrastructure requirements**
All landfill cells (Cell 1, 2, 3, 4A, 4B, 5, 12 and 6, 7 and 8)	(a) The landfill profile must remain stable and any cracking, slumping or failure of the final cover or landfill walls must be reworked with Clean Fill and stabilised. (b) The final cover must be able to incorporate the landfill gas management system. (c) All leachate pipes, gravity feeds and pumps must be free of blockage, leak and defect. (d) All leachate sumps must be maintained free of leaks and defects. (e) All leachate from the leachate sumps must be directed to a leachate pond.
Cell 1 and 2 (Class II)	(f) Capped with interim cover of a minimum of 1 metre of Clean Fill.
Cells 3, 4A, 4B, 5 and 12 (Class III)	(g) Engineered geosynthetic/ HDPE composite cell floor liners to achieve a permeability of at least $<1x10^{-9}$ m/s or equivalent. (h) Engineered geosynthetic/ HDPE composite cell floor liners overlain by a minimum 200mm sand layer on all embankment slopes to protect the liner prior to the disposal of any waste
Cells 7 and 8 (Class III).	(i) In accordance with Condition 1.3.1, Table 1.3.1.

Table 1.4.6: Solid waste containment infrastructure	
Column 1	**Column 2**
Cell Number(s)	**Infrastructure requirements**
	(j) Landfilling of waste must not occur.

1.4.5 The Licence Holder must ensure that the vessel or compounds listed in Column 1 of Table 1.4.7 only store the leachate listed in Column 2 of Table 1.4.7 and in accordance with any specification in Column 3 of Table 1.4.7 for the vessel or compounds in each row of Table 1.4.7.

Table 1.4.7: Leachate containment infrastructure		
Column 1	**Column 2**	**Column 3**
Vessel or compound	**Leachate source**	**Specification**
All	All	(a) Liners must be maintained free of leaks and defects. (b) Overtopping of the vessel or compound must not occur. (c) Stormwater runoff must not enter the vessel or compound or cause erosion of embankments. (d) A freeboard of 500 mm must be maintained in the vessel or compound, except the MIC Cell storage tanks.
MIC Cell leachate pond	MIC cell	(e) HDPE lined to achieve a permeability of at least $<1x10^{-9}$ m/s or equivalent. (f) Direct all leachate to the MIC Cell leachate storage tanks.
MIC Cell leachate storage tanks		(g) Four impervious storage tanks with a total minimum storage capacity of 85 kL each, located on a hardstand that directs any leachate back to the MIC Cell or CC2. (h) Leachate must be sent for reuse at the Kemerton Titanium Dioxide Processing Plant.
Primary Leachate Pond Leachate Evaporation Ponds 1, 2 and 3	Landfill leachate from Cells 1, 2, 3, 4A, 4B, 5, 12 and Cells 6, 7 and 8	(i) HDPE lined to achieve a permeability of at least $<1x10^{-9}$ m/s or equivalent. (j) Designed to contain leachate and stormwater produced as a result of a 1 in 100 year ARI rainfall event. (k) Leachate ponds 1, 2 and 3 must have a total storage capacity of 8,500 kL each while allowing for 500 mm freeboard.
Cristal Pond	CC2	(l) HDPE lined geomembrane overlying a Geosynthetic clay layer (GCL), over a compacted subgrade. (m) Direct all leachate to the Cristal Pond.

1.4.6 The Licence Holder must manage leachate in accordance with the following physical controls and limits:
- (a) reuse of MIC Cell and CC2 leachate at the Premises must not occur;
- (b) the recirculation of leachate via spray over the internal walls of the leachate ponds must not result in discharge beyond the leachate pond embankment liners;
- (c) the recirculation of leachate for dust suppression must only occur to the active tipping area within the Active Landfill Area; and
- (d) direct reinjection of leachate into landfill cells must not occur.

1.4.7 The Licence Holder must ensure that cover material listed in Column 2 of Table 1.4.8 is applied and maintained on landfilled waste types listed in Column 1 of Table 1.4.8 to the depths and within the timescales listed in Columns 3 and 4 of Table 1.4.8 and that sufficient stockpiles of cover material are maintained at the Premises at all times to cover all waste accepted.

Table 1.4.8: Cover requirements			
Column 1	**Column 2**	**Column 3**	**Column 4**
Waste Type	**Cover material**	**Depth**	**Timescales**
Clean Fill	No cover required		
Special Waste Type 1 Special Waste Type 2	Either: • 300 mm of Type 1 Inert waste or Clean fill; or • 1,000 mm of Solid waste		As soon as practicable after acceptance and no later than the end of the working day that the waste was accepted.
Contaminated Solid Waste Drill muds Inert Waste Type 1 Inert Waste Type 2 Putrescible Waste	Type 1 Inert waste or Clean Fill	150 mm	As soon as practicable and not later than the end of the working day that the waste was deposited.
TWM Processed Septage		300 mm	As soon as practicable and not later than the end of the working day that the waste was deposited.
All waste types (excludes Cristal Pigment Slurry)	Clean Fill	1 000 mm	Within 3 months of achieving an interim waste contour.
		2 000 mm	Within 18 months of achieving final waste contours.

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

(a) when undertaking the Works specified by Condition 1.3.1 infrastructure item 1(D); or

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

(c) for the installation of leachate sump access wells;

and all waste that is uncovered or excavated must be landfilled in accordance with Condition 1.4.3, Table 1.4.4 and Condition 1.4.7 of this Licence on the same day the waste is uncovered or excavated.

1.4.9 The Licence Holder must:

(a) progressively install a landfill gas collection and management system as the final cover of landfill cells is complete; and

(b) operate and maintain all landfill gas collection and management system infrastructure to meet or exceed the specifications in Column 1 of Table 1.4.9 according to the specifications in Column 2 of Table 1.4.9 for each item of infrastructure listed in Table 1.4.9 as depicted within Plan 12 in Schedule 2 of the Licence for Cells 1 and 2.

Table 1.4.9: Landfill gas collection and management system	
Column 1	**Column 2**
Infrastructure	**Specification**
Gas extraction wells	(i) Vertical HDPE extraction wells completely sealed to prevent air draw down.
Gas transfer pipelines, laterals and headers	(ii) HDPE, impervious and free of leaks and defects.
Condensate system	(iii) All captured condensate is returned to the Primary Leachate Pond or Leachate Evaporation Pond.
Gas flare station.	(iv) ABM 2,000 m^3/ hour capacity enclosed flare. (v) A ≥1000 ^oC chamber temperature with gas residence time of 0.6 seconds.

1.4.10 The Licence Holder must take the specified actions in Column 3 of Table 1.4.10 when the parameters in Column 1 of Table 1.4.10 fall outside of the corresponding trigger levels in Column 2 of Table 1.4.10.

Table 1.4.10: Landfill gas collection and management system		
Column 1	**Column 2**	**Column 3**
Parameter	**Trigger levels**	**Specified actions**
Methane	40 – 60 % by volume	(a) Monitor the parameters levels in Column 1 at each gas extraction well within one week. (b) Visually check the integrity of the landfill cover within one week[1]. (c) Adjust the gas flare flow rate control valves within one week[1]. (d) Increase the frequency of monitoring in Condition 2.3.2 to weekly until the parameters in Column 1 fall within the trigger levels in Column 2. (e) Assess for the potential of a landfill fire within the landfill cells and submit a notification to the CEO within 2 weeks[1] that details: (i) the parameters that were found outside of the trigger levels; (ii) the specified actions taken; and (iii) the rationale for determining if a landfill fire is or is not occurring within the landfill.
Carbon dioxide	25 – 50 % by volume	
Oxygen	< 2 % by volume	
Nitrogen	2 – 12 % by volume	
Carbon monoxide	< 25 parts per million (ppm)	
Gas temperature	< 55 ^oC	

Note 1: Timeframes are to be taken from the date that the Licence Holder becomes aware of a parameter value falling outside of the trigger levels in Column 2 of Table 1.4.10.

1.4.11 The Licence Holder must, at a minimum frequency of monthly, collect any litter from litter controls screens, perimeter fencing, roads and vegetation within the Premises.

1.4.12 The Licence Holder must operate and maintain at least 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.

1.4.13 The Licence Holder must, by 31 December 2019, install and maintain chain wire fencing of 1.8 metres in height, situated to target waste potentially crossing the southern boundary of the premises and designed so as to effectively capture wind blown waste not captured by the portable litter screens specified in condition 1.4.11.

1.4.14 The Licence Holder must maintain the minimum following infrastructure for the control of potential fires:
(a) water cart with a storage capacity of 15 kL;

(b) a minimum total of 50 kL of water within the primary and secondary stormwater dams; and
(c) cover material that can entirely cover any waste type within the tipping area to a minimum depth of 150 mm should a fire within the Dardanup Conservation Park and Boyanup State Forest present a material risk to the Premises.

1.4.15 The Licence Holder must bituminise the Main haul route and Southern haul route, as identified in Schedule 1: Dust Risk Area Map, by 31 July 2020.

1.4.16 The Licence Holder must manage fugitive dust emissions from trafficable areas during operational hours by:
(a) applying water collected from the primary and secondary stormwater dams, via the water cart specified in 1.4.15 (a), to trafficable areas; or
(b) using a street sweeper upon trafficable areas bituminised in accordance with condition 1.4.16 .

1.4.17 The Licence Holder must manage fugitive dust emissions from the active tipping area during operational hours by:
(a) applying water collected from the primary and secondary stormwater dams, via the water cart specified in condition 1.4.15 (a), to the active tipping area; or
(b) applying leachate via the water cart specified in condition 1.4.15 (a) to the active tipping area in accordance with condition 1.4.6

1.4.18 The Licence Holder must, during operational hours, undertake targeted wetting down of material during disposal and burial at the active tipping area where the Licence Holder is aware that such material has the potential to generate fugitive dust.

1.4.19 The Licence Holder must, as far as practicable, apply a dust suppressant material to non-vegetated areas, landfill batters and within the Laydown area, as identified in Schedule 1: Dust Risk Area Map, when such areas have the potential to generate fugitive dust.

1.4.20 The Licence Holder must, by 31 October of each Annual Period, undertake an assessment of the potential for dust emissions generated within the premises and detail proposed controls for those areas identified as high dust risk areas.

1.4.21 The Licence Holder must submit to the CEO the assessment prepared pursuant to condition 1.4.20 within 14 days of completion of the assessment.

1.4.22 All operational vehicles must pass through a wheel wash prior to exiting the Premises

1.4.23 The Licence Holder must implement control measures to prevent infestations of pest, vermin and weeds.

1.4.24 The Licence Holder shall ensure that the unloading of Cristal pigment waste occurs on an impervious hardstand area.

2 Monitoring

2.1 General monitoring

2.1.1 The Licence Holder must ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
(c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

2.1.2 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.

2.1.3 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.

2.1.4 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.

2.2 Monitoring of inputs and outputs

2.2.1 The Licence Holder must undertake the monitoring in Table 2.2.1 according to the specifications in Table 2.2.1.

Table 2.2.1: Monitoring of inputs and outputs

Input/ Output	Parameter	Units	Averaging period	Frequency
Waste inputs	Waste type as defined in Table 1.4.1 and Table 1.4.2	tonnes	Annual Period	Each load arriving at the Premises
Waste outputs	Waste type as defined in the Landfill Definitions			Each load leaving or rejected from the Premises

2.3 Process monitoring

2.3.1 The Licence Holder must undertake the monitoring in Table 2.3.1 according to the specifications in Table 2.3.1.

Table 2.3.1: Process monitoring		
Process description	**Parameter**	**Frequency and method**
Verification of contaminant levels in Drill Muds treated in accordance with Condition 1.4.3, prior to landfilling	All relevant parameters to the Acceptance Criteria for Class III landfills	In accordance with the Landfill Definitions

2.3.2 The Licence Holder must undertake the monitoring in Table 2.3.2 according to the specifications in Table 2.3.2.

Table 2.3.2: Monitoring of landfill gas management system					
Monitoring point	**Parameter**	**Units**	**Averaging period**	**Frequency**	**Method**
A01-A05, B06, C07, B08-09, C10-11 B12, C13, B14, C15-19, D20-33 and flare station (as depicted in Plan 12 in Schedule 2 of the Licence).	Methane	volume%	Spot sample	Monthly	Landtec GEM 2000 (or superior instrument)
	Carbon dioxide	volume%			
	Oxygen	volume%			
	Nitrogen	volume%			
	Carbon monoxide	ppm			
	Gas temperature	℃			
	Pressure	Pa			

2.4 Groundwater monitoring

2.4.1 The Licence Holder must undertake the monitoring in Table 2.4.1 according to the specifications in Table 2.4.1.

Table 2.4.1: Monitoring of ambient groundwater quality				
Monitoring point	**Parameter**	**Units**	**Averaging period**	**Frequency**
GW 1 and GW 3 – 10[2]. (As shown in Map 1, Schedule 1 of the Licence)	Standing water level[1]	m(AHD)	Spot sample	Six monthly
	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			

Table 2.4.1: Monitoring of ambient groundwater quality				
Monitoring point	**Parameter**	**Units**	**Averaging period**	**Frequency**
	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	Spot sample	Annual
	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	Spot sample	Annual

Note 1: In-field non-NATA accredited analysis permitted.
Note 2: Sampling of new/ replacement groundwater monitoring bores must commence once they are installed and both existing and new bores must be monitored simultaneously.

2.4.2 By the 30 June 2018 the Licence Holder must

(a) ensure that groundwater monitoring bores are installed at the Premises according to the groundwater monitoring bores number and type listed in Table 2.4.2 at the locations depicted in the Premises Map 1 in Schedule 1 of the Licence according to the construction specifications and able to meet the future sampling requirements detailed in Table 2.4.2;

(b) submit a report to the CEO that:

(i) confirms that the groundwater monitoring bores are installed in accordance with Condition 2.4.2(a); and

(ii) contains bore logs for all the installed groundwater monitoring bores.

Table 2.4.2: New groundwater monitoring bore specifications			
Groundwater monitoring bore number	**Groundwater monitoring bore type**	**Construction specifications**	**Future sampling requirements**
GW1, GW5, GW7 and GW9	New nested replacement bore: top of aquifer and Leederville formation.	(a) Constructed in accordance with ASTM D5092-04(2010)e1. (b) Constructed with a 3 meter machine slotted PVC casing screened interval. (c) Nested bores drilled to a depth where the 3 meter vertical screen intercepts: (i) the top of the shallowest aquifer; and (ii) the top of the Leederville formation. (d) Annular space of each bore is sand packed and sealed with a bentonite and cement plug at the surface.	• Representative groundwater samples can be taken: o at the locating depicted in the Premises Map in Schedule 1 of the Licence; o according to the specifications in Condition 2.1.1 and Condition 2.4.1; o from the surface of the shallowest aquifer and from the top of the Leederville formation.

2.5 Noise validation

2.5.1 Within two months of the date of this licence amendment, the Licence Holder must retain the services of a person qualified and experienced in the area of environmental noise assessment and who by their qualifications and experience is eligible to hold membership of the Australian Acoustical Society or the Australian Association of Acoustical Consultants to:

(a) validate the noise modelling calculated within *Environmental Acoustic Assessment, 24762-2-19122-02, Herring Storer Acoustics, September 2019*, by undertaking noise measurements at, or as near as possible, to the nearest noise sensitive premises;

(b) assess in accordance with the methodology required in the *Environmental Protection (Noise) Regulations 1997*, the compliance of the noise emissions from the primary activities, against the relevant assigned levels specified in those Regulations; and

(c) compile and submit to the licence holder within three months of the date of this licence amendment, a report in accordance with condition 2.5.2.

2.5.2 A report prepared pursuant to condition 2.5.1(c) is to include:

(a) a description of the methods used for monitoring of noise emissions from the premises;

(b) details and the results of the validation undertaken pursuant to condition 2.5.1(a); and

(c) details and results of the assessment of the noise emissions from the premises, against the relevant assigned levels in the *Environmental Protection (Noise) Regulations 1997* undertaken pursuant to condition 2.5.1(b); and

2.5.3 The Licence Holder must submit to the CEO the report prepared pursuant to condition 2.5.1(c) within 14 days of receiving it.

2.5.4 Where an assessment pursuant to condition 2.5.1(b) indicates that noise emissions do not comply with the relevant assigned levels in the *Environmental Protection (Noise) Regulations 1997*, the license holder must:

(a) within 60 days of receiving an assessment report pursuant to condition 2.5.1(c) prepare a plan to ensure the undertaking of the licensed activity will no longer lead to any contravention of the *Environmental Protection (Noise) Regulations 1997*; and

(b) provide to the CEO a copy of the plan prepared pursuant to condition 2.5.4(a) within 30 days of its preparation.

3 Information

3.1 Records

3.1.1 All information and records required by the Licence must:
(a) be legible;
(b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
(c) except for records listed in 3.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
(d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
(i) off-site environmental effects; or
(ii) matters which affect the condition of the land or waters.

3.1.2 The Licence Holder must implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

3.1.3 The Licence Holder must:
(a) implement and maintain a system 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 description of the type of waste;
(v) any loads of waste rejected from the premises; and
(vi) the amount of landfill levy payable in respect of the waste; and
(b) maintain a register of Special Waste Type 1 (Asbestos waste), Special Waste Type 2 (Biomedical and clinical waste) and TWM 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; and
(iii) the name of the person that deposited the waste;
for the Annual Period, and make these registers available on request.

3.2 Reporting – CEO Request

3.2.1 The Licence Holder must comply with a CEO request, within 14 days from the date of the CEO Request or such other period specified in the CEO Request.

3.3 Reporting – Construction

3.3.1 If Condition 1.3.2 applies, then the Licence Holder must provide the CEO with a list of departures that are certified as complying with Condition 1.3.2 at the same times and from the same suitably qualified professional engineer, as the certifications under Condition 3.3.2 are provided.

3.3.2 The Licence Holder must submit a Construction Compliance Document to the CEO, following the construction of each landfill cell 6, 7 and 8 of the Landfill Cell Works:
(a) prior to the placement of any waste in the landfill cell; and
(b) excluding Landfill Cell Works specific to Condition 1.3.1 infrastructure item 4.

3.3.3 The Licence Holder must ensure that the Construction Compliance Document required by Condition 3.3.2:
- (a) is certified by a suitably qualified professional engineer that each item of infrastructure specified in Column 1 of Table 1.3.1 with the specifications in Column 2 of Table 1.3.1 has been constructed with no material defects;
- (b) contains as constructed plans for the landfill cell including the leachate collection system;
- (c) is signed by a person authorised to represent the Licence Holder and contains the printed name and position of that person within the company.

3.3.4 The Licence Holder must ensure that the Construction Compliance Document required by Condition 3.3.2 contains a Construction Quality Assurance Validation Report that:
- (a) is certified by a suitably qualified independent third party professional engineer that the construction quality assurance undertaken, as specified by infrastructure item 5 in Table 1.3.1, for the infrastructure specified in Column 1 of Table 1.3.1 with the specifications in Column 2 of Table 1.3.1 has been completed with no material defects or variation from the infrastructure specifications being made; and
- (b) is signed by the suitably qualified independent third party professional engineer and contains the printed name, position and company of that person.

3.3.5 The Licence Holder must submit a construction compliance document to the CEO following the construction of each Phase 1, 2 and 3 of the Cristal Pond and CC2 Works, that:
- (a) includes a detailed description addressing how each as-constructed item of infrastructure and equipment meets the applicable specifications in Table 1.3.3, as required by Condition 1.3.4;
- (b) includes a description of, and explanation for, any departure from the applicable specifications in Table 1.3.3 including how the departure complies with Condition 1.3.5;
- (c) contains as-constructed plans for the applicable phase of Cristal Pond and CC2 Works;
- (d) contains photographs of the applicable phase of works to support the descriptions provided under (a);
- (e) is signed by a person authorised to represent the Licence Holder and contains the printed name and position of that person within the company; and
- (f) is accompanied by a construction quality assurance validation report that:
  - i. is written and certified by a suitably qualified, independent, third party professional engineer that has undertaken construction quality assurance on the completed Cristal Pond and CC2 Works;
  - ii. confirms the details reported by the Works Approval Holder under (a) and (b); and
  - iii. is signed by the suitably qualified independent third party professional engineer and contains the printed name, position and company of that person.

3.4 Reporting – Operation

3.4.1 The Licence Holder must submit to the CEO within 90 days after the Anniversary Date, an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the Conditions in this Licence for the Annual Period.

3.4.2 The Licence Holder must submit to the CEO an Annual Environmental Report within 90 days after the Anniversary Date for the Annual Period. The Annual Environmental Report must contain the information listed in Table 3.4.1 in the format or form specified in Table 3.4.1.

Table 3.4.1: Annual Environmental Report		
Condition or table	**Parameter**	**Format or form**
1.4.3	Summary of the Active Landfill Area, MIC Cell and CC2 that includes: (a) Areas that have been subject to waste deposition for the Annual Period; and (b) Remaining capacity for waste deposition in each cell.	None specified
1.4.9	Summary of landfill gas collection and management system that includes: (a) Infrastructure installed during the Annual Period; and (b) A map of the spatial coverage of the landfill gas collection and management system.	
Table 2.2.1	Volume of wastes accepted/rejected for each waste type during the annual period in a table format.	
Table 2.3.1	Process monitoring Drill Muds: data in a table format for the annual period	
Table 2.3.2	Process monitoring landfill gas management system: data in a table format for the annual period	
Table 2.4.1	Monitoring of ambient groundwater quality for the annual period that includes: (a) data in a table format for the annual period; and (b) data in graphical format for trend analysis to include at least the last five years data where available.	
3.1.2	Complaints summary for the annual period	
3.1.3	Plan of disposal locations for Special Waste Type 1 and Special Waste Type 2 and for the Annual Period	

3.5 Notification

3.5.1 The Licensee must ensure that the parameters listed in Table 3.5.1 are notified to the CEO in accordance with the notification requirements of Table 3.5.1.

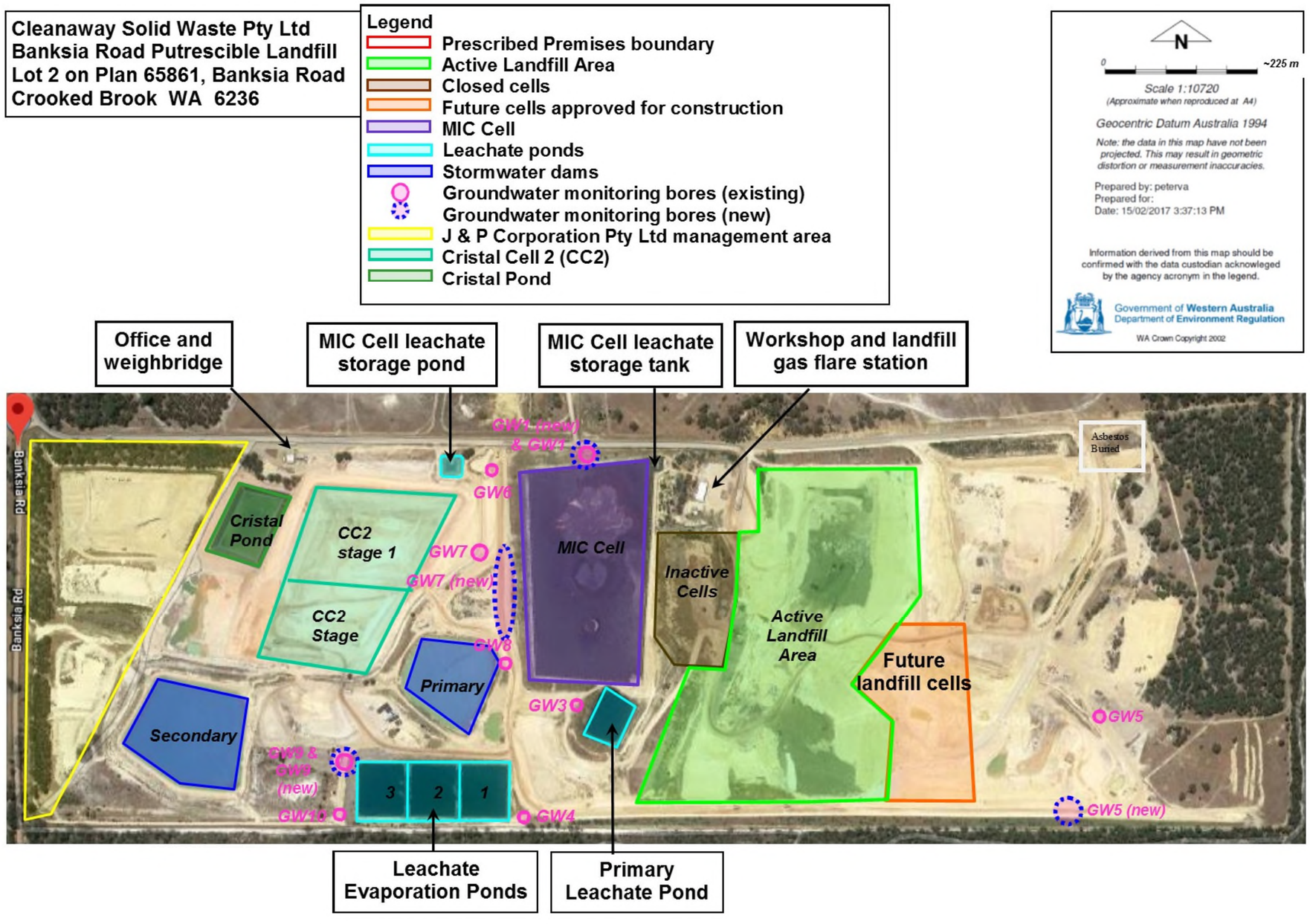
Table 3.5.1: Notification requirements			
Condition or table	**Parameter**	**Notification requirement**	**Format or form[1]**
1.4.8	Landfill gas management system	The scope and timeframes of any proposed expansion of the landfill gas collection and management system as depicted in Plan 12 of Schedule 2 in the Licence, at least 6 months prior to any expansion occurring.	N/A
N/A	Landfill fire	Part A: As soon as practicable but no later than 24 hours of the fire being identified. Part B: As soon as practicable	N1

Note 1: Forms are in Schedule 4

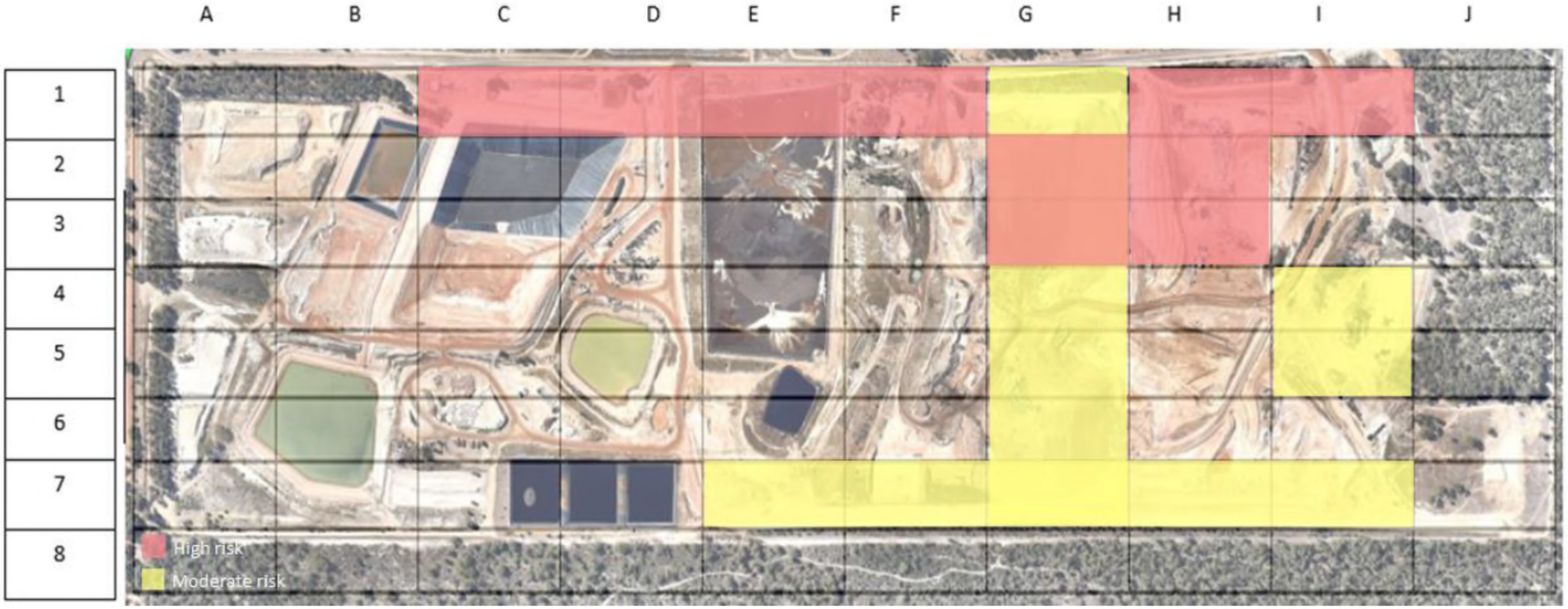
Schedule 1: Maps

Premises map 1

The Premises is shown in the map below. The red line depicts the Premises boundary. Additional infrastructure is labelled and identified by the legend.



Dust Risk Area Map



Notes:

1. Haul route C1-I1. The main haul route carries traffic to and from the active face and whilst being sealed, within a designated waste precinct and at relatively low elevation it carries significant traffic and is also in the general direction of the Dardanup Townsite.

2. Laydown H1-3, I1 & I4-5. Large unsealed flat spaces are at elevation, presenting increased opportunity for fugitive dust.

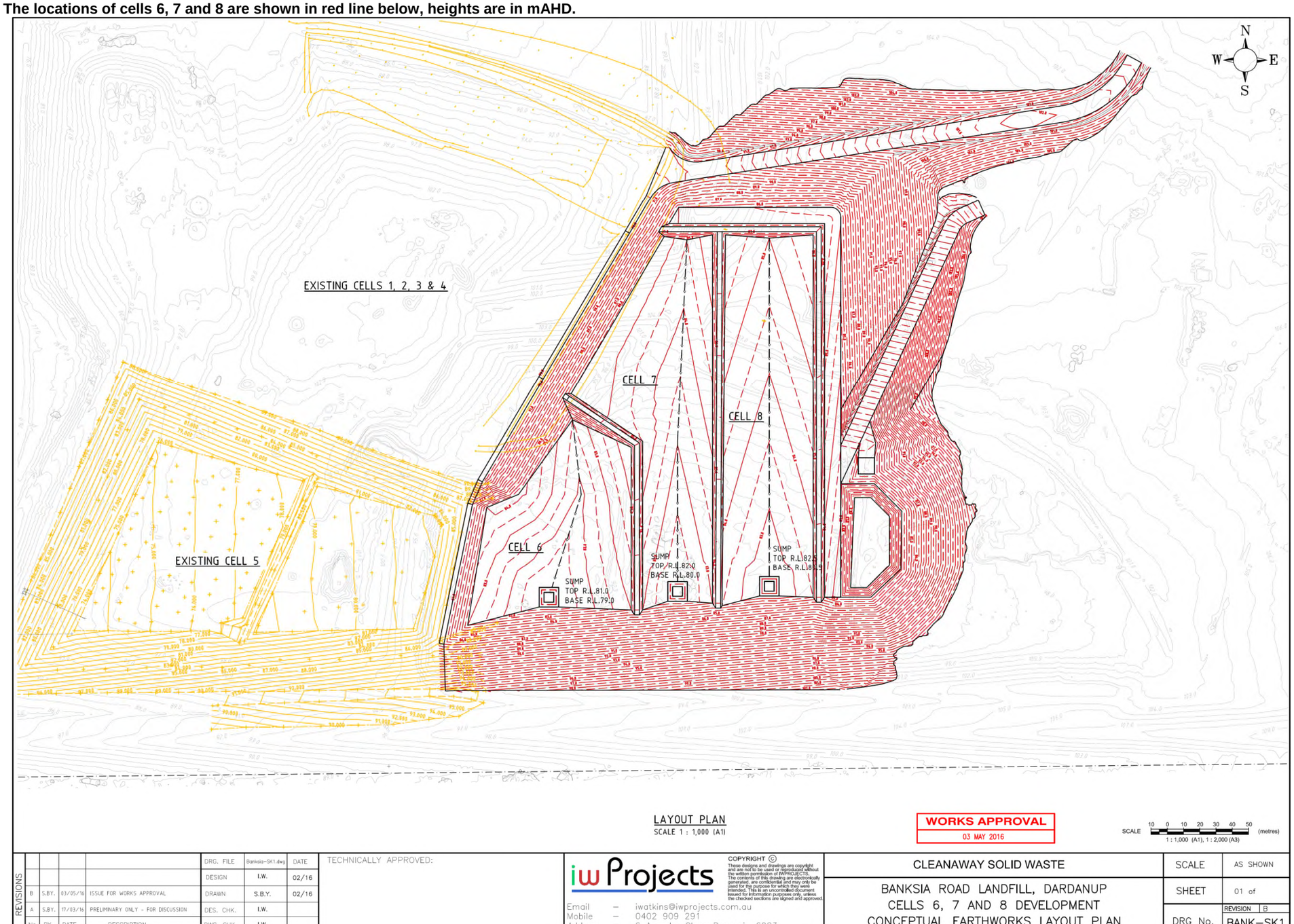
3. Southern haul route E7-I7. Southern haul route currently carries minimal traffic but is elevating west to east and is adjacent to Conservation Park increasing potential environmental impact; this road to be sealed between E7 and G7 by 2020.

4. Active Cell G1-G6. At elevation and the site of tipping loads.

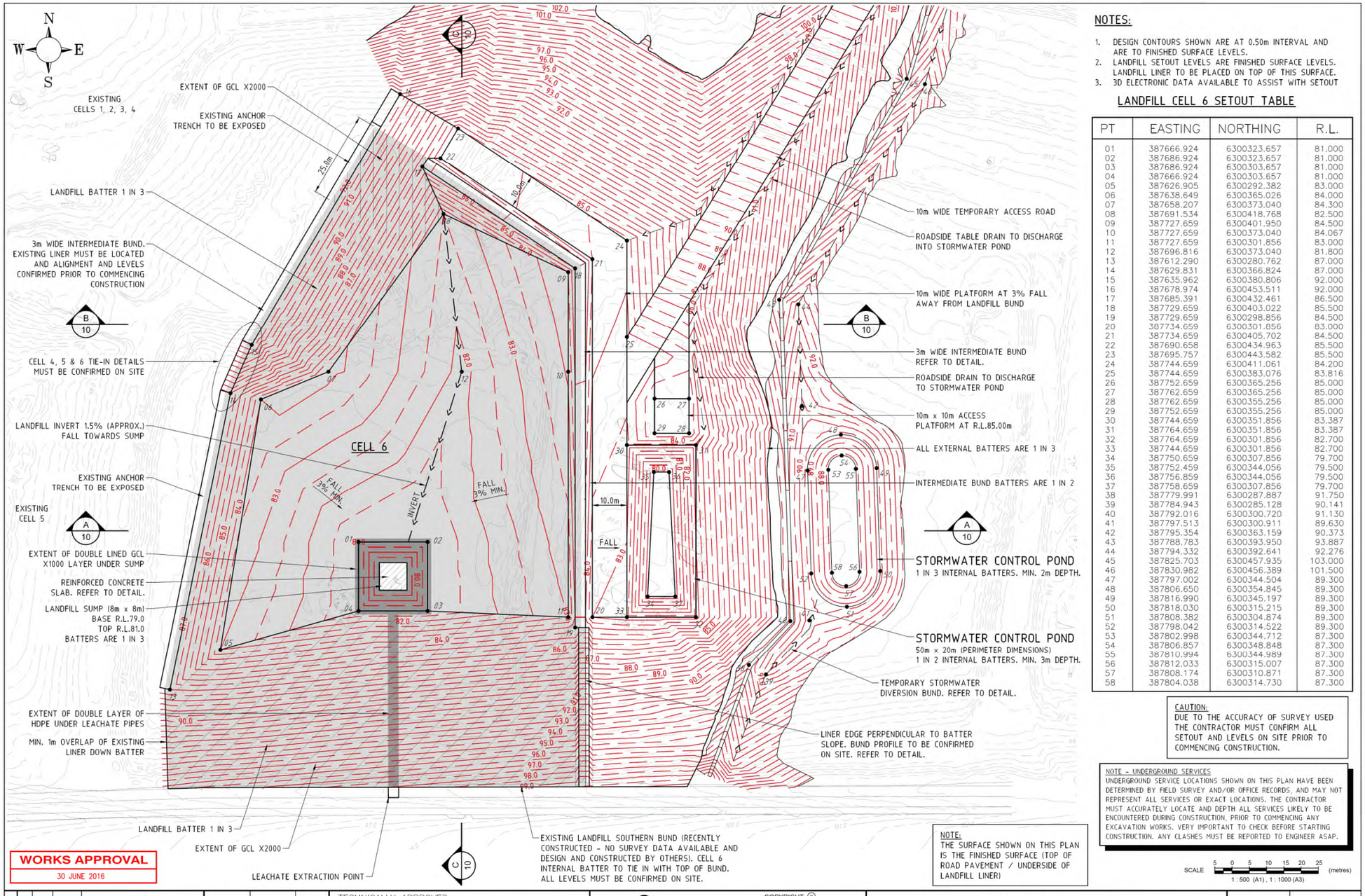
Schedule 2: Plans

Plan 1: Plan of Cell 6, 7 and 8 works

The locations of cells 6, 7 and 8 are shown in red line below, heights are in mAHD.



Plan 2: Plan of Cell 6 works
The construction details of cell 6 are shown below, heights are in mAHD.



NOTES:

1. DESIGN CONTOURS SHOWN ARE AT 0.50m INTERVAL AND ARE TO FINISHED SURFACE LEVELS.
2. LANDFILL SETOUT LEVELS ARE FINISHED SURFACE LEVELS. LANDFILL LINER TO BE PLACED ON TOP OF THIS SURFACE.
3. 3D ELECTRONIC DATA AVAILABLE TO ASSIST WITH SETOUT

LANDFILL CELL 6 SETOUT TABLE

PT	EASTING	NORTHING	R.L.
01	387666.924	6300323.657	81.000
02	387686.924	6300323.657	81.000
03	387686.924	6300303.657	81.000
04	387666.924	6300303.657	81.000
05	387626.905	6300292.382	83.000
06	387638.649	6300365.026	84.000
07	387658.207	6300373.040	84.300
08	387691.534	6300418.768	82.500
09	387727.659	6300401.950	84.500
10	387727.659	6300373.040	84.067
11	387727.659	6300301.856	83.000
12	387696.816	6300373.040	81.800
13	387612.290	6300280.762	87.000
14	387629.831	6300366.824	87.000
15	387635.962	6300380.806	92.000
16	387678.974	6300453.511	92.000
17	387685.391	6300432.461	86.500
18	387729.659	6300403.022	85.500
19	387729.659	6300298.856	84.500
20	387734.659	6300301.856	83.000
21	387734.659	6300405.702	84.500
22	387690.658	6300434.963	85.500
23	387695.757	6300443.582	85.500
24	387744.659	6300411.061	84.200
25	387744.659	6300383.076	83.816
26	387752.659	6300365.256	85.000
27	387762.659	6300365.256	85.000
28	387762.659	6300355.256	85.000
29	387752.659	6300355.256	85.000
30	387744.659	6300351.856	83.387
31	387764.659	6300351.856	83.387
32	387764.659	6300301.856	82.700
33	387744.659	6300301.856	82.700
34	387750.659	6300307.856	79.700
35	387752.459	6300344.056	79.500
36	387756.859	6300344.056	79.500
37	387758.659	6300307.856	79.700
38	387779.991	6300287.887	91.750
39	387784.943	6300285.128	90.141
40	387792.016	6300300.720	91.130
41	387797.513	6300300.911	89.630
42	387795.354	6300363.159	90.373
43	387788.783	6300393.950	93.887
44	387794.332	6300392.641	92.276
45	387825.703	6300457.935	103.000
46	387830.982	6300456.389	101.500
47	387797.002	6300344.504	89.300
48	387806.650	6300354.845	89.300
49	387816.990	6300345.197	89.300
50	387818.030	6300315.215	89.300
51	387808.382	6300304.874	89.300
52	387798.042	6300314.522	89.300
53	387802.998	6300344.712	87.300
54	387806.857	6300348.848	87.300
55	387810.994	6300344.989	87.300
56	387812.033	6300315.007	87.300
57	387808.174	6300310.871	87.300
58	387804.038	6300314.730	87.300

CAUTION:
DUE TO THE ACCURACY OF SURVEY USED THE CONTRACTOR MUST CONFIRM ALL SETOUT AND LEVELS ON SITE PRIOR TO COMMENCING CONSTRUCTION.

NOTE - UNDERGROUND SERVICES
UNDERGROUND SERVICE LOCATIONS SHOWN ON THIS PLAN HAVE BEEN DETERMINED BY FIELD SURVEY AND/OR OFFICE RECORDS, AND MAY NOT REPRESENT ALL SERVICES OR EXACT LOCATIONS. THE CONTRACTOR MUST ACCURATELY LOCATE AND DEPTH ALL SERVICES LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION, PRIOR TO COMMENCING ANY EXCAVATION WORKS. VERY IMPORTANT TO CHECK BEFORE STARTING CONSTRUCTION. ANY CLASHES MUST BE REPORTED TO ENGINEER ASAP.

NOTE:
THE SURFACE SHOWN ON THIS PLAN IS THE FINISHED SURFACE (TOP OF ROAD PAVEMENT / UNDERSIDE OF LANDFILL LINER)

SCALE 5 0 5 10 15 20 25 (metres)
1 : 500 (A1), 1 : 1000 (A3)

WORKS APPROVAL
30 JUNE 2016

REVISIONS					DRG. FILE		DATE
					DESIGN	I.W.	04/16
B	S.BY.	03/05/16	ISSUE FOR WORKS APPROVAL		DRAWN	S.B.Y.	04/16
A	S.BY.	08/04/16	PRELIMINARY ISSUE FOR REVIEW		DES. CHK.	I.W.	
No.	BY	DATE	DESCRIPTION		DWG. CHK.	I.W.	

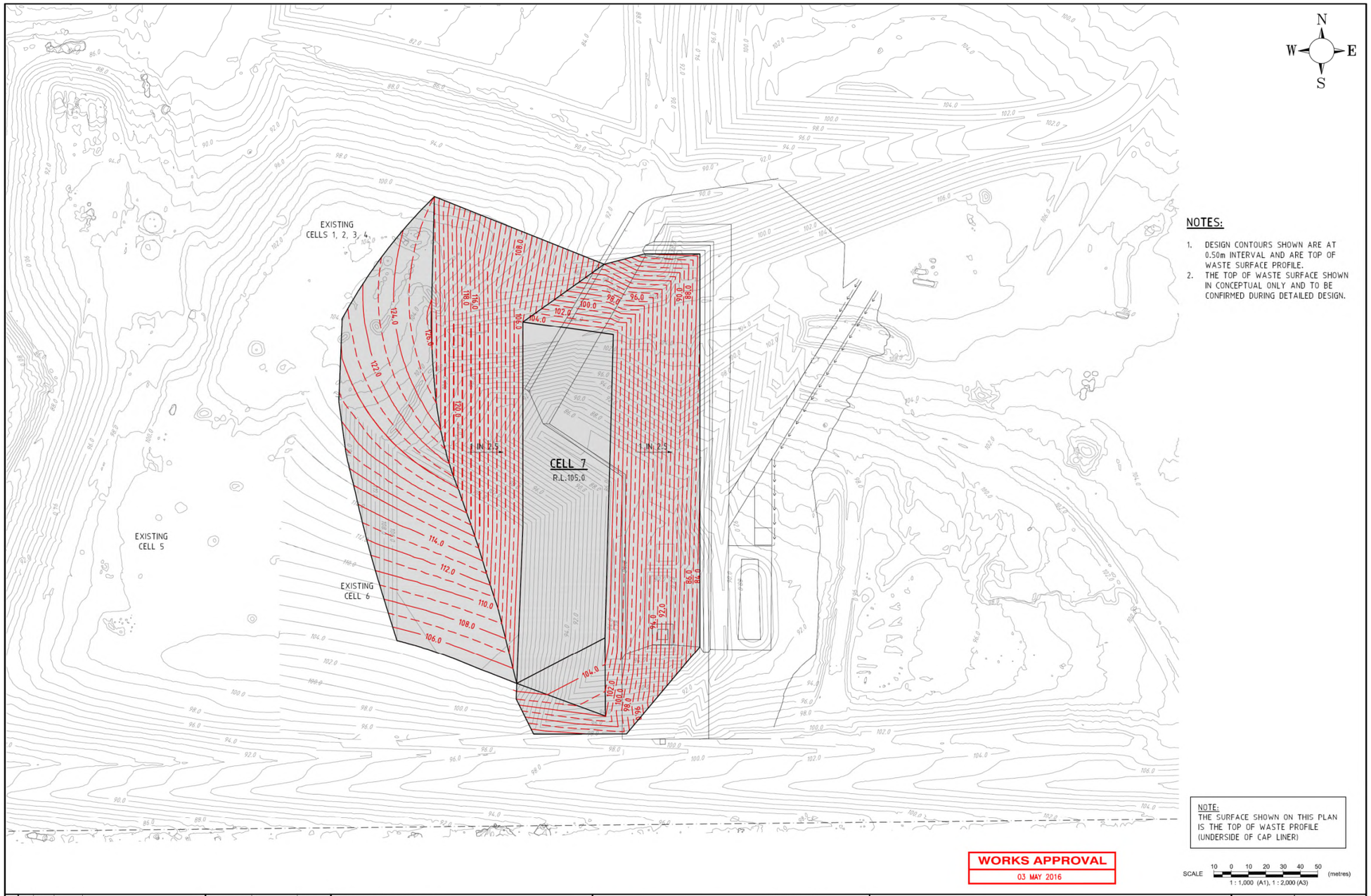
TECHNICALLY APPROVED:

iw Projects
Email – iwatkins@iwprojects.com.au
Mobile – 0402 909 291
Address – 6 Anembo Close Duncraig 6023

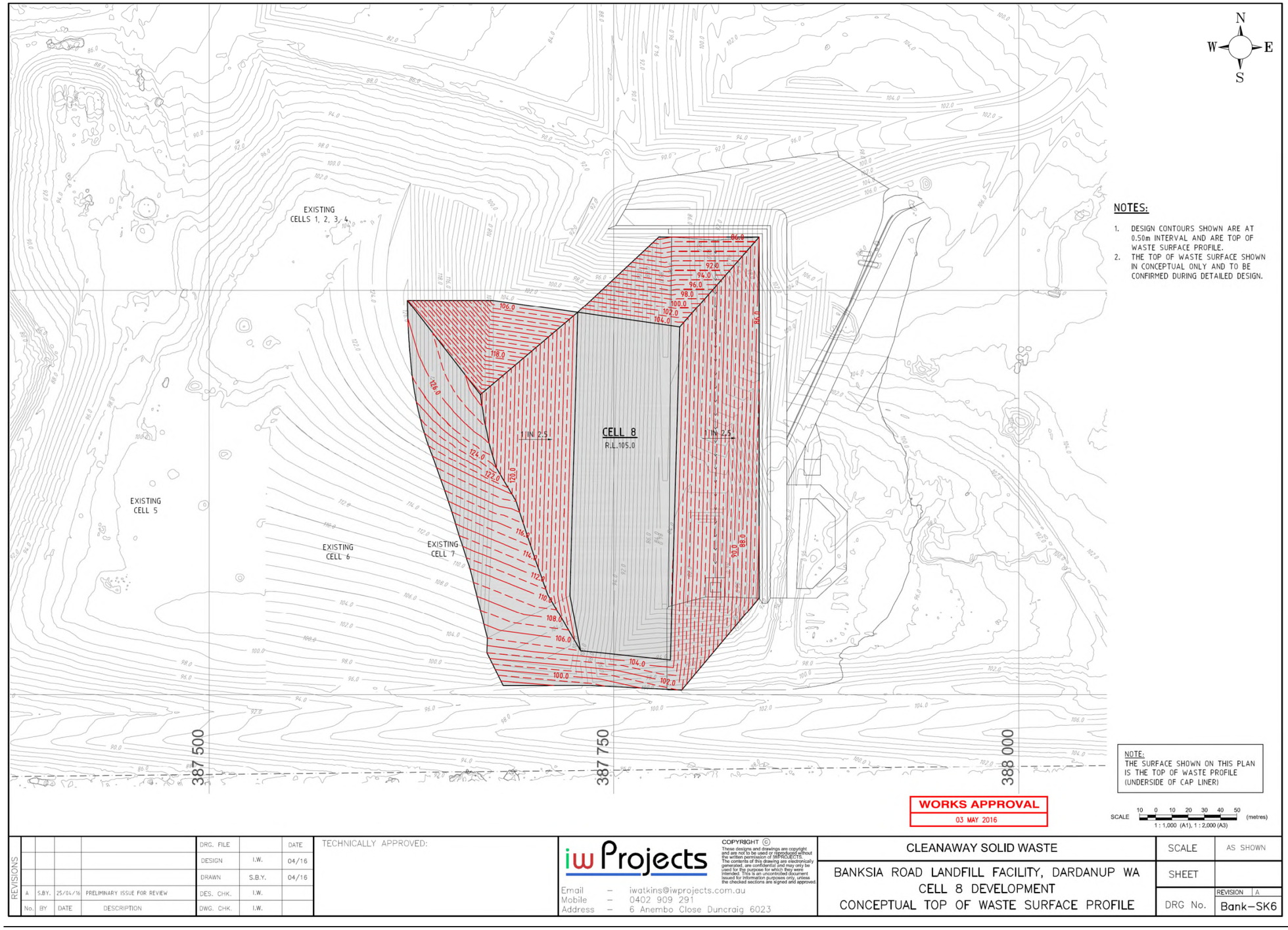
CLEANAWAY SOLID WASTE
BANKSIA ROAD LANDFILL FACILITY, DARDANUP WA
CELL 6 DEVELOPMENT
LANDFILL CELL 6 LAYOUT PLAN

SCALE AS SHOWN
SHEET
DRG No. Bank–009
REVISION B

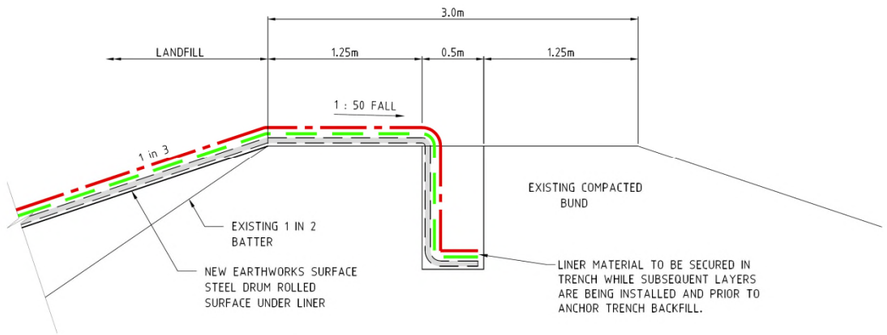
Plan 3: Plan of Cell 7 works
The construction details of cell 7 are shown below, heights are in mAHD.



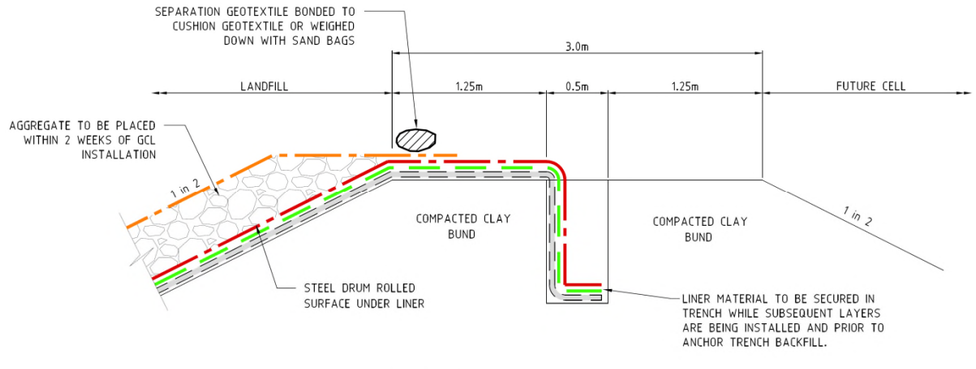
Plan 4: Plan of Cell 8 works
The construction details of cell 8 are shown below, heights are in mAHD.



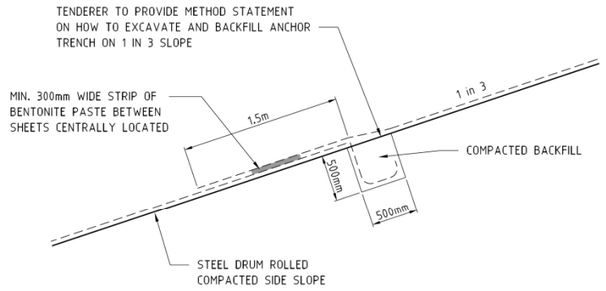
Plan 5: Plan of landfill cell 6, 7 and 8 general liner arrangements 1 of 2
The construction details of the liners for cells 6, 7 and 8 are shown below.



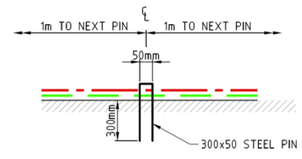
LANDFILL PERIMETER SOUTHERN BUND AND ANCHOR TRENCH DETAIL
NOT TO SCALE



LANDFILL INTERMEDIATE BUND AND ANCHOR TRENCH DETAIL
NOT TO SCALE



GCL ANCHOR TRENCH ON LANDFILL SIDE BATTER SLOPE
NOT TO SCALE



PINNING DETAIL
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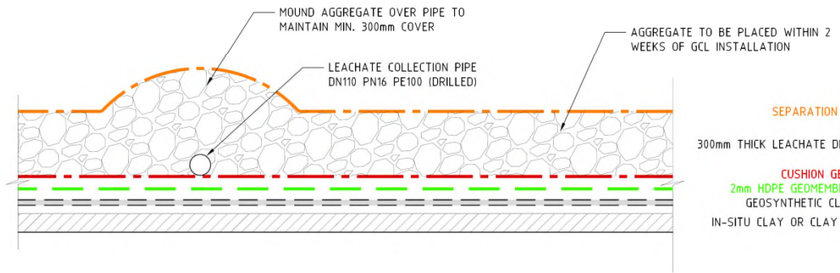
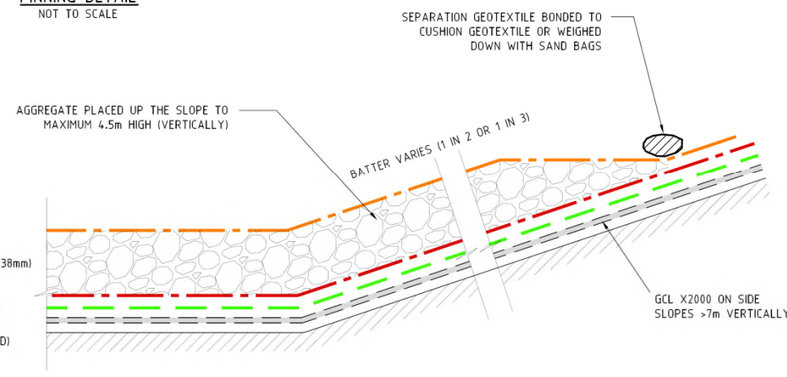


LANDFILL BASE LINER CONFIGURATION
NOT TO SCALE



LANDFILL SIDE LINER CONFIGURATION
NOT TO SCALE

NOTE:
FOR FURTHER MATERIAL SPECIFICATIONS REFER TO JOB SPECIFICATION.

WORKS APPROVAL
30 JUNE 2016

REVISIONS					DRG. FILE		DATE
					DESIGN	I.W.	04/16
	B	S.BY.	03/05/16	ISSUE FOR WORKS APPROVAL	DRAWN	S.B.Y.	04/16
	A	S.BY.	08/04/16	PRELIMINARY ISSUE FOR REVIEW	DES. CHK.	I.W.	
	No.	BY	DATE	DESCRIPTION	DWG. CHK.	I.W.	

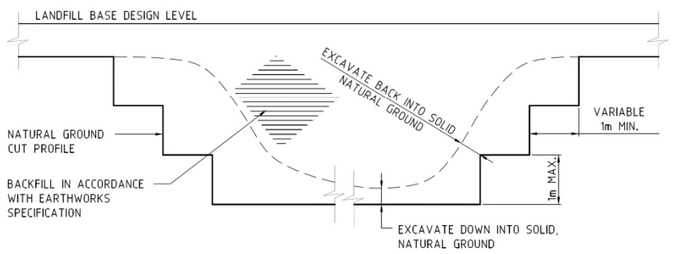
TECHNICALLY APPROVED:

iw Projects

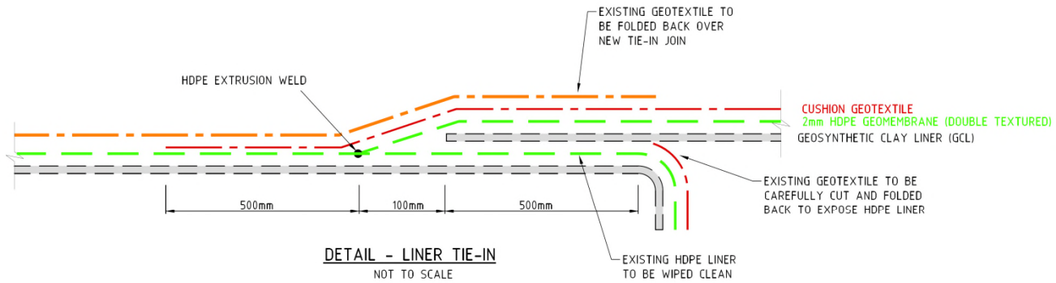
Email – iwatkins@iwprojects.com.au
Mobile – 0402 909 291
Address – 6 Anembo Close Duncraig 6023

CLEANAWAY SOLID WASTE	SCALE	AS SHOWN	
BANKSIA ROAD LANDFILL FACILITY, DARDANUP WA CELL 6 DEVELOPMENT LANDFILL LINER DETAILS – SHEET 1 OF 2	SHEET		
	DRG No.	REVISION	B
		Bank–011	

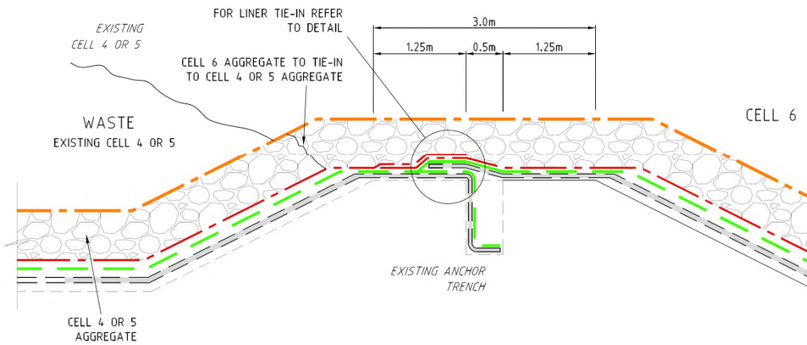
Plan 6: Plan of landfill cell 6, 7 and 8 general liner arrangements 2 of 2
The construction details of the liners for cells 6, 7 and 8 are shown below.



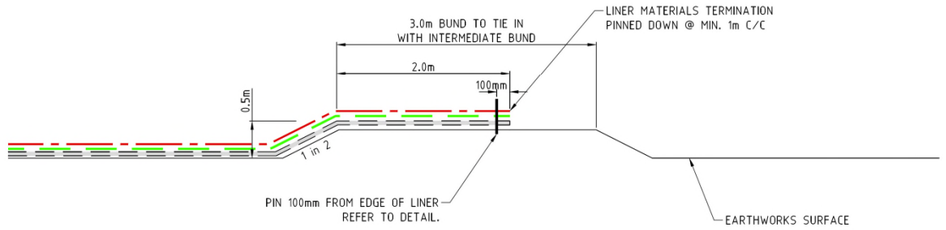
TYPICAL SURFACE WATER POND BACKFILL DETAIL
(CELL 7 AND 8 CONSTRUCTION ACTIVITY)
NOT TO SCALE



DETAIL - LINER TIE-IN
NOT TO SCALE

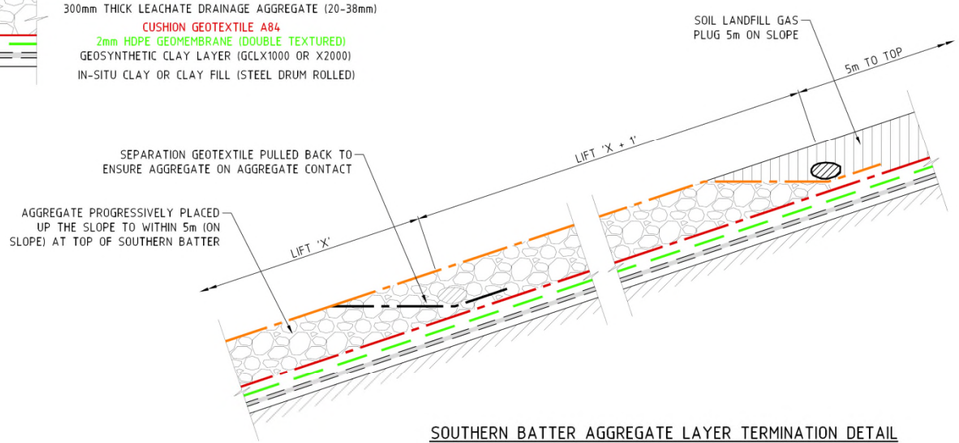


WESTERN PERIMETER BUND TIE-IN DETAIL
NOT TO SCALE



LINER DETAIL ON INTERNAL 1 IN 3 BATTER SLOPE
NOT TO SCALE

SEPARATION GEOTEXTILE A24
300mm THICK LEACHATE DRAINAGE AGGREGATE (20-38mm)
CUSHION GEOTEXTILE A84
2mm HDPE GEOMEMBRANE (DOUBLE TEXTURED)
GEOSYNTHETIC CLAY LAYER (GCLX1000 OR X2000)
IN-SITU CLAY OR CLAY FILL (STEEL DRUM ROLLED)



SOUTHERN BATTER AGGREGATE LAYER TERMINATION DETAIL
NOT TO SCALE

NOTE:
FOR FURTHER MATERIAL SPECIFICATIONS REFER TO JOB SPECIFICATION.

WORKS APPROVAL
30 JUNE 2016

REVISIONS					DRG. FILE		DATE
					DESIGN	I.W.	04/16
	B	S.BY.	03/05/16	ISSUE FOR WORKS APPROVAL	DRAWN	S.B.Y.	04/16
	A	S.BY.	08/04/16	PRELIMINARY ISSUE FOR REVIEW	DES. CHK.	I.W.	
	No.	BY	DATE	DESCRIPTION	DWG. CHK.	I.W.	

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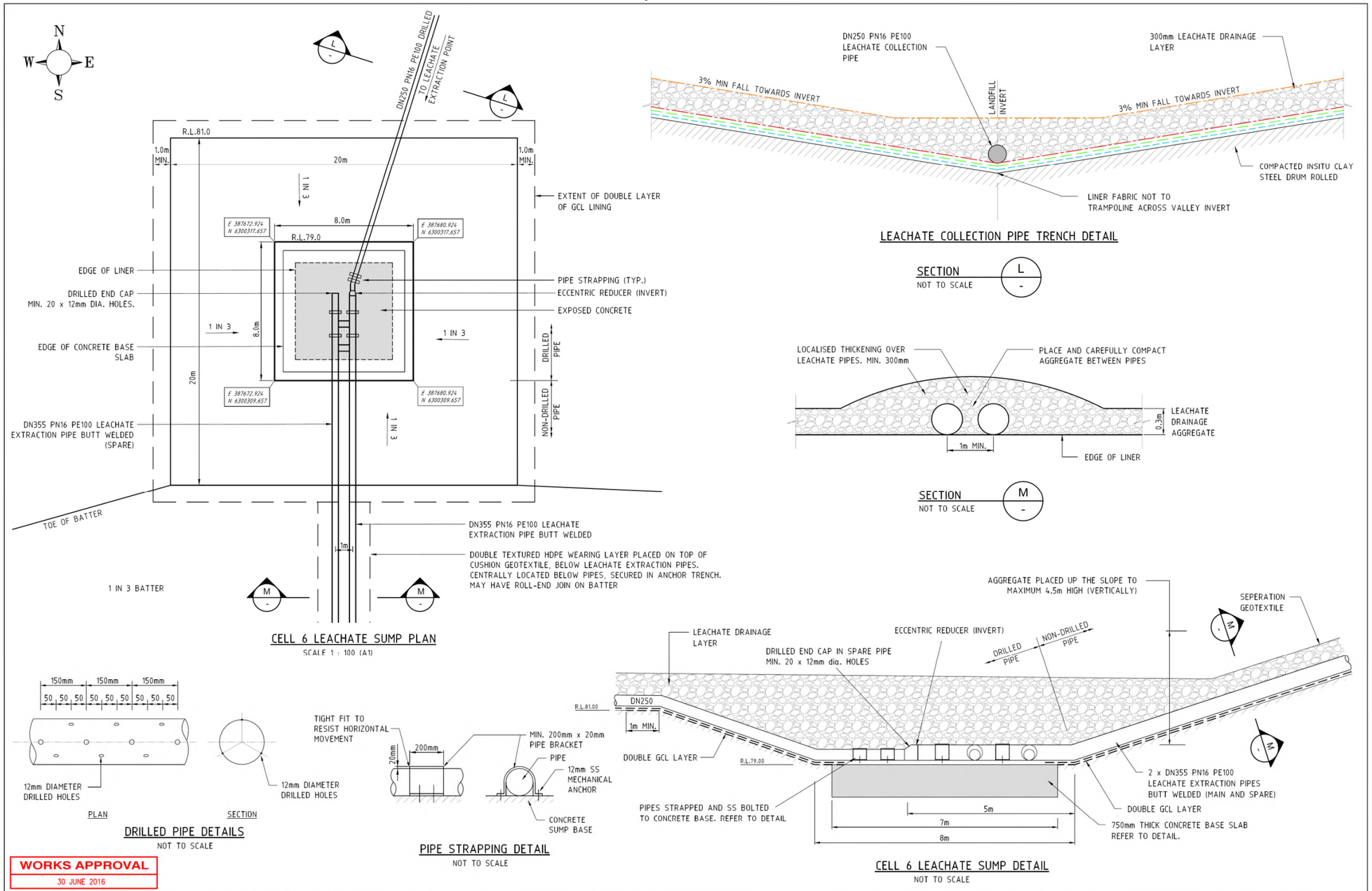
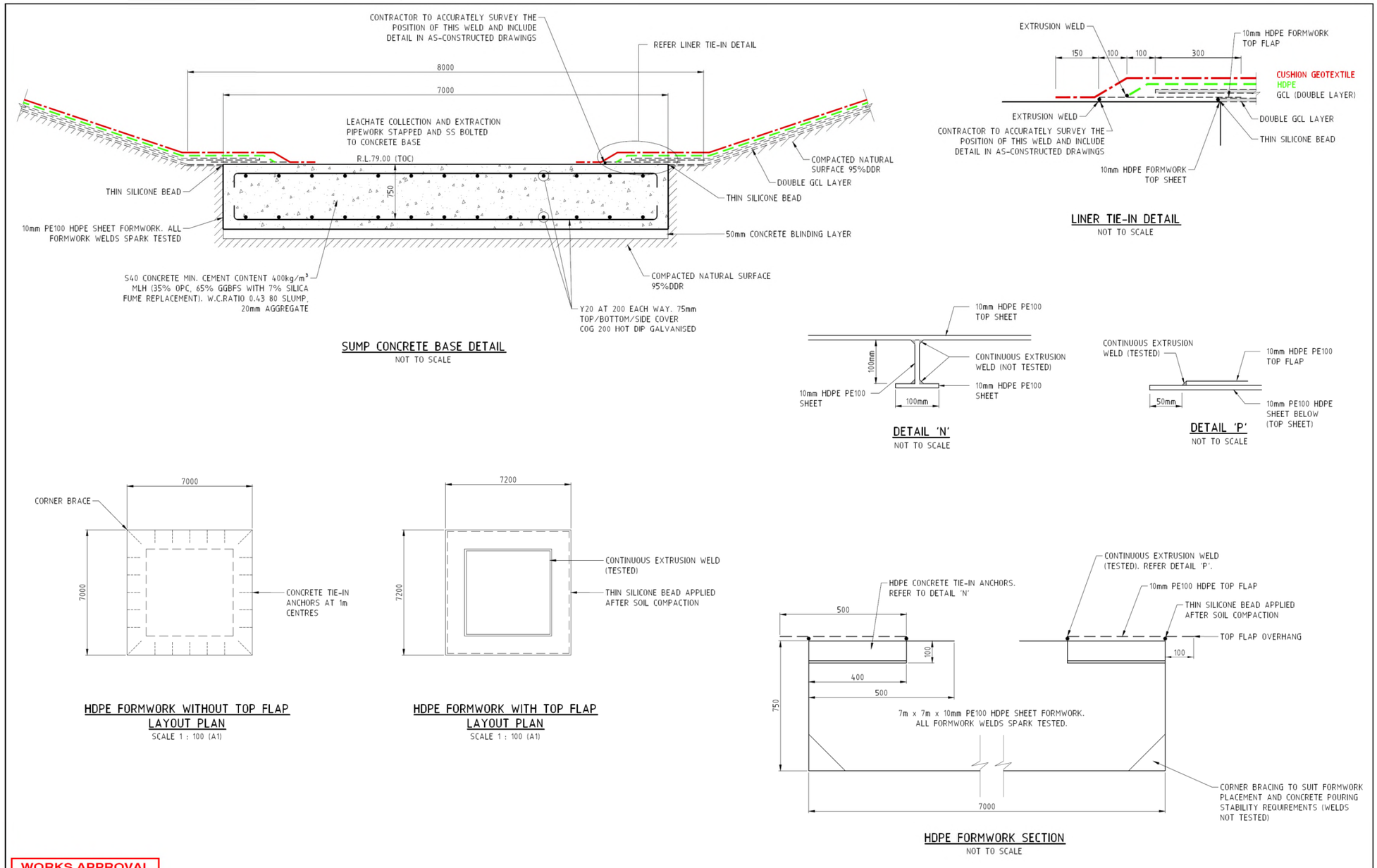
CLEANAWAY SOLID WASTE	SCALE: AS SHOWN
BANKSIA ROAD LANDFILL FACILITY, DARDANUP WA CELL 6 DEVELOPMENT LANDFILL LINER DETAILS – SHEET 2 OF 2	SHEET:
	DRG No.: Bank–012 REVISION B

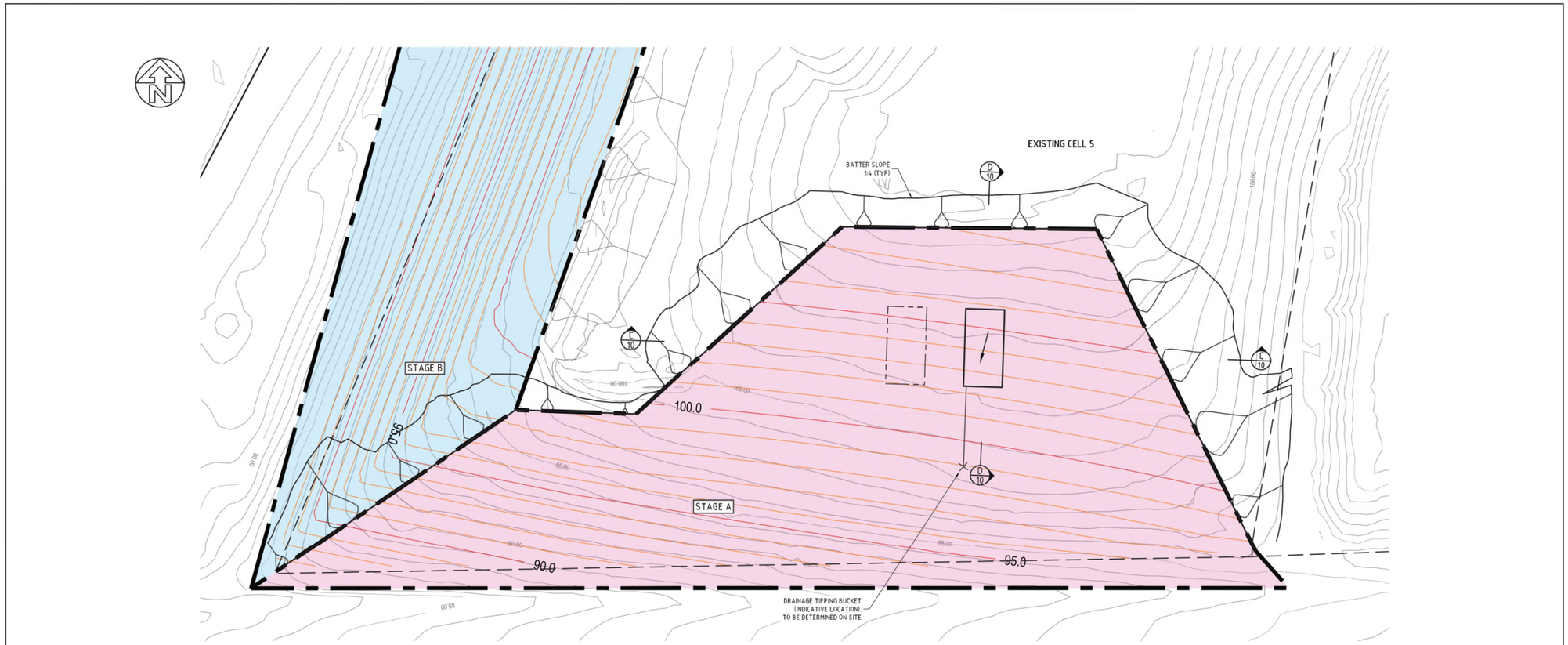
Plan 7: Plan of landfill cell 6, 7 and 8 general leachate collection and leachate sump arrangements
The construction details of the leachate collection infrastructure, leachate collection sumps and liners for cells 6, 7 and 8 are shown below.



Plan 8: Plan of landfill cell 6, 7 and 8 general leachate collection sump arrangements
The construction details of the leachate collection sumps and liners for cells 6, 7 and 8 are shown below.



Plan 9: Plan of landfill cell 5 phytocap location
The construction location for the phytocap trial on cell 5 is shown below, heights are in mAHD.



STAGE A - PHYTOCAP TRIAL AREA AND SOUTHERN BATTER
SCALE 1:500 @ A1

LEGEND

- PROPOSED LYSIMETER PAN LOCATION (WATER FLOW DIRECTION SHOWN). REFER SHEET 06 FOR DETAILS.
- PROPOSED VEGETATION PAD LOCATION. REFER SHEET 06 FOR DETAILS.
- CELL BOUNDARY
- EXTENT OF PROPOSED STAGE A CAPPED AREA
- EXTENT OF PROPOSED STAGE B CAPPED AREA
- 76.0 EXISTING SURVEY CONTOURS (REF 'x20155261_BANK_Survey Contours JUN 2016.dwg')
- 76.0 TOP OF CAP CONTOURS (REF 'x20155261_Top of Cap Contours.dwg')

10 0 10 20 30 40 Metres
SCALE 1:500

REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	DWGCHK.	VERIFIED	APPROVED
2	ISSUED FOR DER APPROVAL	22.08.16	M.S./A.W.	P.Sm.			
1	ISSUED FOR COMMENT		M.S./A.W.	P.Sm.			

NOTES:

100mm ON ORIGINAL DRAWING - DO NOT SCALE DRAWING

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- BUILDING SURVEYING
- SPATIAL INFORMATION
- ELECTRICAL, MECHANICAL AND AUTOMOTIVE

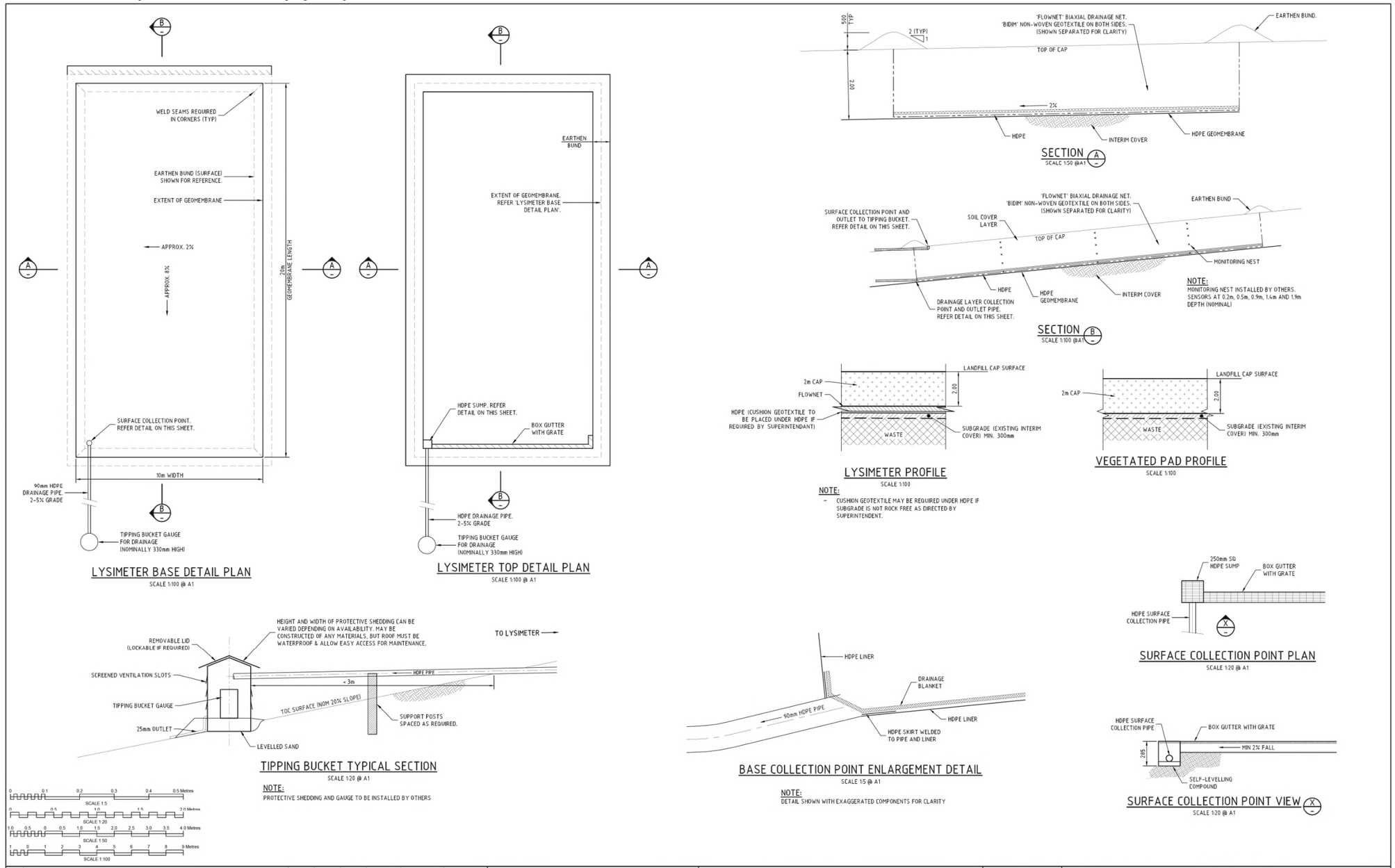
SHEET SIZE A1
SCALE: 1:500
ORIGINAL SURVEY BY AUSTRALIAN UAV
SURVEY DATE: 17.06.16
COORDS & DATUM COORDINATES TO (GDA94) ALL LEVELS TO Mahd

CLEANAWAY WASTE MANAGEMENT LTD.
BANKSIA ROAD LANDFILL CAPPING
STAGES A & B CAPPING DESIGN
CONSTRUCTION PLAN - STAGE A

FILENAME:	JOB NUMBER	SHEET NUMBER	REVISION
20155261_BANKSIA CAPPING PLAN.DWG	20155261	03	2

C:\USERS\BRADLEY.KOLSTER\APPDATA\LOCAL\TEMP\ACPUBLISH_13764\20155261_BANKSIA CAPPING PLAN.DWG | 03 STAGE A | 29-Aug-2016 - 10:43am

Plan 10: Plan of landfill cell 5 phytocap arrangements
The construction specifications for the phytocap trial on cell 5 are shown below.



REV	AMENDMENT / REASON FOR ISSUE	DATE	DES.	DWN.	DWGCHK.	VERIFIED	APPROVED
2	ISSUED FOR DER APPROVAL	22.08.16	M.S./A.W.	P.Sm.			
1	ISSUED FOR COMMENT		M.S./A.W.	P.Sm.			

NOTES:

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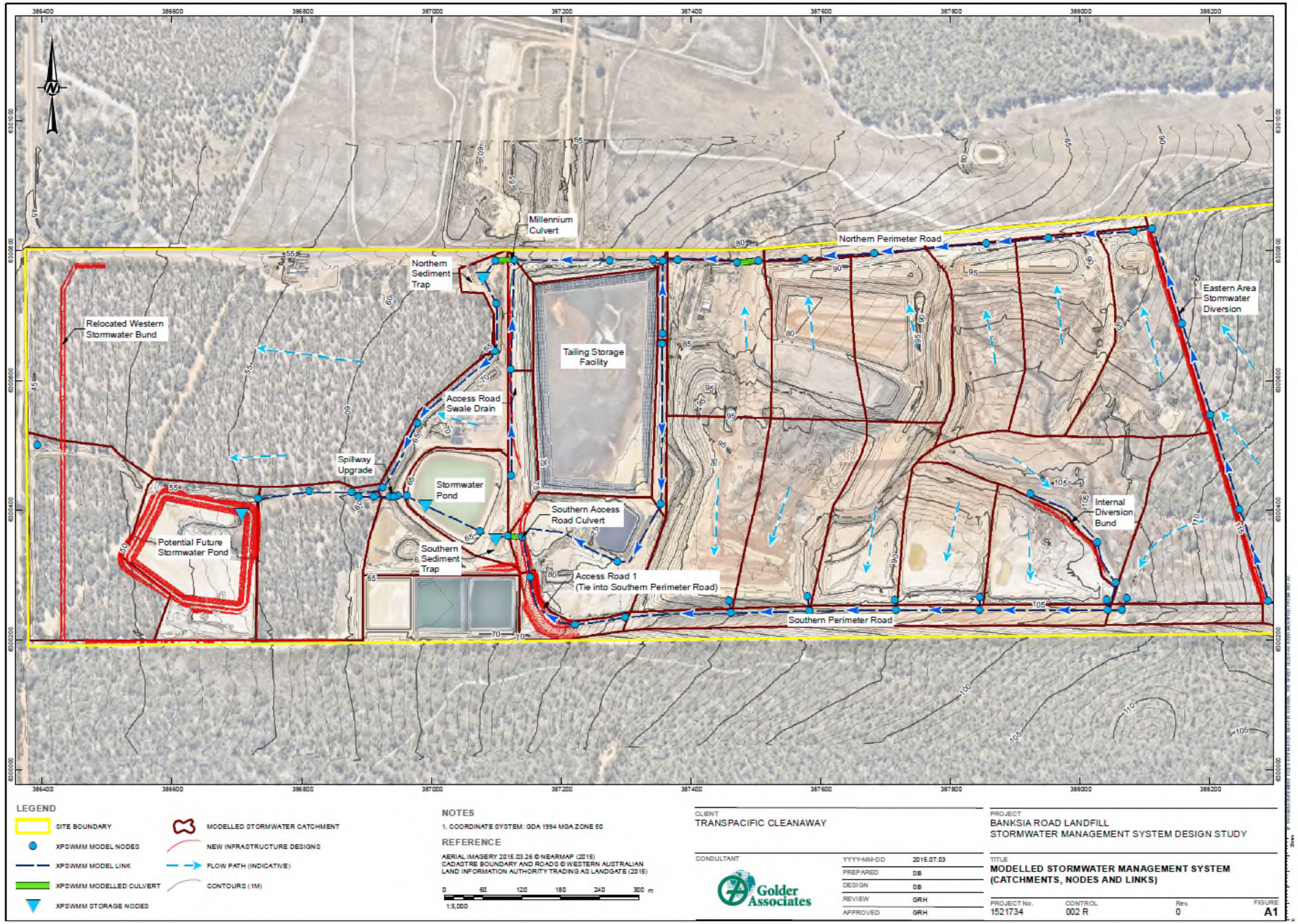
- BUILDING SURVEYING
- SPATIAL INFORMATION
- ELECTRICAL, MECHANICAL AND AUTOMOTIVE

SHEET SIZE A1	CLEANAWAY WASTE MANAGEMENT LTD.
SCALE: AS SHOWN	BANKSIA ROAD LANDFILL CAPPING
ORIGINAL SURVEY BY AUSTRALIAN UAV	STAGES A & B CAPPING DESIGN
SURVEY DATE: 17.06.16	LYSIMETER DETAILS & TYPICAL SECTIONS
COORDS & DATUM COORDINATES TO (GDA94) ALL LEVELS TO Mahd	FILENAME: 20155261_BANKSIA CAPPING PLAN.DWG

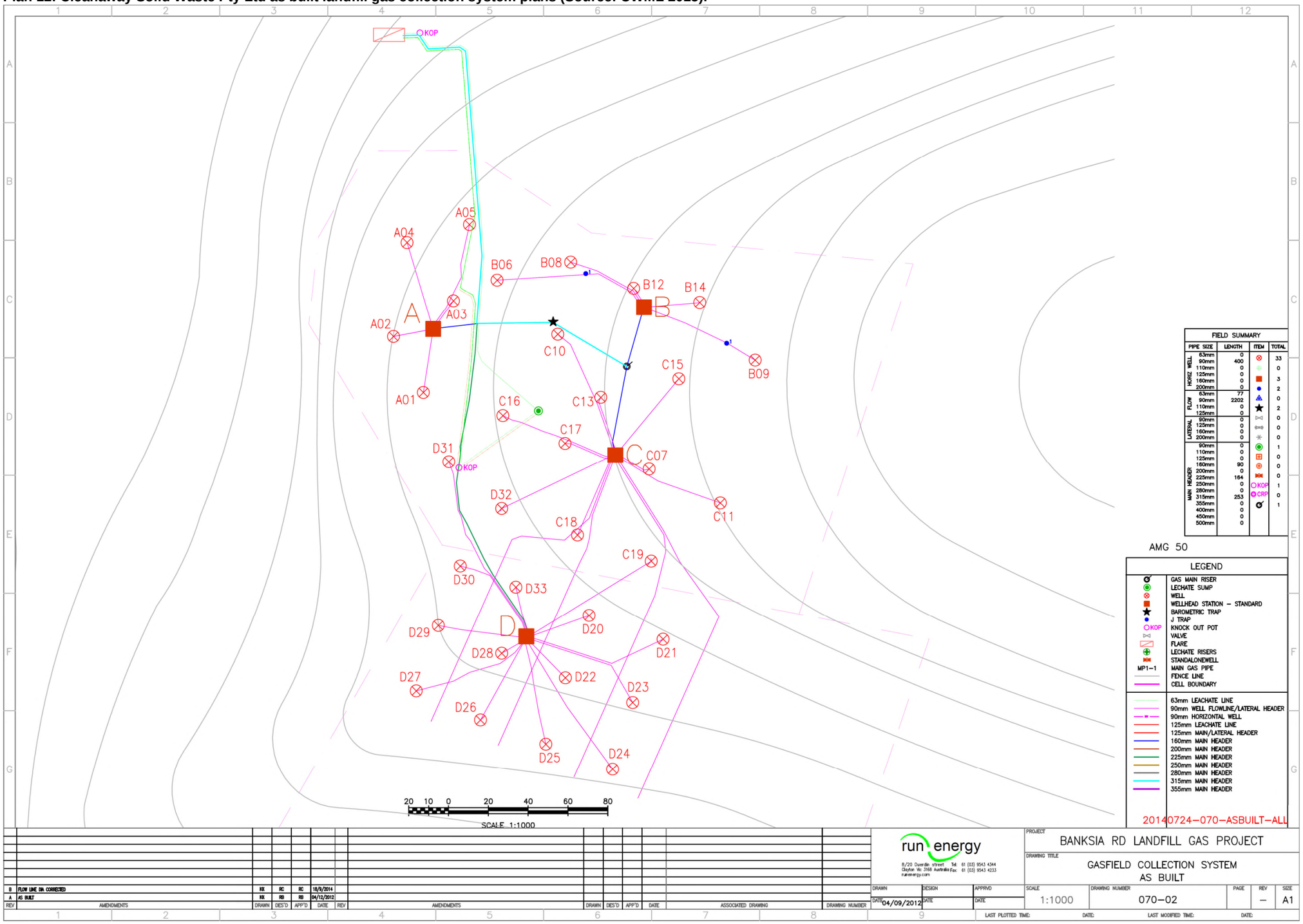
JOB NUMBER	SHEET NUMBER	REVISION
20155261	06	2

C:\USERS\BRADLEY KOLSTER\APPDATA\LOCAL\TEMP\ACPUBLISH_13764\20155261_BANKSIA CAPPING PLAN.DWG | 06 LYSIMETER DETAILS | 29-Aug-2016 - 10:44 am

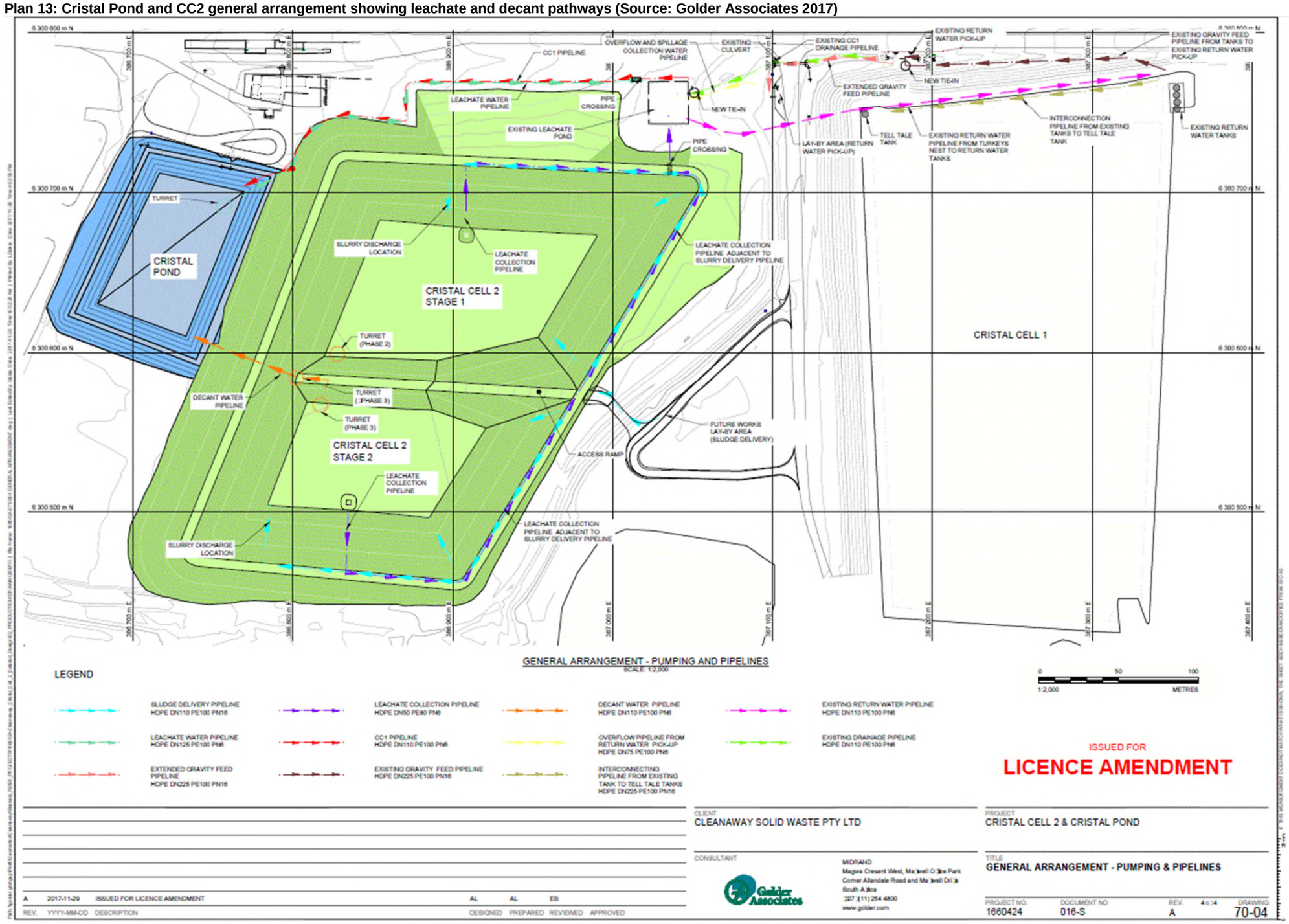
Plan 11: Cleanaway Solid Waste Pty Ltd Banksia Road Landfill proposed stormwater management (Source: Golder and Associates 2015a).



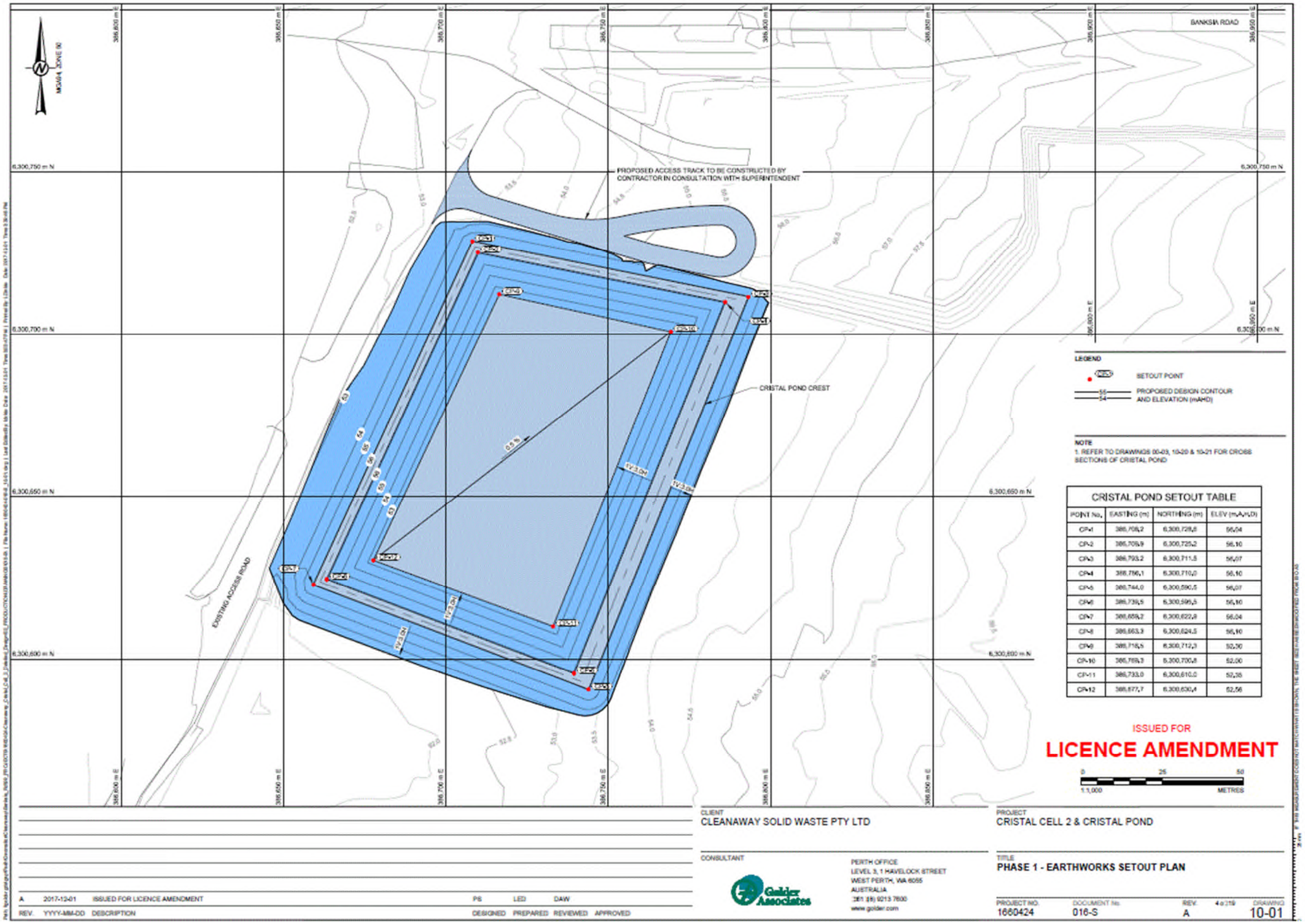
Plan 12: Cleanaway Solid Waste Pty Ltd as built landfill gas collection system plans (Source: CWML 2015).



Plan 13: Cristal Pond and CC2 general arrangement showing leachate and decant pathways (Source: Golder Associates 2017)

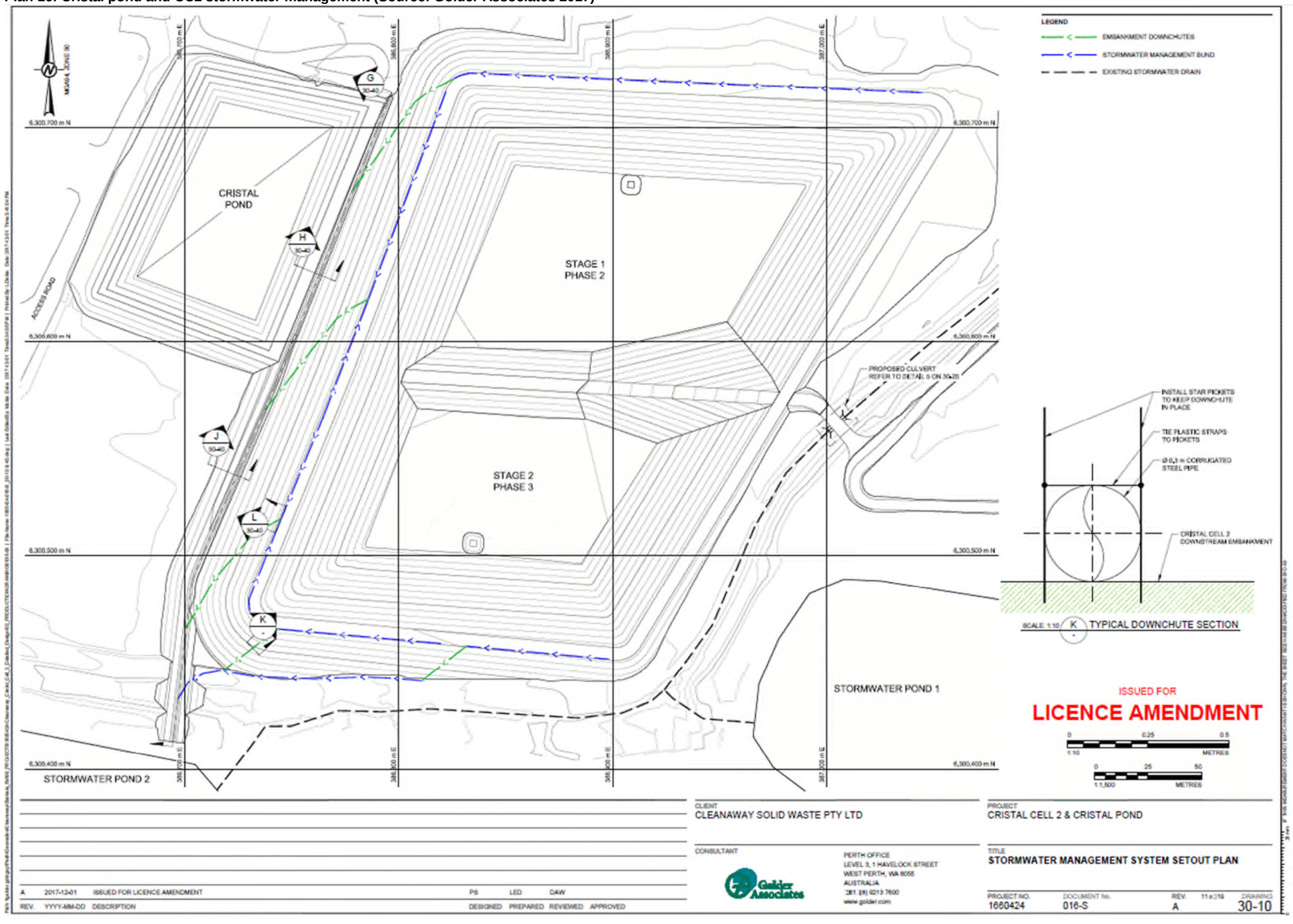


Plan 14: Cristal Pond earthworks plan (Source: Golder Associates 2017)

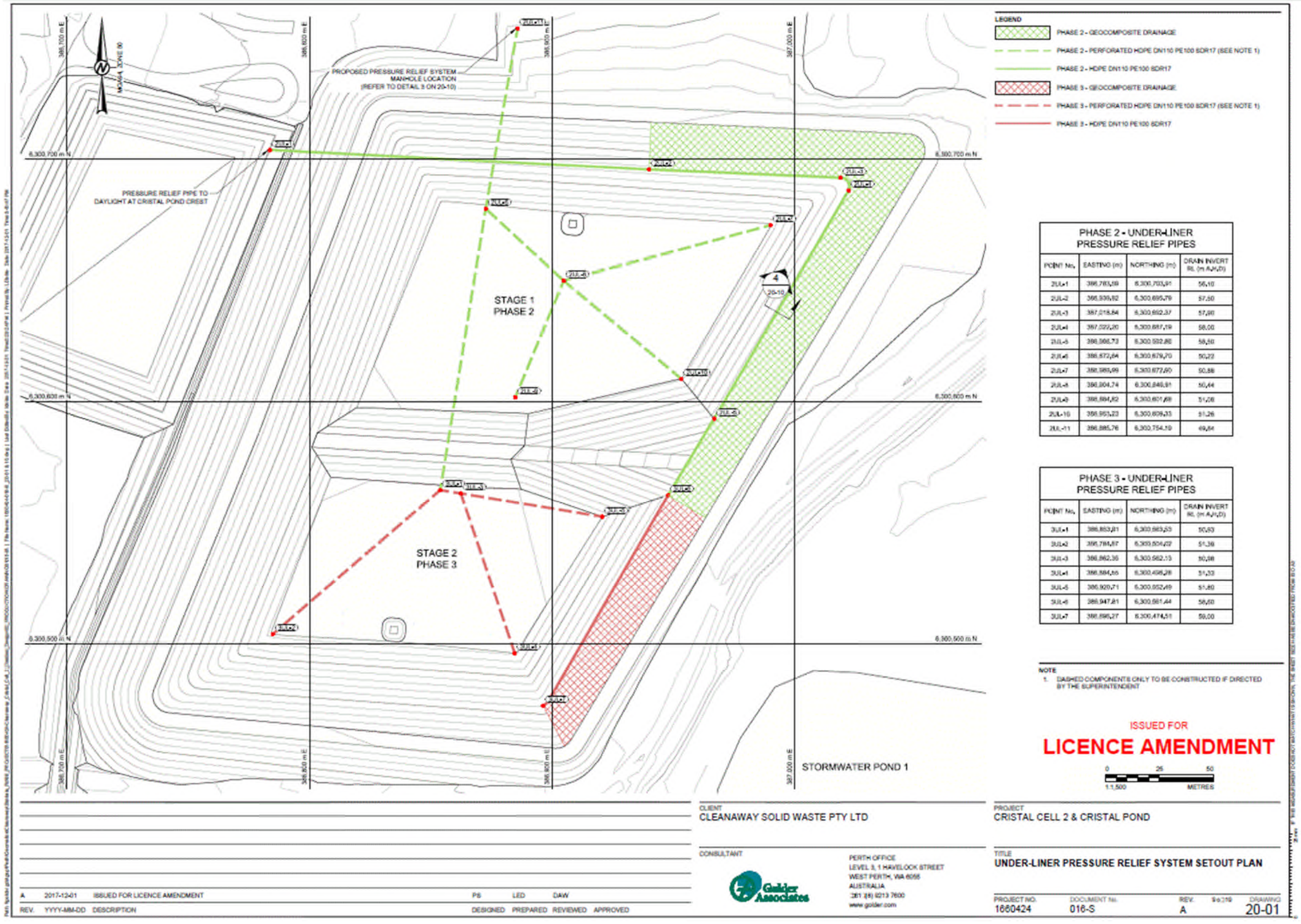


Plan 15: CC2 Stage 1 and Stage 2 earthworks plan (Source: Golder Associates 2017)

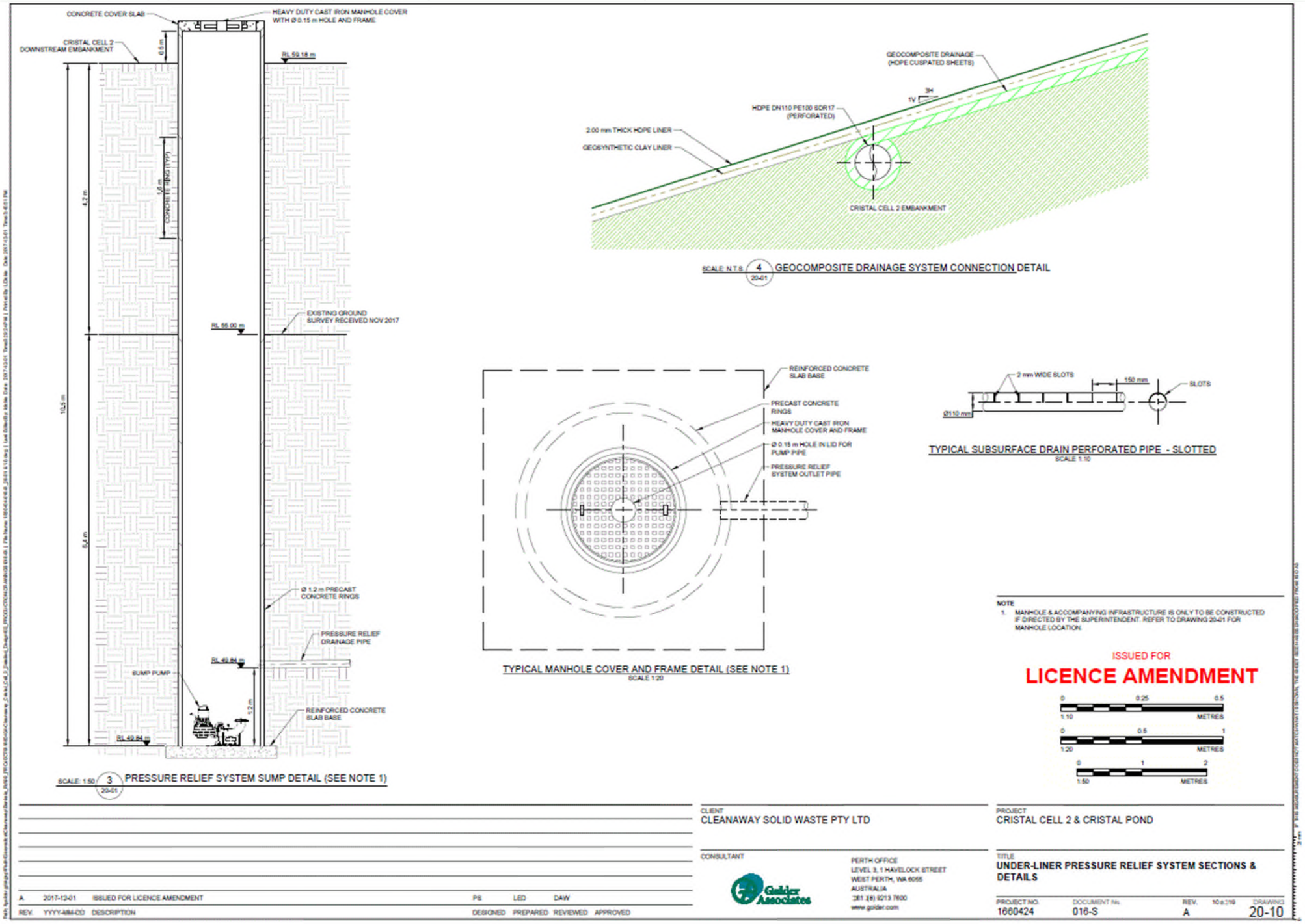
Plan 16: Cristal pond and CC2 stormwater management (Source: Golder Associates 2017)



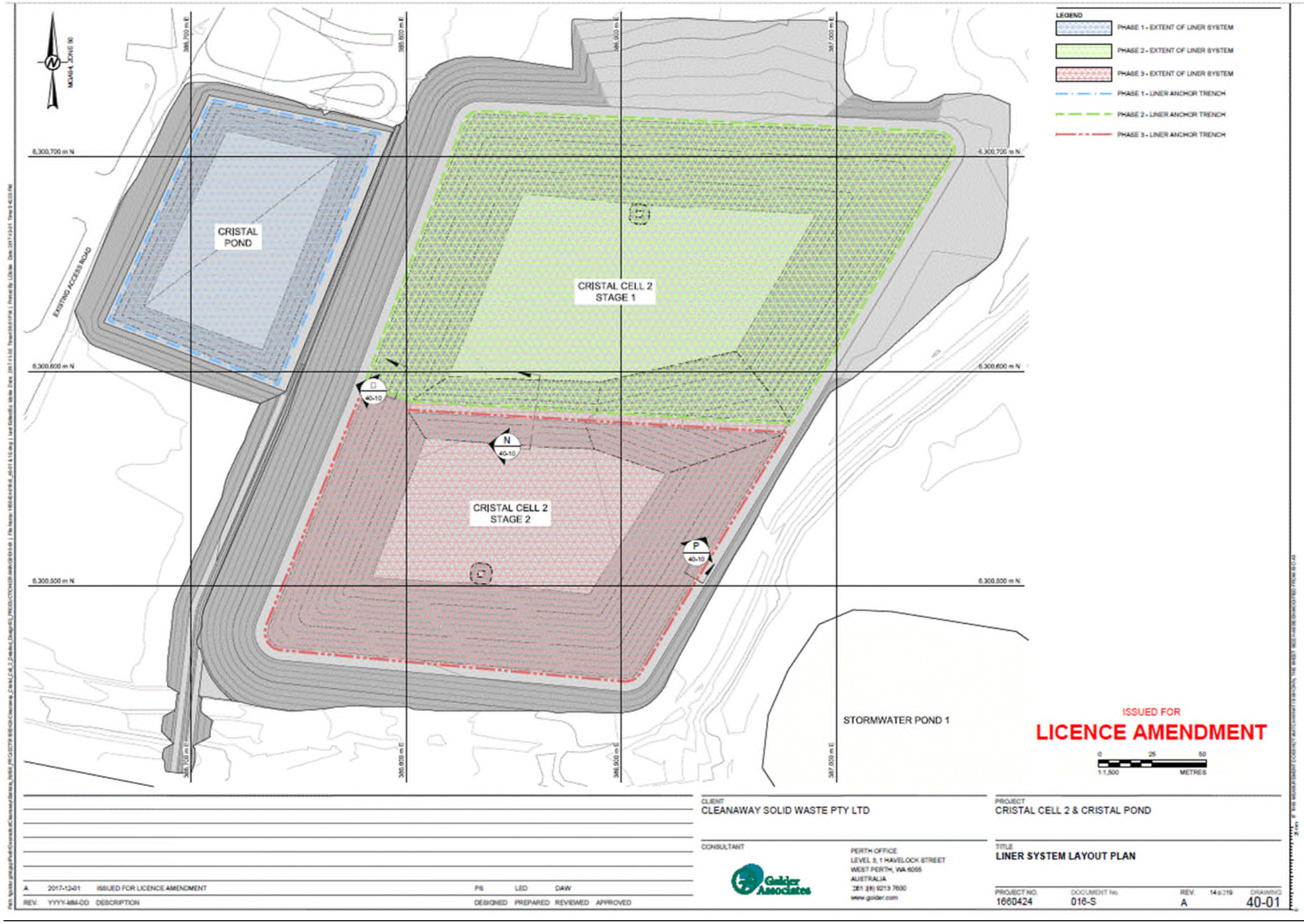
Plan 17: CC2 under-liner pressure relief system arrangement (Source: Golder Associates 2017)



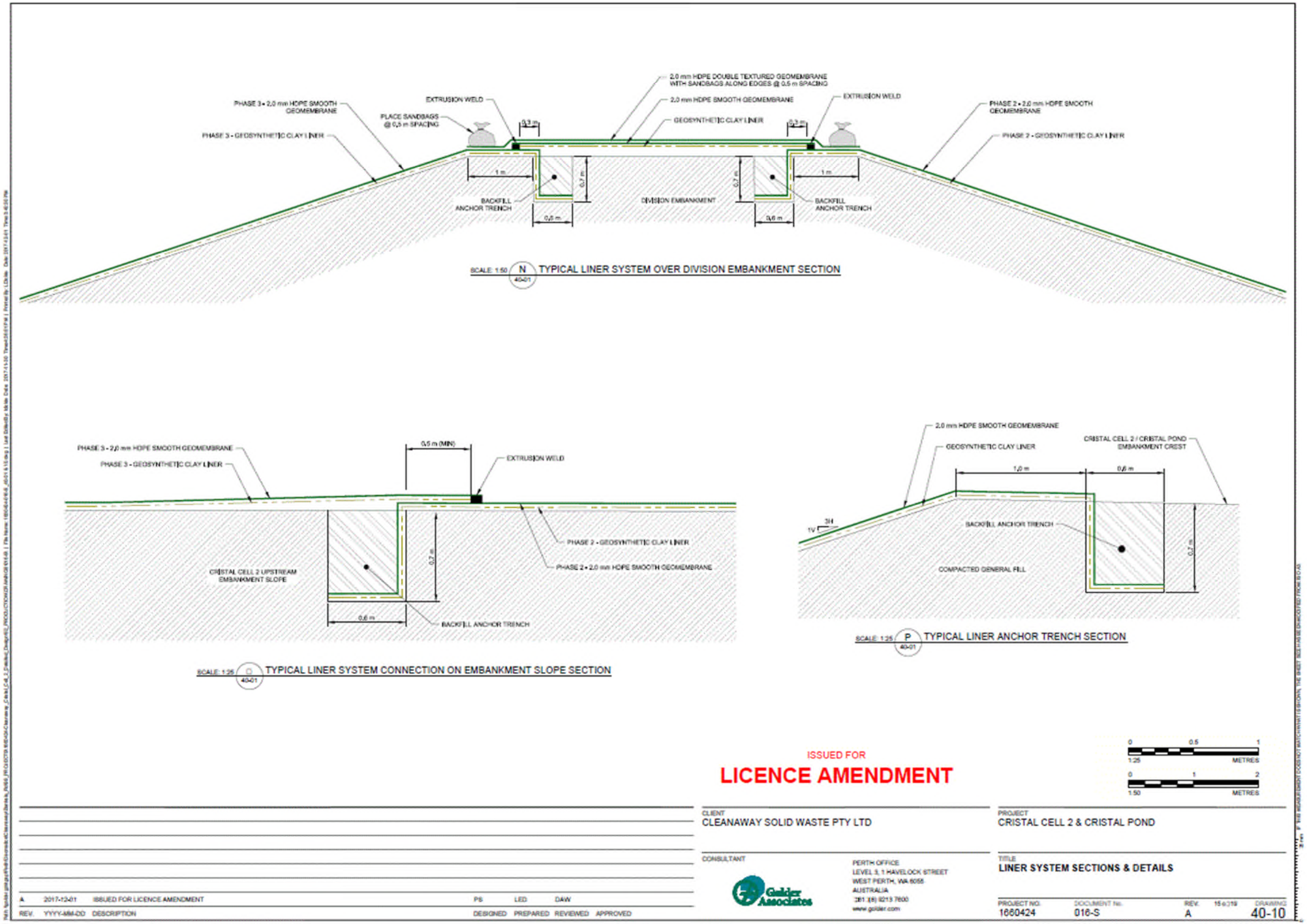
Plan 18: CC2 under-liner pressure relief system pipework detail (Source: Golder Associates 2017)



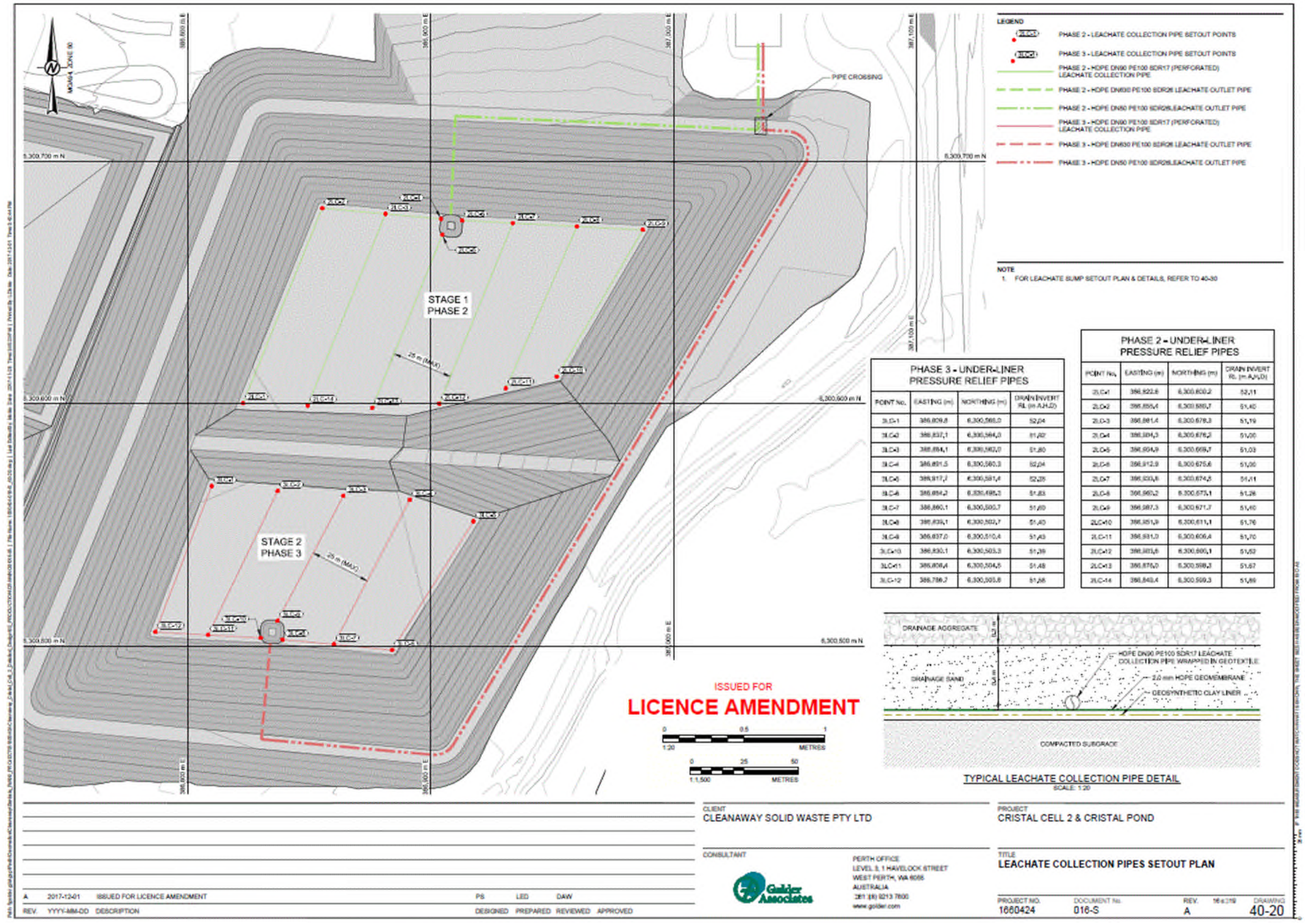
Plan 19: Cristal pond and CC2 liner system extents (Source: Golder Associates 2017)



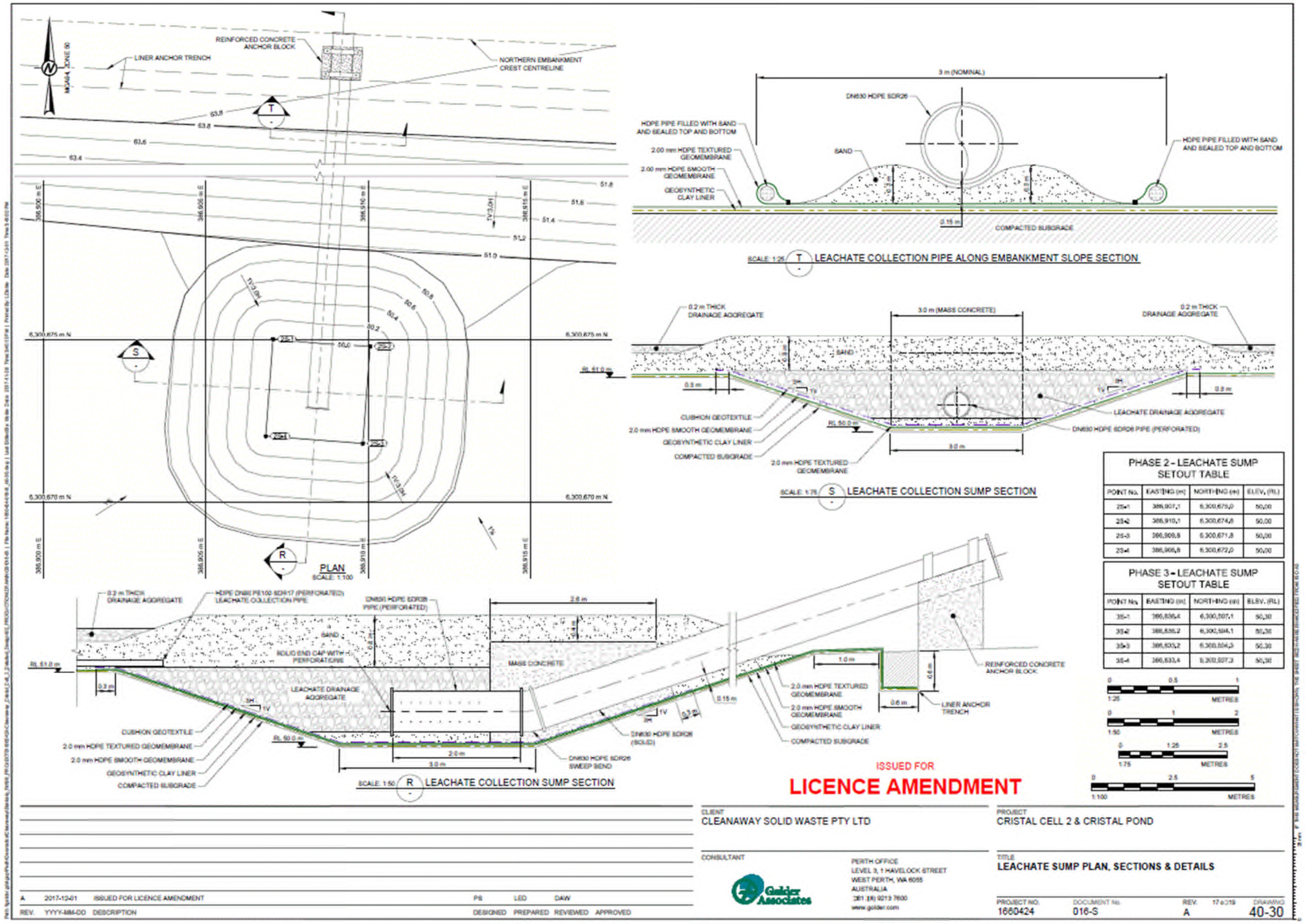
Plan 20: Cristal pond and CC2 liner system section detail (Source: Golder Associates 2017)



Plan 21: CC2 over-liner leachate collection system arrangement (Source: Golder Associates 2017)



Plan 22: CC2 over-liner leachate collection system section detail (Source: Golder Associates 2017)



Schedule 3: Landfill cell liner construction specifications and quality assurance commitments

Table 1: GCL material specifications (IW Projects 2016b, page 25 and 26).

Property	Test	Frequency	Value	Value
			Landfill Base	Side Slopes > 7m Vertically
Montmorillonite content	XRD (X-ray diffraction) Quantitative Mineralogy Analysis	50 tonnes	> 70 wt%	> 70 wt%
Carbonate content (*1*)		50 tonnes	1-2 wt%	1-2 wt%
Bentonite form		50 tonnes	Natural Na-bentonite or >80 wt% Sodium as activated bentonite	Natural Na-bentonite or >80 wt% Sodium as activated bentonite
Particle size	AS 1289-3.6.2	50 tonnes	Powdered (e.g. 80% passing 75 micron sieve) or Granulated (e.g. < 1% passing 75 micron)	
Cation exchange capacity	(Methylene Blue Method)	50 tonnes	≥ 70 meq/100 g (or cmol/kg)	≥ 70 meq/100 g (or cmol/kg)
Free Swell (bentonite) (min. ave.)	ASTM D5890	50 tonnes	≥ 24 mL/2g	≥ 24 mL/2g
Moisture Content (bentonite) (min. ave.) (*2*)	ASTM D5993	2,500 m^2	≤ 25% at Manufacture ≤ 35% Site Samples	≤ 25% at Manufacture ≤ 35% Site Samples
Fluid Loss (bentonite) (min. ave.) (*2*)	ASTM D5891	50 tonnes	18 ml max.	18 ml max.
Top Geotextile Mass (min. ave.) (*3*)	ASTM D5261	20,000 m^2	≥ 240 g/m^2 Non-woven	≥ 240 g/m^2 Non-woven
Mass of GCL (min. ave.) (*4*)	ASTM D5993	2,500 m^2	≥ 4,350 g/m^2	≥ 4,290 g/m^2
Mass of Bentonite (min. ave.) (*4*)	ASTM D5993	2,500 m^2	≥ 4,000 g/m^2	≥ 3,700 g/m^2
Bottom Geotextile Mass (min. ave.)	ASTM D5261	20,000 m^2	≥ 110 g/m^2 Woven	≥ 350 g/m^2 Woven/Non-woven
Composite layer Thickness (Dry) (min. ave.)	ASTM D1777	2,500 m^2	≥ 6 mm	≥ 6 mm
Elongation (MD) (min. ave.)	ASTM D4632	20,000 m^2	≥ 10%	≥ 10%
Tensile Strength (min. ave.)	ASTM D6768	20,000 m^2	≥ 8 kN/m	≥ 12 kN/m
Peel Strength (min. ave.)	ASTM D6496	2,500 m^2	360 N/m	360 N/m
Permeability (max. ave.) (*2*)	ASTM D5887	25,000 m^2	≤ 2.8 x 10^{-11} m/s	≤ 3.0 x 10^{-11} m/s

Table 2: GCL material specification construction quality assurance testing (IW Projects 2016b, page 27).

Item	Property	Standard	Frequency
Conformance testing (sampled at the point of manufacture or on site, as determined by the Superintendent)	Thickness (dry)	ASTM D1777	1 sample every 3rd roll
	Mass per unit area of bentonite component of GCL	ASTM D5993	1 sample per 2,500 m^2
	Mass per unit area of GCL	ASTM D5993	1 sample per 1,000 m^2
	Montmorillonite content	XRD (X-ray diffraction) Quantitative Mineralogy Analysis	1 sample per 10,000 m^2
	Cation exchange capacity of bentonite	Methylene blue method	1 sample per 1,500 m^2
	Mass/unit length of bentonite in overlaps	Visual inspection and weighing	1 sample every 3rd roll
	Moisture content of bentonite	AS 1289.2.1.1	1 sample per 2,500 m^2
	Swell index/free swell of clay	ASTM D5890	1 sample per 1,500 m^2
	Water absorption	ASTM D5891	1 sample per 1,500 m^2
	Peel strength (for needle-punched products only)	ASTM D6496	*1 sample per roll for side slope and 1 sample per 1,000 m^2 for flatter areas
	Tensile strength	ASTM D4595	1 sample per 10,000 m^2
	Index flux	ASTM 5887	1 sample per 10,000 m^2
Visual inspection of GCL	Colour, thickness, needle punching, presence of needles or broken needles, and sewing density or other faults in the material.		Every roll
Thickness of GCL (i.e. uniformity of bentonite distribution) and apparent variations in the as placed moisture distribution.	On-site		Each roll during placement. If thickness appears to be variable a check of the variability of the mass per unit area shall be conducted

Table 3: HDPE geomembrane material specifications (IW Projects 2016b, page 48).

Property	Test Method	HDPE Test Value – 2.00mm Double Textured	Testing Frequency (minimum)
Thickness (min. ave.) • Lowest individual for 8 out of 10 values • Lowest individual for any of the 10 values	D 5994	nom. (-5%) - 10% - 15%	Per roll
Asperity Height (min. ave.) (*1*)	D 7466	0.40 mm	Every 2nd roll (*2*)
Density (min. ave.);	D 1505/D 792	0.940 g/cc	90,000 kg
Tensile Properties (min. ave.) (*3*) • Yield strength • Break strength • Yield elongation • Break elongation	D 6693 Type IV	 29 kN/m 21 kN/m 12% 100%	9,000 kg
Tear Resistance (min. ave.)	D 1004	249 N	20,000 kg
Puncture Resistance (min. ave.)	D 4833	534 N	20,000 kg
Carbon Black Content - Particle size ~20 nm (range)	D 4218 (*5*)	2.0-3.0%	9.000 kg
Carbon Black Dispersion	D 5596	note (*6*)	20,000 kg
Stress Crack Resistance (*4*)	D 5397 (App.)	500 hr.	Per GRI GM10
Oxidative Induction Time (OIT) (min. ave.) (7) (a) Standard OIT, **and** (b) High Pressure OIT	 D 3895 D 5885	 100 min. 400 min.	90,000 kg
Oven Aging at 85°C (*7*) (a) Standard OIT (min. ave.) - % retained after 90 days, **and** (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D 5885	 55% 80%	Per each formulation
UV Resistance (*8*) (a) Standard OIT (min. ave.) or (b) High Pressure OIT (min. ave.) - % retained after 1,600 hrs (*10*)	D 7238 D 3895 D 5885	 N.R. (*9*) 50%	Per each formulation

Table 4: HDPE geomembrane minimum weld properties (IW Projects 2016b, page 50).

Property	Test Method	2.00 mm
Peel strength (fusion & ext.), kN/m	ASTM D 6392	18.0
Shear strength (fusion & ext.), kN/m	ASTM D 6392	27.6

Table 5: HDPE geomembrane material specification construction quality assurance testing (IW Projects 2016b, page 50 and 51).

Item	Property	Standard	Frequency
Conformance testing (sampled at the point of manufacture or on Site, as determined by the Superintendent)	Thickness	ASTM D5994	Each roll
	Density	ASTM D1505, ASTM D792	One sample per 5,000 m^2, or every five rolls delivered to Site whichever is the greatest number of tests
	Tensile properties (yield and break stress, yield and break elongation)	ASTM D6693 type IV	
	Puncture resistance	ASTM D4833	
	Tear resistance	ASTM D1004	
	Carbon black content	ASTM D1603	
	Carbon black dispersion	ASTM D5596	
	Stress crack resistance	ASTM D5397	One sample every 10,000 m^2, or resin type or manufacturing run
	Oxidative induction time	ASTM D3895, ASTM D5885	
Start-up test weld	Welding equipment		Checked daily at start of Works, and whenever the welding equipment is shut-off for more than one hour. Also after significant changes in weather conditions
	Weld conditions		Test weld strips will be required whenever personnel or equipment are changed and/or wide temperature fluctuations are experienced. Minimum 1.5 m continuous seam
Destructive weld testing	On-Site, hand tensiometer in peel and shear	ASTM D6392	Every weld
	Off-Site — weld seam strength in peel and shear	ASTM D6392	Every 150 m (if fusion weld), every 120 m (if extrusion weld)
Non-destructive weld testing		Air pressure test, ASTM D5820 Vacuum box test, ASTM D5641	All seams over full length
Visual inspection of geomembrane	Tears, punctures, abrasions, cracks, indentations, thin spots, or other faults in the material.		Every roll
Thickness of geomembrane	On-Site		Five per 100 m, 20 m apart, taken at the edge of the sheet

Table 6: Geotextile material specifications (IW Projects 2016b, page 54).

Geotextile Application	Parameter	Specifications	Test Method & Frequency
Geotextile Cushion Layer Geofabrics supply, A84	Wide Strip Tensile Strength (MD/XMD) (min. ave.)	≥ 52.0/52.0 kN/m	AS 3706-2 1 sample/5,000 m^2
	Grab Tensile Strength (MD/XMD) (min. ave.)	≥ 4,000/4,000 N	AS 3706-2 1 sample/5,000 m^2
	Trapezoidal Tear Strength (MD/XMD) (min. ave.)	≥ 1,200/1,200 N	AS 3706-3 1 sample/5,000 m^2
	CBR Burst Strength (min. ave.)	≥ 9,000 N	AS 3706-4 1 sample/5,000 m^2
Geotextile Separation Layer Geofabrics supply, A24	Wide Strip Tensile Strength (MD/XMD) (min. ave.)	≥ 14.0/14.0 kN/m	AS 3706-2 1 sample/5,000 m^2
	Grab Tensile Strength (MD/XMD) (min. ave.)	≥ 850/850 N	AS 3706-2 1 sample/5,000 m^2
	Trapezoidal Tear Strength (MD/XMD) (min. ave.)	≥ 345/345 N	AS3706-3 1 sample/5,000 m^2
	CBR Burst Strength (min. ave.)	≥ 2,500 N	AS 3706-4 1 sample/5,000 m^2

Table 7: Geotextile material specifications construction quality assurance testing (IW Projects 2016b, page 54).

Item	Property	Standard	Frequency
Conformance testing (sampled at the point of manufacture or on Site, as determined by the Superintendent)	Wide Strip Tensile Strength	AS 3706–2	1 sample per 5,000 m^2
	Grab Tensile Strength	AS 3706–2	1 sample per 5,000 m^2
	Trapezoidal Tear Strength	AS 3706–3	1 sample per 5,000 m^2
	CBR Burst Strength	AS 3706–4	1 sample per 5,000 m^2
Destructive tests	Tensile tests for joints.	AS 3706–6	As required.
Visual inspection of geotextile	Colour, thickness, tears, holes, punctures, needle-punching, presence of needles or broken needles, and other faults in the material.		Each roll during placement.

Schedule 4: Reporting & notification forms

Licence: L8904/2015/1 Licensee: Cleanaway Solid Waste Pty Ltd
Form: N1 Date of incident:

Notification of landfill fire.

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for incidents of landfill fire	
Date and time of event	
Reference or description of the location of the event	
Description of where fire took place	
Materials burned/burning and associated substances potentially released	
Best estimate of the quantity of material burned/burning	
Measures taken , or intended to be taken, to stop any emission	
Description of the failure or accident	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Cleanaway Solid Waste Pty Ltd	
Date	