SITA AUSTRALIA ALLUWUNA FARM LANDFILL
LOTS 4869, 5931, 9926 & 26934
GREAT SOUTHERN HIGHWAY, SAINT RONANS
APPLICATION FOR PLANNING CONSENT
SHIRE OF YORK TPS No.2

PROJECT LOCALITY PLAN
NOT TO SCALE

DRAWING SCHEDULE		
DRAWING No.	DESCRIPTION	REVISION
D001	COVER SHEET	A
D002	SITE PLAN	A
D003	LANDFILL CELL LAYOUT PLAN	A
D004	LANDFILL ULTIMATE TOP OF WASTE	A
D005	LANDFILL CELL 1 AND 2 LAYOUT PLAN	A
D006	LANDFILL INFRASTRUCTURE LAYOUT PLAN	A
D007	TYPICAL SECTIONS	A
D008	TYPICAL SECTION AND DETAILS	A
D009	LANDFILL DETAILS	A
D010	BORROW AREA LOCATIONS PLAN	A
D011	WEIGHBRIDGE DETAILS	A
D012	SITE BUILDING CONCEPTS	A

NOTES:

1. THESE NOTES APPLY TO ALL PROJECT DRAWINGS IN THE SET UNLESS NOTED OTHERWISE AND SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION.
2. ALL LEVELS ARE IN METRES TO AUSTRALIAN HEIGHT DATUM (AHD).
3. ALL CO-ORDINATES ARE IN METRES TO MAP GRID AUSTRALIA (MGA 94, ZONE 55).
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
5. DIMENSIONS AND LOCATION OF EXISTING STRUCTURES SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
6. LOCATION AND DEPTH OF ALL SERVICES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
7. DIMENSIONS SHALL NOT BE SCALED OFF DRAWINGS.
8. DRAWING MUST BE PRINTED IN COLOUR TO CORRECTLY IDENTIFY ALL DESIGN ELEMENTS.

REFERENCE:

BASE MAP SOURCED FROM NEARMAP WEB SITE http://maps.au.nearmap.com, ACCESSED 27.01.2015

NOT FOR CONSTRUCTION

Rev.	YYYY-MM-DD	DESCRIPTION	PREPARED	DESIGN	REVIEW	APPROVED
A	2014-02-1	ISSUE FOR COMMENT	E.KING	L.DuPREEZ	L.SMITH	L.DuPREEZ

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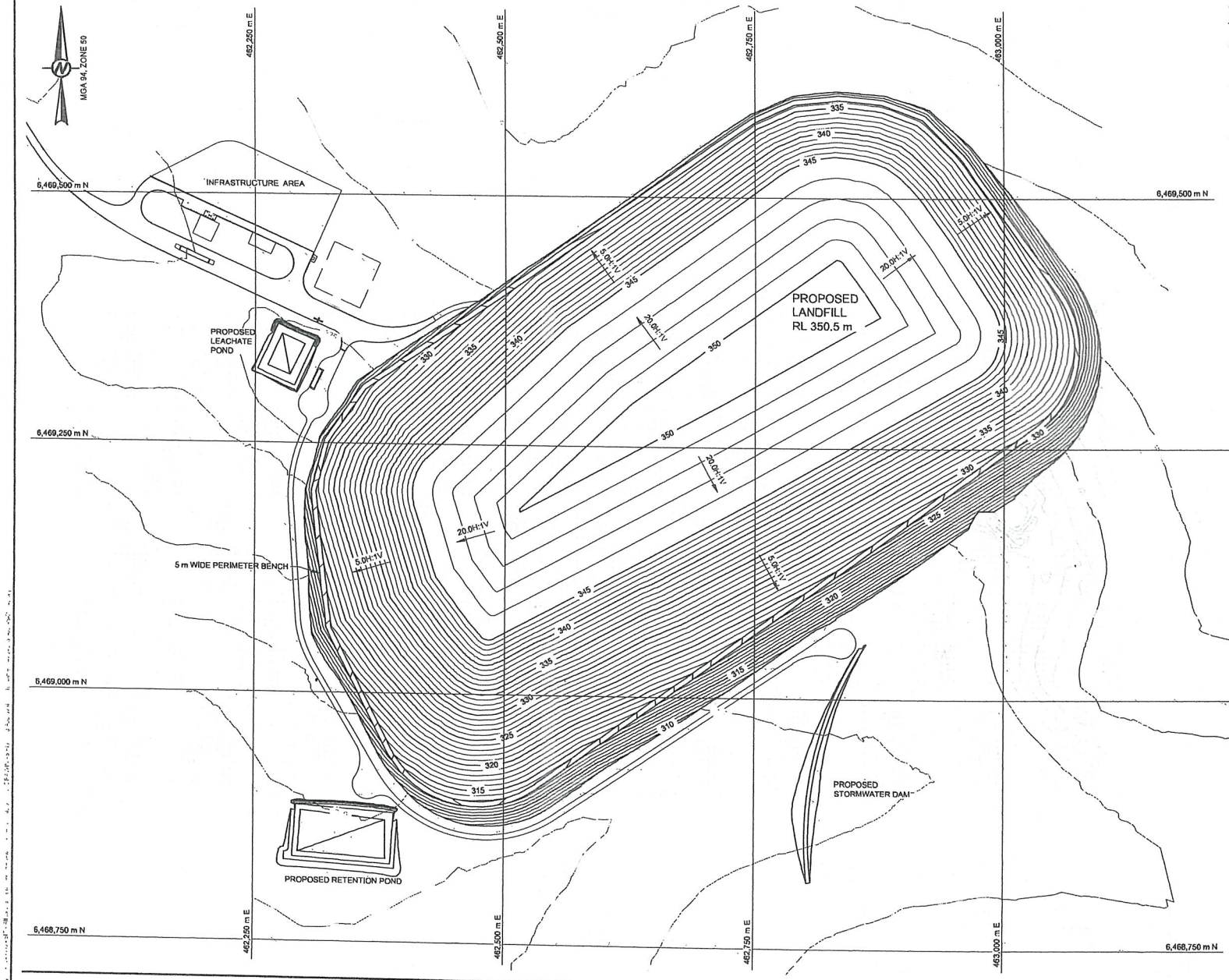
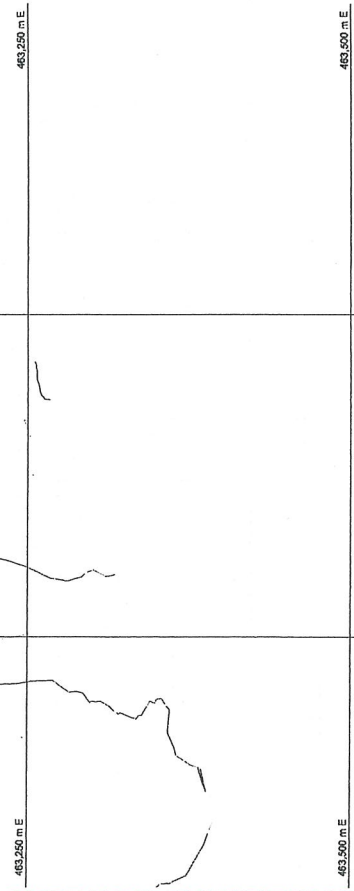
PROJECT
ALLAWUNA FARM LANDFILL

TITLE
COVER SHEET

PROJECT No.	DOCUMENT NO.	Rev		FIGURE
147645033	PLANNING - FEB 2015	A	1 of 12	D001





LEGEND:

20 INDICATIVE SUBGRADE CONTOURS (1 m INTERVALS)

20 EXISTING CONTOURS (1 m INTERVALS)

REFERENCE:

BASE SURVEY SHOWN FROM BOWMAN AND ASSOCIATES PTY LTD DRG. FILE ALLA_Survey Feature.dwg, DATED 09 SEPTEMBER 2014.

NOTE

1. REFER TO D001 FOR GENERAL NOTES
2. DESIGN SURFACE SHOWN IS TOP OF WASTE. LANDFILL CAP IS TO BE PLACED ON TOP OF SURFACE

NOT FOR CONSTRUCTION

0 100 200

1:5,000 METRES

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A	2014-02-01	ISSUE FOR COMMENT	E.KING	L.DuPREEZ	L.SMITH	L.DuPREEZ

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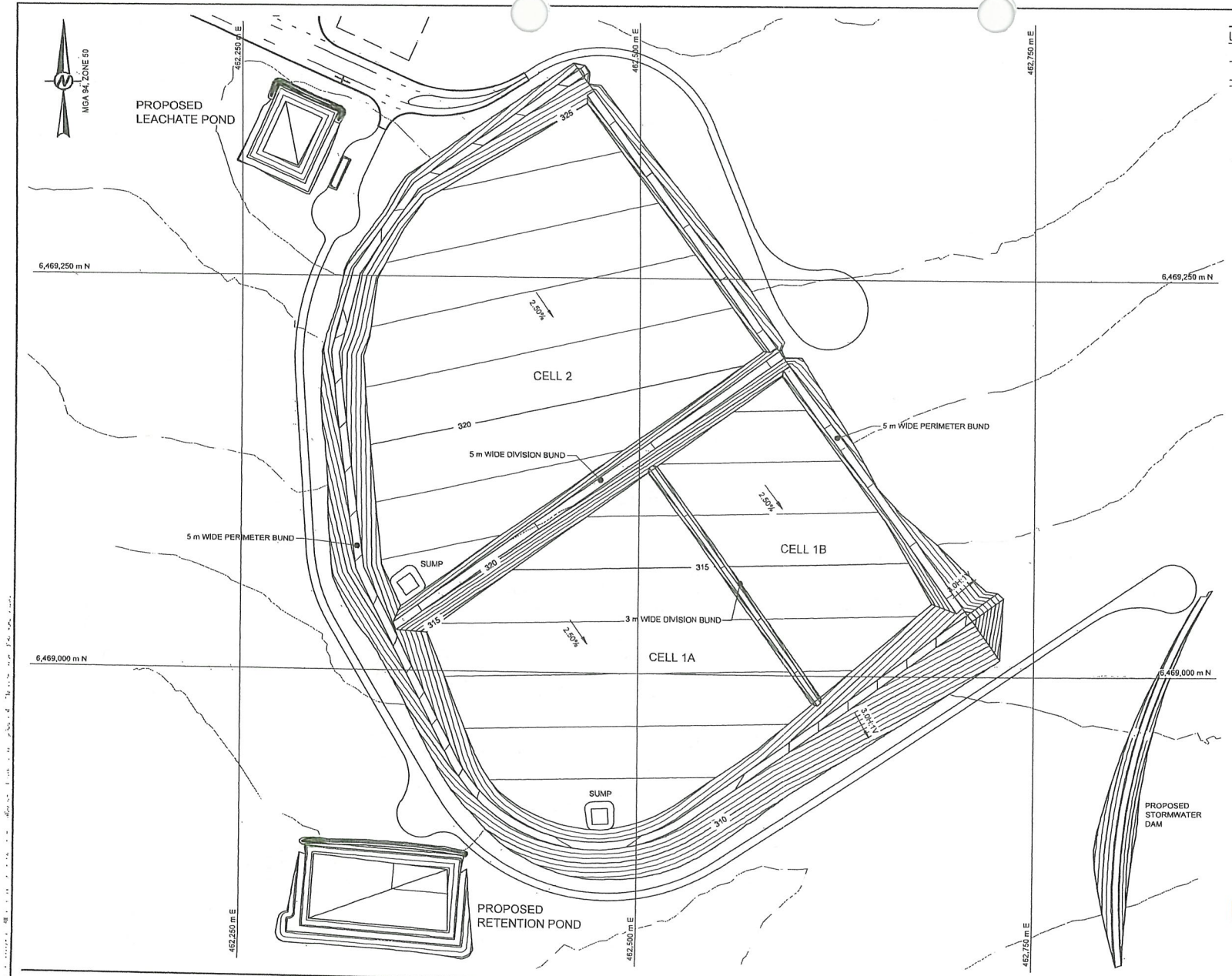
PROJECT
ALLAWUNA FARM LANDFILL

TITLE
LANDFILL ULTIMATE TOP OF WASTE

PROJECT No.	DOCUMENT NO.	Rev.	4 of 12	FIGURE
147645033	PLANNING - FEB 2015	A		D004



LEGEND:

DESIGN BREAKLINES

20 TOPOGRAPHICAL CONTOUR AND ELEVATION (mAHD)

NOTE:

1. REFER TO D001 FOR GENERAL NOTES

REFERENCE:

BASE SURVEY SHOWN FROM BOWMAN AND ASSOCIATES PTY LTD DRG. FILE ALLA_Survey Feature.dwg, DATED 09 SEPTEMBER 2014.

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0 100 200
1:5,000 METRES

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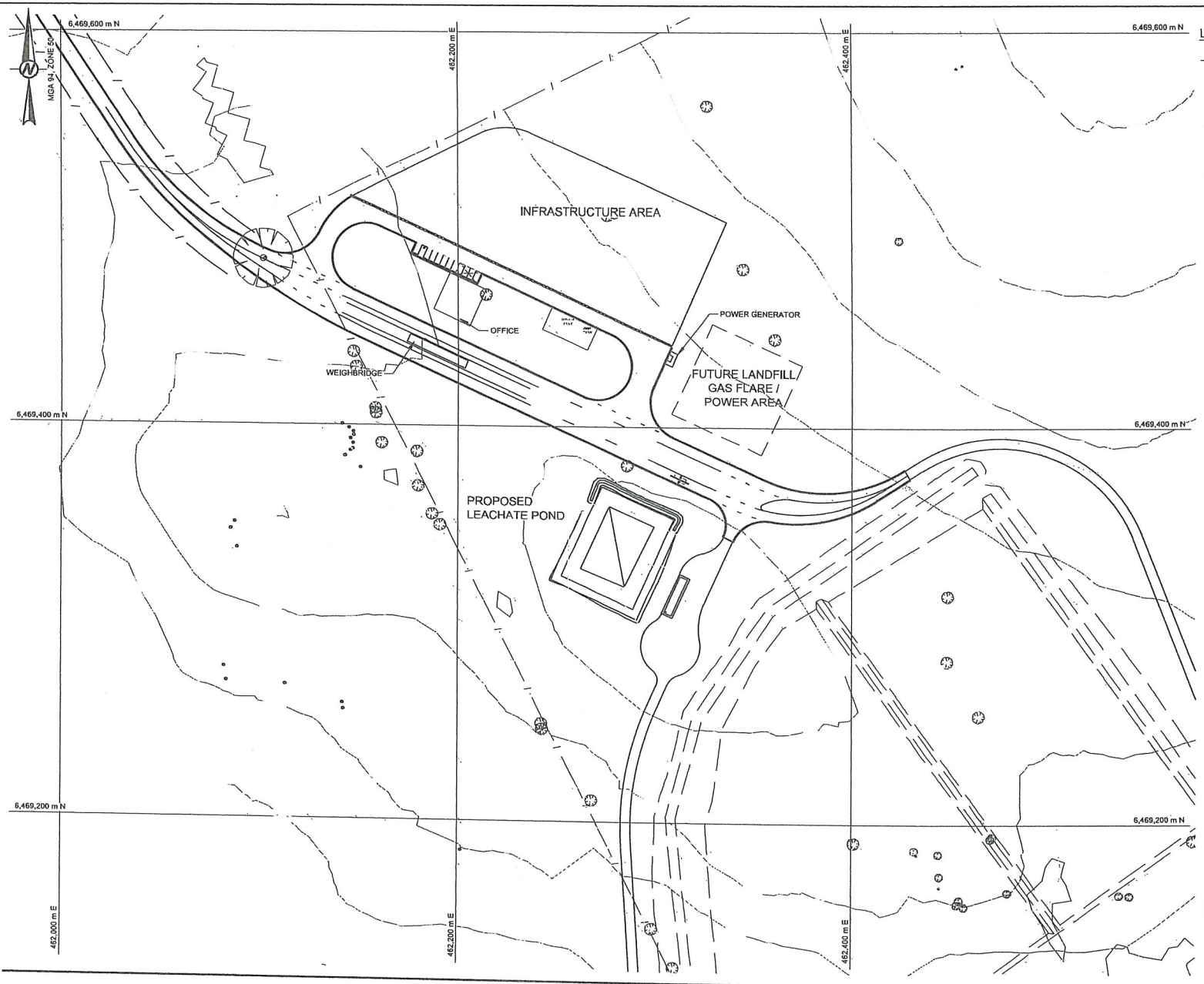
PROJECT
ALLAWUNA FARM LANDFILL

TITLE
LANDFILL CELL 1 AND 2 LAYOUT PLAN

PROJECT No.	DOCUMENT NO.	Rev	Sheet	FIGURE
147645033	PLANNING - FEB 2015	A	5 of 12	D005



LEGEND:

—20— EXISTING CONTOURS (1 m INTERVALS)

NOTE:

1. REFER TO D001 FOR GENERAL NOTES.

REFERENCE:

BASE SURVEY SHOWN FROM BOWMAN AND ASSOCIATES PTY LTD DRG. FILE ALLA_Survey Feature.dwg, DATED 09 SEPTEMBER 2014.

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0 50 100
1:2,000 METRES

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A	2014-02-1	ISSUE FOR COMMENT	E.KING	L.DuPREEZ	L.SMITH / L.DuPREEZ

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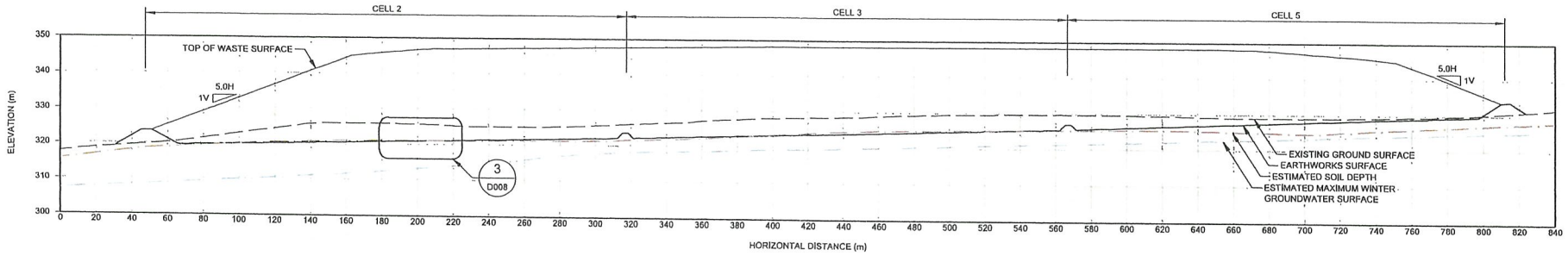
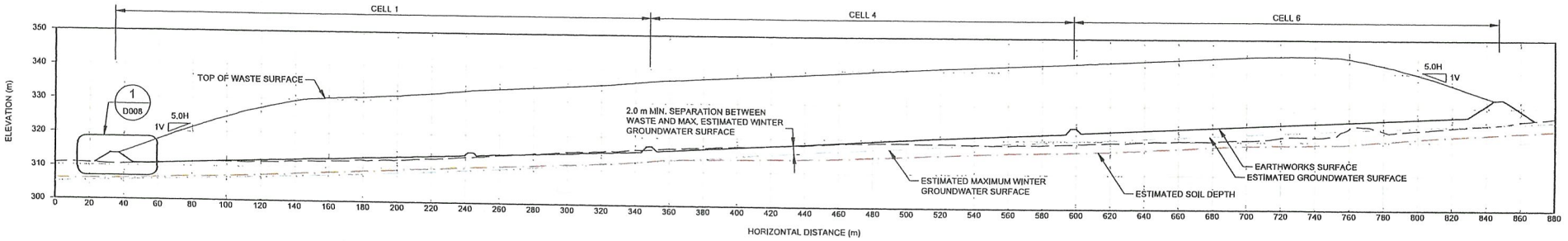
TITLE
LANDFILL INFRASTRUCTURE LAYOUT PLAN

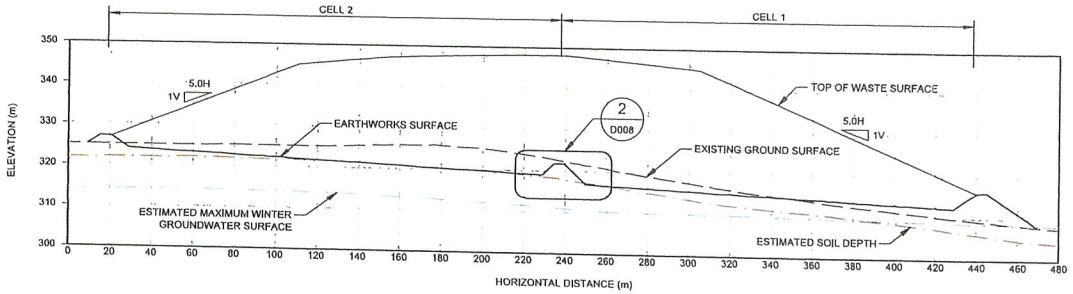
PROJECT No	DOCUMENT NO.	Rev	Sht	FIGURE
147645033	PLANNING - FEB 2015	A	6 of 12	D006



HOR. SCALE 1:2,500 / VERT. SCALE 1:1,250 — A (D003) SECTION



HOR. SCALE 1:2,500 / VERT. SCALE 1:1,250 — B (D003) SECTION



HOR. SCALE 1:2,500 / VERT. SCALE 1:1,250 — C (D003) SECTION

NOT FOR CONSTRUCTION

0 25 50
1:1,250 METRES

0 50 100
1:2,500 METRES

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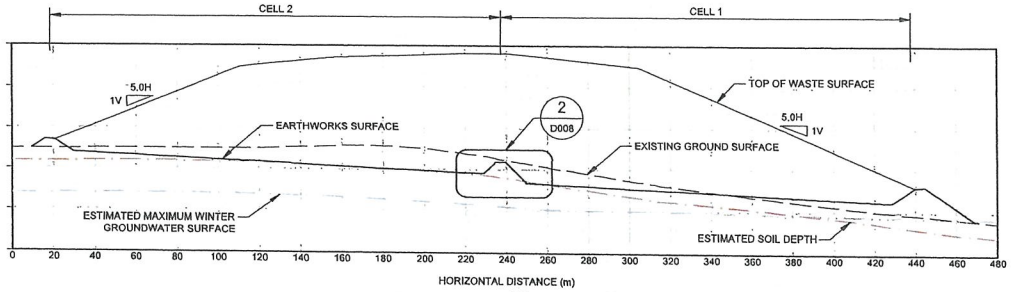
PROJECT
ALLAWUNA FARM LANDFILL

TITLE
TYPICAL SECTIONS

PROJECT No.	DOCUMENT NO.	Rev.	7 of 12	FIGURE
147645033	PLANNING - FEB 2015	A		D007



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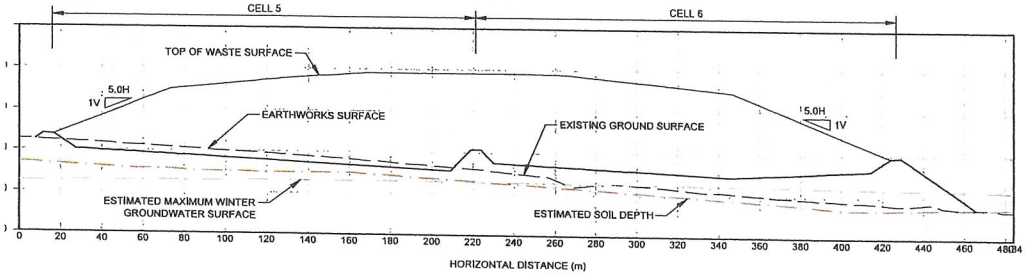
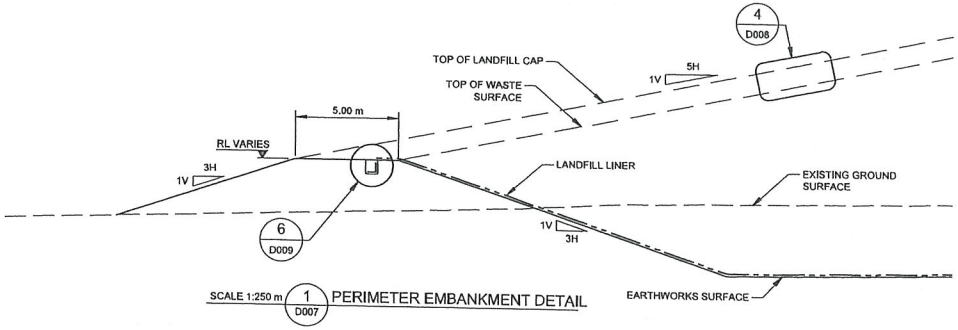
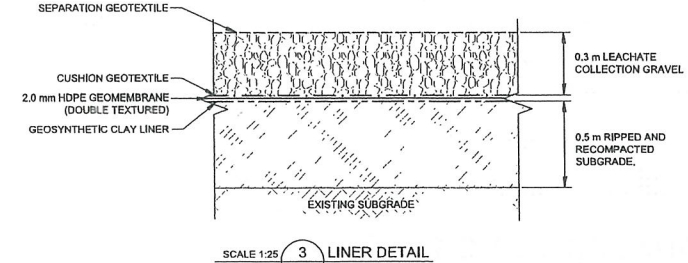


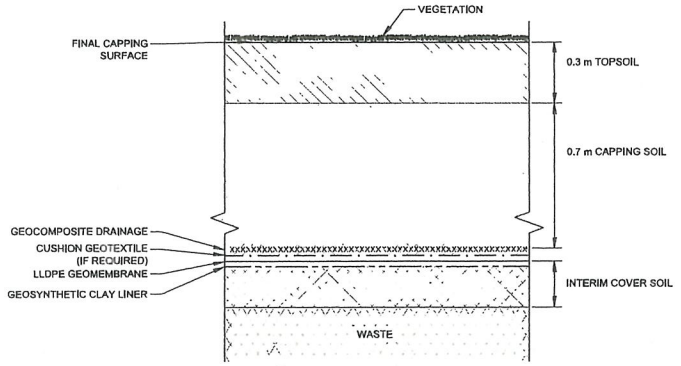
HOR. SCALE 1:2,500 / VERT. SCALE 1:1,250 — E / D003 SECTION



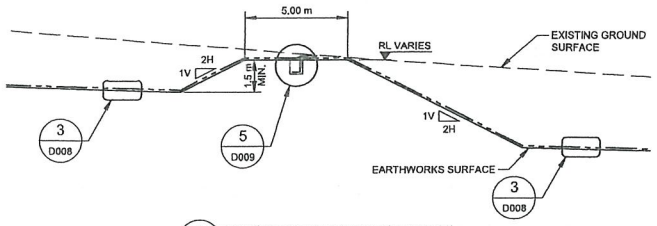
SCALE 1:250 m — 1 / D007 PERIMETER EMBANKMENT DETAIL



SCALE 1:25 — 3 / D008 LINER DETAIL



SCALE 1:25 m — 4 / D008 INDICATIVE LANDFILL CAP DETAIL



SCALE 1:250 m — 2 / D007 DIVISION EMBANKMENT DETAIL

0 0.5 1 — 1:25 METRES
0 25 50 — 1:1,250 METRES
0 5 10 — 1:250 METRES
0 50 100 — 1:2,500 METRES

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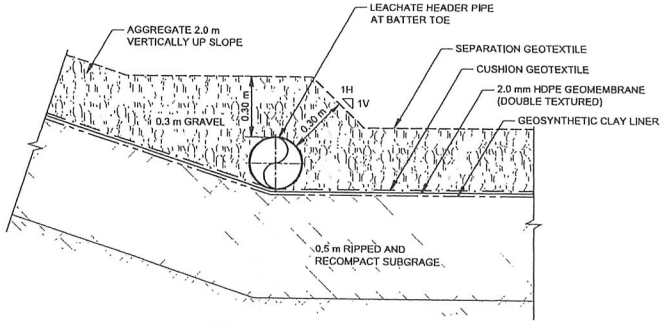
TITLE
TYPICAL SECTION AND DETAILS

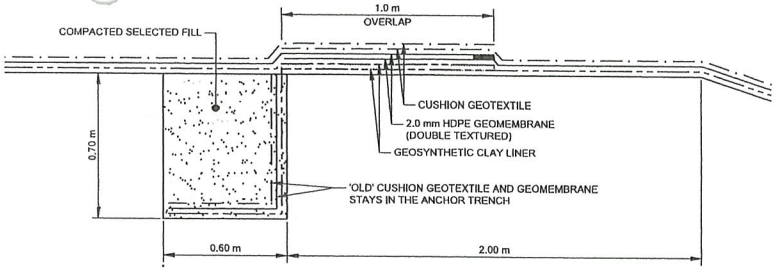
PROJECT No.	DOCUMENT NO.	Rev.	SHEET	FIGURE
147645033	PLANNING - FEB 2015	A	6 of 12	D008



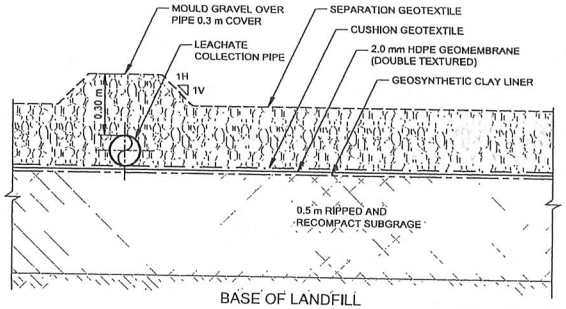
TYPICAL BATTER TOE PIPE DETAIL
scale 1:25 m

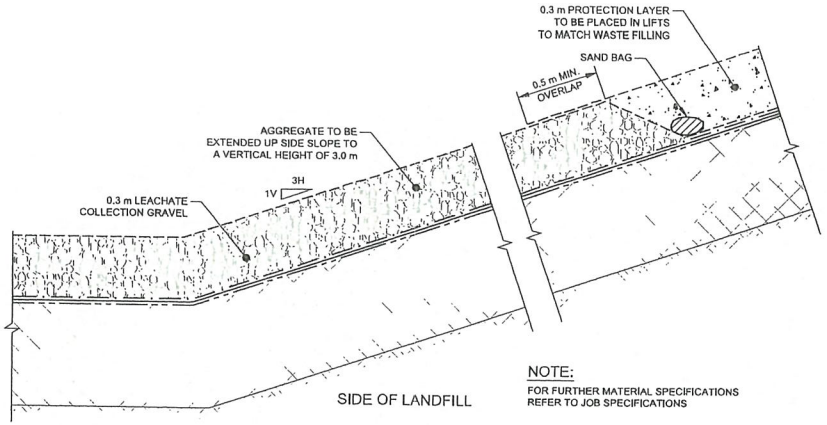
NOTES:

1. CUT CUSHION GEOTEXTILE AND GEOMEMBRANE AT ANCHOR TRENCH CREST
2. FOLD BACK CUSHION GEOTEXTILE AND GEOMEMBRANE
3. OVERLAP NEW GCL WITH EXISTING GCL USING BENTONITE PASTE
4. FOLD BACK GEOMEMBRANE AND OVERLAP WITH NEW GEOMEMBRANE LAYE. EXTRUSION WELD TOGETHER.
5. FOLD BACK CUSHION GEOTEXTILE AND OVERLAP WITH NEW CUSHION GEOTEXTILE. STITCH OR HEAT TACK THE OVERLAP.



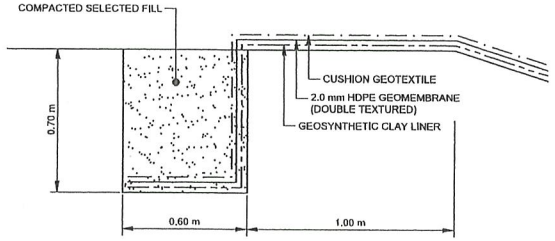
SCALE 1:25 m (5 / D008) TYPICAL ANCHOR TRENCH DETAIL ON DIVISION EMBANKMENT



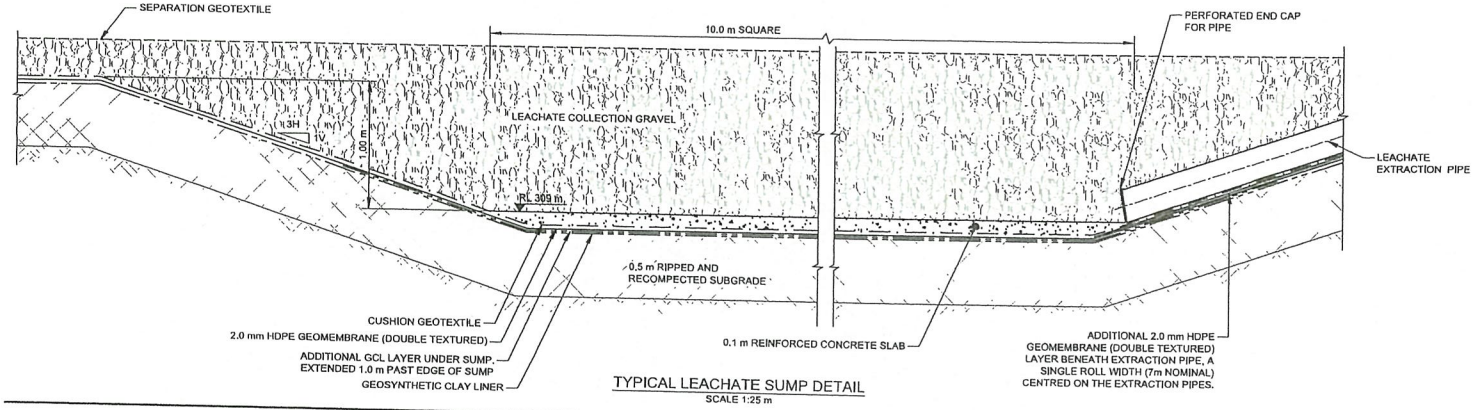


TYPICAL BASE AND SIDE LINER DETAIL
SCALE 1:25 m

NOTE:
FOR FURTHER MATERIAL SPECIFICATIONS REFER TO JOB SPECIFICATIONS



SCALE 1:25 m (6 / D008) TYPICAL ANCHOR TRENCH DETAIL ON PERIMETER EMBANKMENT



TYPICAL LEACHATE SUMP DETAIL
SCALE 1:25 m

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0 0.5 1
1:25 METRES

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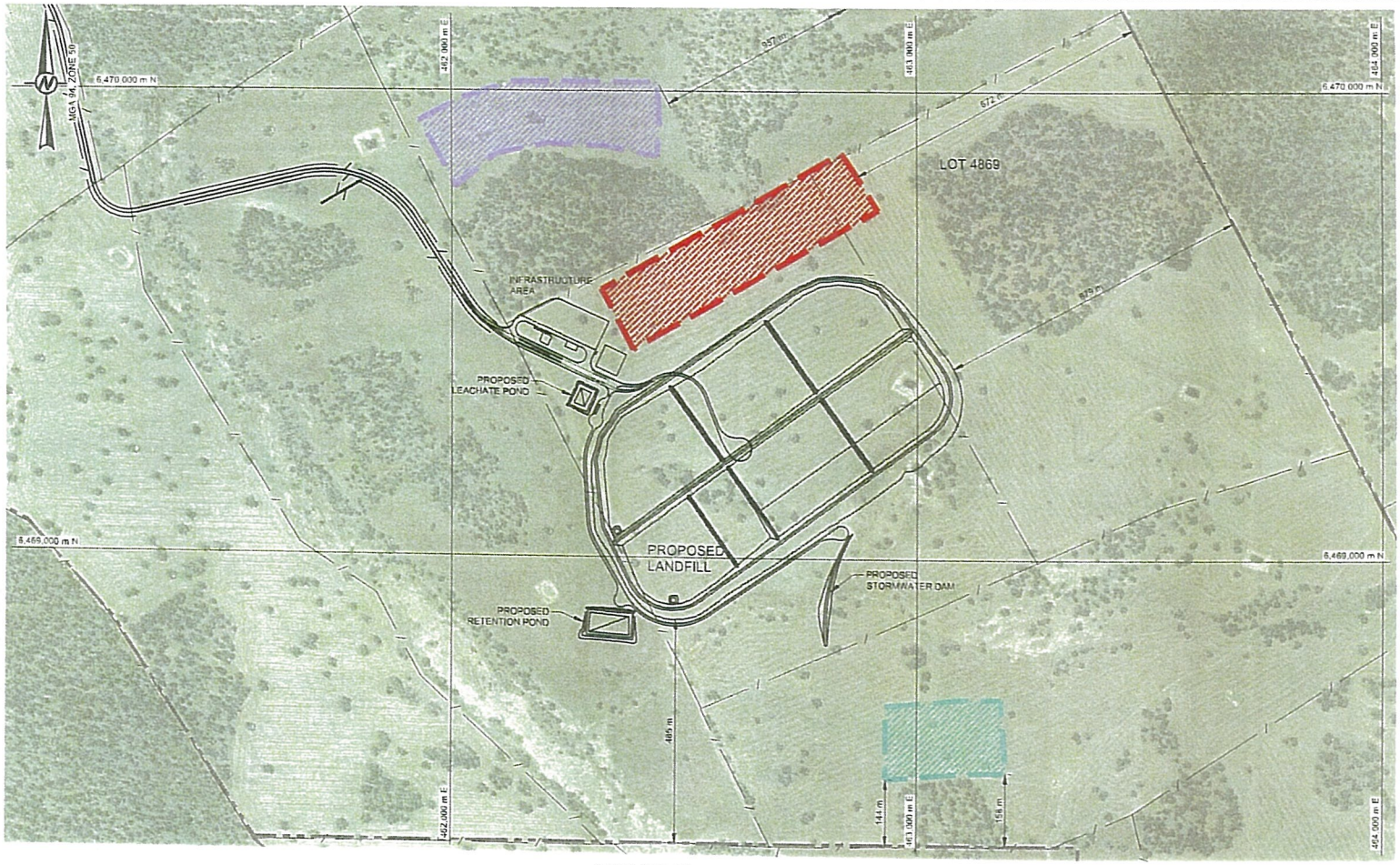
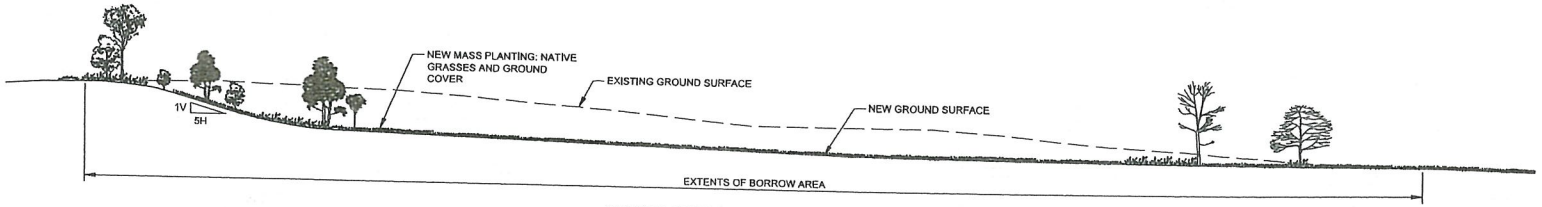
PROJECT
ALLAWUNA FARM LANDFILL

TITLE
LANDFILL DETAILS

PROJECT No.	DOCUMENT NO.	Rev.	Sheet	FIGURE
147645033	PLANNING - FEB 2015	A	9 of 12	D009



LAYOUT PLAN
SCALE 1:10,000 m



TYPICAL BORROW SECTION
SCALE 1:1,250 m

LEGEND:

- BORROW AREA 1
- BORROW AREA 2
- BORROW AREA 3
- CADASTRAL BOUNDARY
- EXISTING FENCE

NOTE:

1. REFER TO D001 FOR GENERAL NOTES.

REFERENCE:

BASE MAP SHOWN FROM BOWMAN AND ASSOCIATES PTY LTD DRG. FILE "FULL SIZED AERIAL PHOTO.jpg"

BORROW AREAS			
DESCRIPTION	VOLUMES (m³)	AREA (ha)	AVERAGE DEPTH (m)
AREA 1	420000	8.8	4.75
AREA 2	320000	7.2	4.31
AREA 3	160000	4.0	4.20

NOT FOR CONSTRUCTION

0 250 500
1:10,000 METRES

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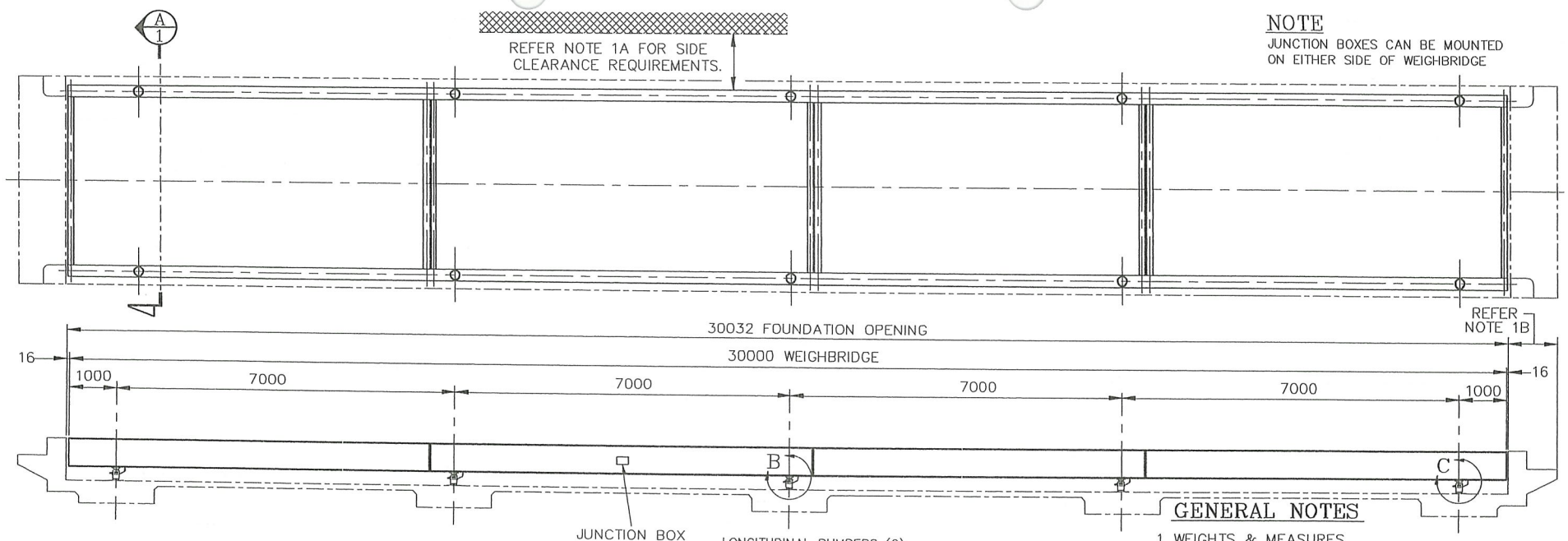
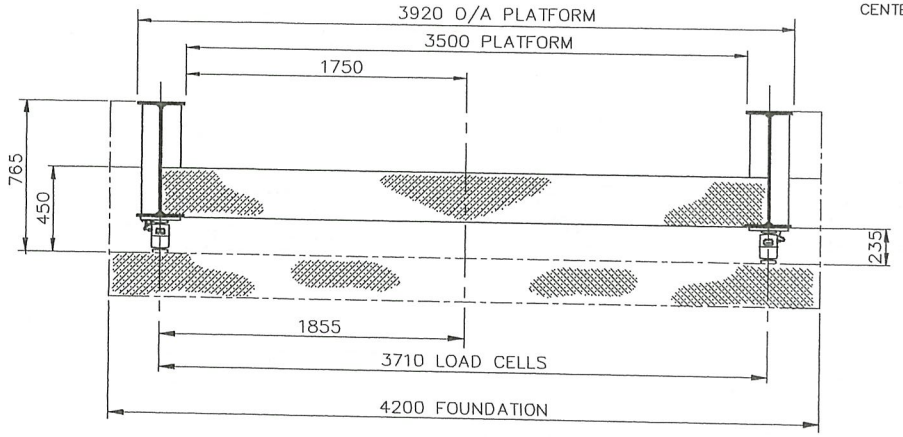
PROJECT
ALLAWUNA FARM LANDFILL

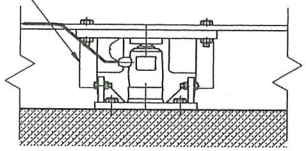
TITLE
BORROW AREA LOCATIONS PLAN

PROJECT No.	DOCUMENT NO.	Rev		FIGURE
147645033	PLANNING - FEB 2015	A	10 of 12	D010

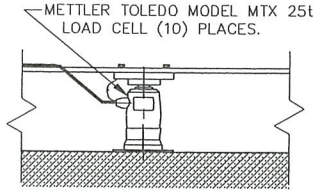




SECTION AA



DETAIL B



DETAIL C

GENERAL NOTES

1 WEIGHTS & MEASURES

STATE WEIGHTS & MEASURES AUTHORITIES REQUIRE CERTAIN MINIMUM REQUIREMENTS ,IE CLEARANCE AT SIDE OF SCALE, LENGTH OF APPROACH, POSITION OF INDICATOR ETC. THESE REQUIREMENTS SHOULD BE CLARIFIED WITH LOCAL AUTHORITIES WHEN PLANNING WEIGHBRIDGE LOCATION.

(A) CLEAR SPACE REQUIRED AT BOTH SIDES OF SCALE IN SOME STATES IS (1) METRE. CHECK WITH LOCAL AUTHORITIES FOR MINIMUM REQUIREMENTS FOR EACH INSTALLATION.

(B) LENGTH OF LEVEL APPROACH DEPENDS ON USE OF SCALE, IE PUBLIC OR PRIVATE WEIGHBRIDGE. THEREFOR THE STATE WEIGHTS & MEASURES AUTHORITY SHOULD BE CONTACTED FOR A FIRM DECISION APPLICABLE FOR EACH INSTALLATION.

(C) LOCATION OF INDICATOR/WEIGHHOUSE DEPENDS ON STATE REQUIREMENTS. THIS MATTER SHOULD BE RESOLVED WITH THE STATE WEIGHTS AND MEASURES DEPARTMENT.

(D) DIGITAL INDICATOR READOUT TO BE LOCATED NOT MORE TAN 6 METRES FROM THE PLATFORM EDGE, AND THE OPERATOR IS PROVIDED WITH A CLEAR VIEW OF THE ENTIRE PLATFORM.

2 WEIGHBRIDGE CLEARANCE

A 16mm CLEARANCE BETWEEN WEIGHBRIDGE AND FOUNDATION CURB CHANNELS (BOTH ENDS) WHICH MUST BE HELD, AND HAS BEEN ALLOWED FOR.

3 LOAD RATING

THE MAXIMUM ALLOWABLE LOADS ARE:
9000kg PER SINGLE AXLE, 16500kg PER TANDEM AXLE WITH AXLE SPACING BETWEEN 1.3m AND 2.8m AND NO LESS THAN 3m BETWEEN INSIDE AXLES OF ADJACENT TANDEMS.
23500kg PER TRI-AXLE BOGIE WITH AXLE CENTRES OF 1.3m.

THE MAXIMUM ALLOWABLE TOTAL WEIGHT ON WEIGHBRIDGE AT ONE TIME TO BE NO MORE THAN 100000kg.

INFORMATION PROVIDED BY BOWMAN AND ASSOCIATES, 06/02/2015

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CLIENT: SITA AUSTRALIA

PROJECT: ALLAWUNA FARM LANDFILL

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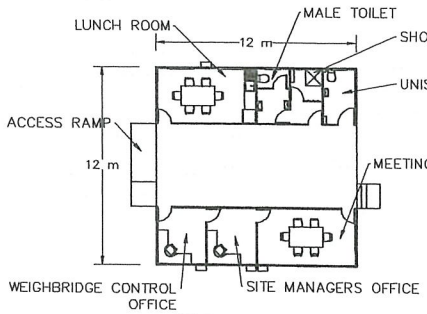
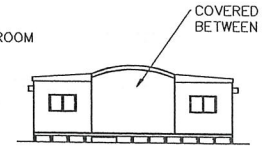
TITLE: WEIGHBRIDGE DETAILS

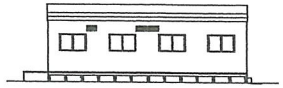
PROJECT No	DOCUMENT NO.	Rev	11 of 12	FIGURE
147645033	PLANNING - FEB 2015	A		D011



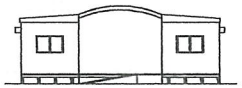
WEIGHBRIDGE AND ADMINISTRATION OFFICE PLAN



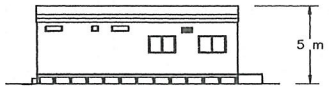
EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION



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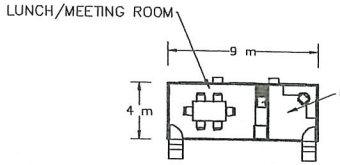

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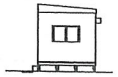

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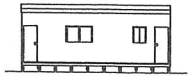

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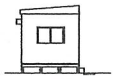

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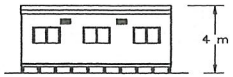

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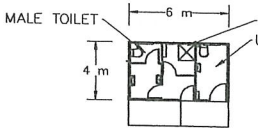

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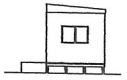

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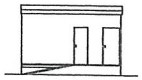

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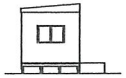

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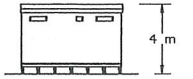

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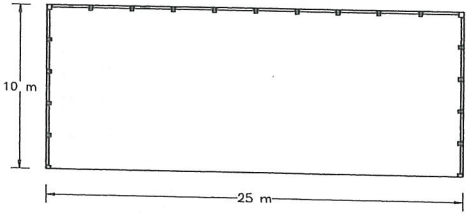

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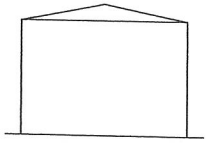

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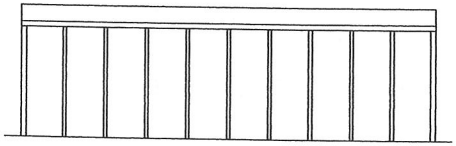

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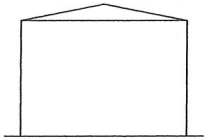

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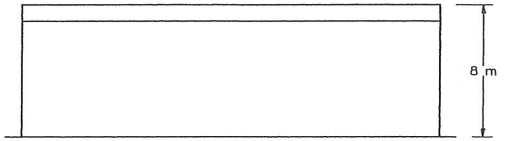

NORTH ELEVATION

NOTES:

1. Drawings are indicative of proposed structure form only, detailed design by others.
2. Details may vary prior to application for licence approvals.

NOT FOR CONSTRUCTION

Rev.	YYYY-MM-DD	DESCRIPTION
A	2014-02-1	ISSUE FOR COMMENT

PREPARED	DESIGN	REVIEW	APPROVED
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PROJECT
ALLAWUNA FARM LANDFILL

TITLE
SITE BUILDING CONCEPTS

PROJECT No.	DOCUMENT NO.	Rev.	12 of 12	FIGURE
147645033	PLANNING - FEB 2015	A		D012

SECTION D
SCALE 1 10,000 C35

FOR DISCUSSION
16 FEBRUARY 2015

SCALE 200 0 200 500 (metres)
1 : 10,000 (A1), 1 : 20,000 (A3)

Bowman and Associates Pty Ltd
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Mail: PO Box 2059, Rossmoyne WA 6148
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Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Landfill Sections

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
16/02/15	1:10,000	B.W.B.	S.B.Y.	Allawuna Farm Landfill	D013B	E	A1

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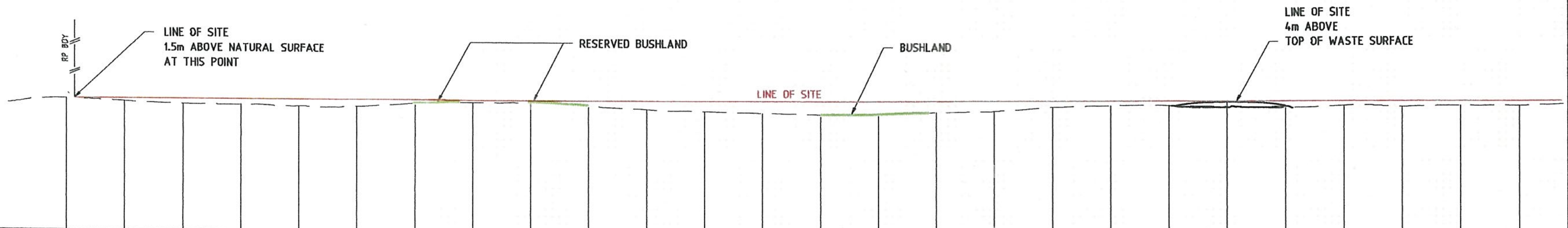
Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Landfill Layout Plan

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
16/02/15	1 : 7,500	B.W.B.	S.B.Y.	Allawuna Farm Landfill	D013A	E	A1



DATUM R.L. -220.000

DATUM R.L. -220.000																											
DESIGN LANDFILL EARTHWORKS																						324.934	330.772				
DESIGN LANDFILL TOP OF WASTE SURFACE																						350.50	331.756				
EXISTING SURFACE LEVEL		355	343.854	333.861	331.715	324.69	324.493	340.269	345.769	347.732	333.616	318.32	311.879	303.443	295.806	297.684	304.833	310.097	327.133	333.524	334.388	328.952	323.513	333.168	328.81	332.03	331.266
CONTROL LINE CHAINAGE	0.000	250.000	500.000	750.000	1000.000	1250.000	1500.000	1750.000	2000.000	2250.000	2500.000	2750.000	3000.000	3250.000	3500.000	3750.000	4000.000	4250.000	4500.000	4750.000	5000.000	5250.000	5500.000	5750.000	6000.000	6250.000	6500.000

SECTION
SCALE 1 : 10,000

D / C35

FOR DISCUSSION
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Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Landfill Sections

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
16/02/15	1[illegible]000	B.W.B.	S.B.Y.	Allawuna Farm Landfi[illegible]	D013B	E	A1

THE LEADER IN RESOURCE RECOVERY

FIRE MANAGEMENT PLAN: ALLAWUNA FARM LANDFILL

March 2015

Prepared By

Bowman & Associates Pty Ltd

Environmental Engineering Consultants
Waste Management Specialists
www.bowmanassociates.com.au

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DISCLAIMER

This document has been prepared by making logical conclusions from the relevant regulatory guidelines and industry practices. These conclusions are based on the Consultants enquiries, knowledge and professional experience from preparing fire management plans.

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DOCUMENT CONTROL

VERSION	DATE ISSUED	PREPARED BY	REVIEWED BY	APPROVED SIGNATURE
Draft V1	11 April 2014	P Antony	B Bowman	
Draft V2	24 June 2014	A Davies	P Antony	
Final	24 November 2014	A Davies	B Bowman	
2	5 March 2015	B Bowman	B Bowman	

DOCUMENT DISTRIBUTION

VERSION	TYPE	FORMAT	ISSUED TO	ORGANISATION
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Draft V2	Electronic	.pdf	Rob Fraser Ralph Smith	DFES
Final	Electronic	.pdf	Rob Fraser Ralph Smith	DFES
2	Electronic	.pdf	Nial Stock	SITA Australia

FILE NAME AND PATH

Z:\Bowman&Associates\Client Files\SITA\Allawuna Landfill\Fire Management Plan\Fire Management Plan\150305 BB SITA Allawuna Fire Management Plan V2.docx

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TABLES

DRAWINGS

APPENDICES

ACRONYMS

BAL	Bush Fire Attack Level
CBFCO	Chief Bush Fire Control Officer
DER	Department of Environment Regulation (Formerly DEC)
DFES	Department of Fire and Emergency Services (Formerly FESA)
EPA	Environmental Protection Authority
FMP	Fire Management Plan
HAZMAT	Hazardous Materials
LGA	Local Government Authority
PPE	Personal Protective Equipment
Shire	Shire of York
SITA	SITA Australia
SITE	Lots 4869, 5931, 9926 & 26934 Great Southern Highway, Saint Ronans, Shire of York
CO_2	Carbon Dioxide

UNITS OF MEASURE

ha	Hectare
km	Kilometre
L	Litre
m	Metre
mm	Millimetre
°C	Degree Celsius
%	Percentage

1 ALLAWUNA FARM LANDFILL FIRE MANAGEMENT OBJECTIVE

Any landholder has an obligation to manage the risk of fire on their property. SITA will be responsible for the prevention and response to fire on the Allawuna Property comprising of Lots 4869, 5931, 9926 & 26934 Great Southern Highway, Saint Ronans in the Shire of York. Depending on the type of fire response required, additional volunteer or professional fire fighting personnel may take an hour or more to reach the site. As such an effective first response to any fire event by the SITA personnel available on site is key to minimising the impact of any fire event on site.

This plan describes how staff with appropriate training will:

- Minimise the risk of fire through fuel load management and safe operational practices.
- Respond safely to an event of fire on any part of the Allawuna Property.
- Alert the appropriate authorities and engage in a coordinated response to fire.
- Maintain equipment in serviceable condition.
- Conduct periodic training and drills.

The site has been divided into four management zones based on the activities performed and the different types of fire risk associated.

This Fire Management Plan will be periodically reviewed, at least annually and after any fire event to ensure risks are minimised and information remains current.

2 INTRODUCTION

SITA Australia (SITA, Proponent) proposes to establish Allawuna Farm Landfill in the Shire of York (Shire). The site would be a licensed Category 64 premises, receiving up to 250,000 tonnes per annum of Class II waste from the Perth Metropolitan area.

The Allawuna Farm Landfill is proposed as a replacement to SITA's Shale Road Landfill at South Cardup which is nearing capacity.

This document clearly describes the management procedures SITA will employ during an event of fire within the landfill or the surrounding infrastructure.

Fires are a concern for the management of any landfill and have been associated largely with poorly managed open dumps. Materials that are landfilled are generally a good fuel source for surface and subsurface fires due to their high calorific values. Combustible materials such as paper, plastics, dry organics and wood are the main fuels. The presence of oxygen during waste placement or the opportunity for drawing of oxygen through the surface creates a suitable environment for combustion. The heat generated during the decomposition of waste serves as the source of ignition and completes the three elements of the 'fire triangle' which are fuel, oxygen and ignition source. Hence it is necessary to monitor, control and prevent the occurrence of suitable conditions for generation of landfill fires and, in the event of fire, document how best to manage and reduce the impact.

Fires in landfills typically result from below standard operational practices, including dumps where waste is often left uncovered at the end of the day. Daily cover reduces the ingress of air to the waste and promotes the onset of anaerobic conditions. It also isolates the waste from the surface and reduces the potential for accidental or deliberate fires being started.

Fires have the potential to damage infrastructure, disrupt operations, cause threat to life and release harmful substances into the environment.

Fire can also originate naturally from the surrounding bush lands and farming areas particularly during dry and hot weather conditions or if deliberately lit. This document provides a framework for fire management and the protection of life and assets at the proposed Allawuna Farm Landfill and its surrounding environment during an event of fire.

The Fire Management Plan (FMP) has been developed based on *Planning for Bush Fire Protection – Edition 2* (Commission, 2010) which is the currently endorsed the guideline by Department of Fire and Emergency Services (DFES) for subdivisions and the Firebreak Order from the Local Government Authority (LGA) in the Shire. As there is no specific guideline for the management of fires on rural and/or landfill premises, the subdivision guideline is considered an appropriate base reference, with this FMP tailored to suit the rural setting.

2.1 LEGISLATION

The regulations and requirements related to landfill fire management are as follows:

2.1.1 BUSH FIRES ACT 1954

Regulates restrictions such as prohibited burning times, total fire bans, requirements for plant equipment to contain fire extinguishers, suitable spark arrester and other restrictions.

2.1.2 LOCAL GOVERNMENT ACT

Implementation of terms and conditions in the approved FMP by the Local Government.

2.1.3 ENVIRONMENTAL PROTECTION (UNAUTHORISED DISCHARGE) REGULATIONS 2004

These regulations make it an offence to discharge certain materials into the environment. The discharge will be in the form of visible smoke from burning of certain materials.

2.1.4 FIRE BRIGADES ACT 1942 AND FIRE BRIGADES REGULATIONS 1943

Allows the fire authority to enter into an agreement with an owner or occupier of any premises for the provision of the receiving, monitoring and testing of equipment.

3 DESCRIPTION OF FACILITY

3.1 LOCATION AND SITE DESCRIPTION

The proposed Allawuna Farm Landfill is to be located at:

Lots 4869, 5931, 9926 & 26934 Great Southern Highway, Saint Ronans in the Shire of York.

An aerial view locality plan is attached on **Drawing ALLA-FMP-01**. The site is located on the southern side of Great Southern Highway approximately 80 km by road from Perth and 20 km by road from York.

The Allawuna property is currently a farm and is zoned as General Agriculture (York, 2013). The combined area of the Lots is 1,516 ha. Approximately 25% of the site is uncleared remnant bushland, with the remainder being cleared land used for broad acre cereal cropping. The remnant bushland areas will require periodic fuel load management to reduce the risk of bushfire.

The large size of the site enables significant buffer distances to be maintained and infrastructure to be sited without disturbing areas of remnant natural vegetation. In the proposed design the nearest sensitive receptors (two single residences) are 1.9 km and 2.4 km from the proposed landfill footprint respectively. The Mount Observation Picnic Area, while not classified as a sensitive receptor under the Environmental Protection Authority (EPA) guidelines has been identified as an area of local amenity. The picnic area is located 4.6 km from the proposed landfill footprint. The proposed landfill site is not visible from Mount Observation.

Drawing ALLA-FMP-02 shows the Lot cadastral boundaries and general site configuration.

3.2 METEOROLOGICAL DATA

The annual average climate characteristics for York region obtained from the Bureau of Meteorology (Weather Station Number 10311) between 1996 and 2013 are:

1.1.1 TEMPERATURE

Temperature range (mean maximum)	18.1 – 36.6 °C	Average 26.5 °C
Temperature range (mean minimum)	3.6 – 16.6 °C	Average 9.5 °C

1.1.2 RAINFALL AND EVAPORATION

Average rainfall	406.4 mm
Annual pan evaporation	2,205 mm

3.3 BUFFER DISTANCES

The landfill and infrastructure locations have been selected to provide appropriate buffer distances to the surrounding nature reserves, nearest residences, public use areas, surface waters and property boundaries. Buffer distances are summarised in **Table 1** below.

Table 1: Buffer Distances

Buffer Description	Separation Distance (m)
Landfill to Nearest Site Boundary	600
Landfill to Nearest Neighbouring Dwelling	1,900
Landfill to Mount Observation Picnic Area	4,600
Landfill to Wandoo National Park	1,000
Leachate Pond to 13 Mile Brook	500
Landfill to 13 Mile Brook	350

The Guideline *Separation Distances between Industrial and Sensitive Land Uses* (Authority, 2005) requires a minimum separation between landfill activities and a single residence of 150 m. The guideline also requires a separation distance of 500 m to any subdivision development. Given the rural location of the landfill, future subdivision is unlikely. Regardless, the internal 600 m buffer on the property will be owned by the Proponent and easily maintained against any future development in the area.

3.4 FLORA AND VEGETATION

A comprehensive Level 2 flora investigation of the affected works areas was undertaken by ENV Australia. The key findings of the investigation were:

- The area is dominated by cleared cropland (87%) with low fauna habitat value,
- The remaining area (13%) is a seasonally dry minor creekline, also with low fauna habitat value,
- No declared weeds, threatened or priority flora were identified at the site, and
- The proposed development is likely to have minimal impact on the flora and fauna of the survey area and surrounds.

The landfill has been specifically located to avoid clearing of any remnant bushland on the site. The scattered isolated Marri and Wandoo trees on the area have been carefully assessed and show no evidence of Black Cockatoo roosting or breeding.

A portion of the remnant bushland on the northern part of the property is protected by an agreement to reserve, issued by the Soil and Land Conservation Commissioner (Conservation Covenant). The Conservation Covenant does not prohibit fuel load management by burning off in the reserved area.

3.5 FAUNA

ENV Australia completed a Level 1 fauna survey in the landfill development area. The key findings of the fauna investigation were:

- Both habitat types present in the study area are of low fauna habitat value,
- A comprehensive Black Cockatoo (*Calyptorhynchus latirostris* and *Calyptorhynchus baudinii*) species specific assessment found minor evidence of foraging under 10 of the 144 scattered Marri and Wandoo trees,
- No evidence of roosting or breeding in any trees,
- Closest known Carnaby's Cockatoo roosting site is over 16 km away, and
- No evidence of Graceful Sun Moth (*Synemon gratiosa*) habitat in the area.

The mostly cleared cropland does not hold any significant habitat value.

3.6 SURFACE WATER

A catchment map showing the flow of water resources in the vicinity of the landfill development can be seen on **Drawing ALLA-FMP-07**. The Allawuna property is characterised by a dividing valley containing the seasonally dry 13 Mile Brook watercourse. The stream order and travel distances for the connection of 13 Mile Brook to the Avon River are summarised in **Table 2** below.

Table 2: Surface Water Stream Order

Watercourse	From	To	Length (km)	Total Length (km)
13 Mile Brook	Headwaters	Allawuna Creek Crossing	6.0	6.0
13 Mile Brook	Allawuna Creek Crossing	Property Boundary	3.4	9.4
13 Mile Brook	Property Boundary	Warranine Brook	1.7	11.1
Warranine Brook	13 Mile Brook	Clackline Brook	20.2	31.3
Clackline Brook	Warranine Brook	Spencers Brook	6.1	37.4
Spencers Brook	Clackline Brook	Avon River	10.5	47.9

The landfill is located 41.9 km upstream from the Spencers Brook/Avon River intersection.

The area around the landfill and site infrastructure will be contoured to drain towards 13 Mile Brook via a servies of stormwater swales and check drains.

3.7 SITE INFRASTRUCTURE

3.7.1 ACCESS ROAD

A sealed access road across the site, from the intersection with the highway to the landfill development area, will be constructed as part of the works. The road has been aligned to minimise disruption to cropping, minimise the removal of remnant vegetation, maintain a safe geometry for truck movements and align with an existing creek crossing. The road pavement will be minimum 4 m wide, sealed to an appropriate standard for regular heavy vehicle movements and include 1.0 m wide shoulders on each side. The access road will be fenced to keep livestock and other fauna off the road. The sealed access road will have a minimum 10 m wide vegetation/crop free area between the fences. The access road fence will have emergency access gates installed periodically along its length.

3.7.2 CREEK CROSSING

A dual lane creek crossing will be installed on the property across 13 Mile Brook to enable all weather vehicle access to the landfill. The crossing will be constructed of reinforced concrete box culvert sections to the standard Main Roads WA specification.

3.7.3 WEIGHBRIDGE AND ENTRY OFFICE

The general configuration of the office and infrastructure area can be seen on **Drawing ALLA-FMP-03**. The north west of the landfill development area will have a 30 m long weighbridge. The entry office located north east of weighbridge will have a meeting room, lunch room and ablution facilities supplied from a potable water tank adjacent to the building.

3.7.4 TRUCK WHEEL WASH

A truck mud shaker will be constructed adjacent to the leachate dam (**Drawing ALLA-FMP-03**). Trucks will drive over a rumble grid to remove debris from the tyres. Any water trapped in the mud shaker pit will be collected and treated for recycling or pumped into the leachate pond. Solids debris will be removed and disposed at an appropriately licensed landfill.

3.7.5 HARDSTAND, CONTRACTORS OFFICE, SHED AND EQUIPMENT STORAGE AREA

A hardstand area will be established for the storage of equipment and movement of vehicles.

Two demountable buildings will be installed for the landfill operations contractor, one containing ablutions and a shower and locker room, the other with an office and lunch room. An area of the compound has been set aside for future landfill gas extraction infrastructure, which may include a flare and potentially electricity generators. Any expansion of site infrastructure shall include an update of this Fire Management Plan to reflect a change in risk, fire sources or required response.

3.7.6 WATER TANKS AND RETICULATION PIPING

One 100,000 L and one 150,000 L water tank will be installed at the infrastructure area. The 100,000 L tank will be used for storing non potable water for general site use. The 150,000 L tank will be reserved for fire fighting use. Both tanks will be equipped with British Instant Coupling outlets, compatible with Local Fire Brigade equipment. A stand pipe and pump for refilling water trucks will be located adjacent to the tanks.

3.7.7 GENERATOR

A diesel powered generator will be installed in the designated future landfill gas flare or power area. The generator will be mounted on a concrete pad and surrounded by a 2 m wide gravel apron area to minimise fire risk. Any grassed areas within 30 m of the generator will be cleared or regularly trimmed to be maintained at less than 10 cm in height to minimise the fuel load. Power from the generator will be reticulated around the landfill site.

3.7.8 FUEL TANK

A bunded fuel tank will be installed at the hardstand area to store diesel fuel for landfill plant and equipment. The fuel tank will be installed and commissioned in compliance with *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007* (Australia, 2014).

3.7.9 SERVICES

Underground power, water, leachate and data transfer conduits will be installed around the site.

3.7.10 STORMWATER DAM AND DRAINAGE STRUCTURES

A stormwater dam constructed of the low permeability clay material found on the site will be constructed to the south east of the landfill (**Drawing ALLA-FMP-02**). The stormwater dam will have a capacity to hold 30,000 kL.

The stormwater dam will collect all surface runoff from the valley above the facility. An appropriately sized overflow weir has been designed for the stormwater dam.

3.7.11 LEACHATE POND LOCATION

The leachate pond will be sited 500 m from 13 Mile Brook, as shown on **Drawing ALLA-FMP-02**. The leachate pond will be enclosed with a 2.0 m high security fence topped with barbed wire to prevent access by animals, such as kangaroos, to minimise the risk of liner damage.

3.7.12 LEACHATE RECIRCULATION

A leachate pipe will be laid connecting the leachate pond to the landfill. The leachate pipe will be used to deliver leachate from the landfill to the leachate pond and to return leachate to the landfill for leachate evaporation and recirculation. The recirculation of leachate back into the landfill will aid the decomposition of waste. Leachate may also be trickled onto the surface of the active cell area for evaporation.

3.7.13 RETENTION POND

A retention pond is proposed to be constructed south west and down gradient from the landfill. A network of groundwater relief drains will be installed in the lower areas beneath the landfill environmental barrier system. The groundwater relief drains will allow potential groundwater beneath the landfill to drain to the retention pond. Any water collected in the retention pond will be sampled for quality prior to being released to the site stormwater management system.

3.7.14 SITE SECURITY

A minimum 2 m high security fence topped with barbed wire will be erected around the perimeter of the landfill operations area to prevent unauthorised site access, capture windblown litter and prevent access by livestock and kangaroos (**Drawing ALLA-FMP-06**). The construction and maintenance of the perimeter fence is expected to be a standard condition of any licence issued for the facility by the Department of Environment Regulation (DER).

The fence will have fire emergency access gates at appropriate locations along its perimeter. These gates will be locked securely, with a key provided to the local fire authority.

A waterproof emergency information cylinder containing site maps, a Materials Safety Data Sheet for chemicals stored on site and emergency contact details will be stored adjacent to the main gate, entry gate into landfill infrastructure and at the weighbridge for use by the authorities in an emergency if the site is unattended by SITA personnel or inaccessible.

Contact details will be exchanged with neighbouring properties to maintain mutual vigilance for unauthorised access to the Allawuna site or neighbours.

4 BUSH FIRE HISTORY

The site, surrounding properties and adjacent bushland all experienced extensive damage during the Cyclone Alby wildfires in 1978 which burned a total of 114,000 ha across south-west Western Australia. Minor fires have occurred since on the site, adjacent farming properties and in the adjacent Wandoo National Park. Typical sources of fire are lightning strikes, smouldering logs or stumps from past burning off and hot shell casings from hunters or farmers discharging firearms. Good fire control measures are in place on the property with periodic burning of remnant bushland areas to keep the fuel load low. Constructed fire breaks are clear and well maintained. SITA will continue to manage the fuel load on site to minimise the risk of fire once it takes over the property.

DFES has advised SITA that the portion of the Wandoo National Park adjacent to Allawuna shows no evidence of recent burning. The prevention of off-site bushfires spreading onto the Allawuna property is addressed in this document.

5 SITE RISK ASSESSMENT

5.1 FIRE MANAGEMENT ZONES

The Allawuna Farm Landfill has been divided into four zones for better management of risk during the event of a fire. **Drawing ALLA-FMP-08** shows the four fire management zones.

5.1.1 ZONE 1 - SUPPORTING INFRASTRUCTURE

The supporting infrastructure consists of clear hardstands, offices, equipment storage area, water tanks, fuel tank, leachate pond and weighbridge. The main materials used for the construction of these structures will be steel, concrete and timber. Below ground leachate reticulation pipes will be laid and will be made of High Density Polyethylene. The fuel for fire will be flammable materials stored in the buildings and fuel spillage.

5.1.2 ZONE 2 - LANDFILL FOOTPRINT AND RETENTION POND

The ultimate landfill footprint will cover an area of 36 ha and will be used for waste placement. Zone 2 will also consist of equipment and plant used for waste placement and daily cover during operation. A retention pond is located to the south west of the landfill footprint. The fuel for fire will be combustible waste, high internal temperature resulting from decomposition of waste and presence of oxygen.

5.1.3 ZONE 3 – CROPLANDS AND VEGETATION

The area outside the landfill footprint will have isolated stands of native vegetation, croplands and access roads. The fuel for fire in Zone 3 will be dry debris, crops and vegetation.

5.1.4 ZONE 4 – SEALED INTERNAL ACCESS ROAD

The minimum 4 m wide sealed access road within a 20 m easement from the intersection of Great Southern Highway connecting to the landfill and the infrastructure will pass through croplands and vegetation. This fuel for fire would be dry debris from cropping and tree litter or overhanging branches of trees on to the easement. The construction quality of the internal road is equivalent to Main Roads WA standards and can to be used as a safe entry and exit route from Great Southern Highway during an event of Total Fire Ban.

5.2 HAZARD ASSESSMENT

5.2.1 ZONE 1 - SUPPORTING INFRASTRUCTURE

Two stands of existing vegetation are located in the vicinity of Zone 1.

<u>Vegetation to North</u>

The existing vegetation covering an area of 8.7 ha, located north of the supporting infrastructure can be classified as Open Forest. The trees are 8 m to 10 m high with low frequency and the vegetation falls in the Category A (Forest) 04 (Low Open Forest) according to the *Vegetation Type and Class in the Planning for Bush Fire Protection Guidelines – Edition 2*. The distance from the nearest building to the vegetation is approximately 45 m. The native vegetation lies upslope with the surface topography rising at 3% from the south to north and rising 2% from west to east.

Vegetation to West

The existing vegetation adjacent to the creek covers an area of 2.7 ha. This area of vegetation is located west of the supporting infrastructure and can be classified as Woodland. The trees are 8 m to 10 m high and the vegetation falls in Category B (Woodland) 07 (Low Woodland) according to the Vegetation Type and Class in the *Planning for Bush Fire Protection Guidelines – Edition 2* (Commission, 2010). The distance from the nearest building to the Woodland vegetation to the west is approximately 280 m. The leachate pond is located 70 m away from the vegetation. The native vegetation lies downslope with the surface topography rising to Zone 1 at 6% gradient.

The proximity of the northernmost infrastructure to the vegetation on north and west categorises this zone as BAL – 12.5 in accordance with *Table 2 Bush Fire Protection Guidelines – Edition 2*. Structures constructed in Zone 1 will meet the appropriate BAL standard, as defined in *AS3959 Construction of buildings in bushfire-prone areas* for their proximity to nearby bushland areas.

5.2.2 ZONE 2 - LANDFILL FOOTPRINT AND RETENTION POND

Zone 2 has vegetation to the north east and north west.

Vegetation to North East

The landfill footprint will have daily cover over the waste placement area and will be free from any infrastructure. The vegetation on the north east of the landfill footprint can be classified as open forest and is approximately 140 m from the perimeter of the landfill footprint. The vegetation is located upslope from the landfill.

Vegetation to North West

The vegetation on the north-west of the landfill footprint is the Low Woodland identified in Zone 1. The landfill footprint is approximately 180 m from the Low Woodland. The stormwater dam in Zone 2 is 340 m from the Low Woodland to the north. The vegetation to the south of the stormwater dam is more than 250 m away.

The distance to the vegetation in Zone 1 is greater than 100 m and falls outside the BAL classification in *Table 2 Bush Fire Protection Guidelines – Edition 2*. Hence Zone 2 is considered to have negligible risk to fire from the native vegetation.

5.2.3 ZONE 3 – CROPLANDS AND VEGETATION

The area outside landfill footprint and infrastructure consists of croplands with isolated strands of vegetation. Zone 3 is a threat to the landfill infrastructure and the existing residential house. Any fire escape from the landfill or spread of fire through croplands and vegetation also has the potential to impact the neighbouring properties. The bush fire hazard in this zone can be classified as "Moderate" as per *Section 1 Appendix 1 in Table 2 Bush Fire Protection Guidelines – Edition 2,* due to the isolated strands of open forest vegetation and the farming with barley or canola in an undulating terrain.

5.2.4 ZONE 4 – SEALED INTERNAL ACCESS ROAD

Zone 4 consists of a minimum 4 m wide sealed internal access road through a 20 m wide easement. Zone 4 will act as the access corridor for Zone 1 and Zone 2 to the Great Southern Highway. The sealed road will travel through gradual undulating terrains with native vegetation or croplands outside the 20 m wide easement. There will be no building or occupied infrastructure in Zone 4 and with the easement

periodically removed of any fuel source, Zone 4 can be classified as "Moderate" as per *Section 1 Appendix 1 in Table 2 Bush Fire Protection Guidelines – Edition 2.*

5.2.5 EXTERNAL - FIRE SPREADING FROM OFF SITE

There is potential for fire originating from off the site to spread onto the Allawuna property in Zone 3. Fires starting on neighbouring properties or in the Wandoo National Park have the potential to spread by either by direct travel through connected vegetation or spotting ignition by lofted embers falling on the Allawuna Property.

This risk is minimised by the maintenance of low fuel loads on the Allawuna property, maintenance of appropriate fire breaks and the large separation distances between the stands of remnant vegetation and the landfill footprint area.

Spotting distance is a function of ember material and wind conditions. Maintaining a low fuel load reduces potential ember sources, such as long unburnt Marri and Wandoo bark. By remaining vigilant to the prevailing wind and fire conditions, the risk of fire transferring to the property without a timely and effective response can be minimised. The risk of fire spreading to the site is considered comparable to the risk of fire in Zone 3, being Moderate.

5.3 ZONE FIRE RISK RANKING

The fire management zones have been ranked from 1 to 4 based on the hazard assessment carried out in **Section 5.2**. Rank 1 has low risk of fire and rank 3 has high risk with respect to distance from vegetation.

Table 3: Fire Risk Ranking for Zones Identified

Zone	Fire Management Zone	Ranking
1	Supporting Infrastructure (BAL 12.5)	3
2	Landfill Footprint and Retention Pond	1
3	Croplands and Vegetation (Moderate)	2
4	Sealed Internal Access Road	2
External	Spread of Fire from Off Site	2

6 TYPES OF FIRES

There are many different situations on the site from which fire may result:

- Fire in landfill - waste or gas,
- Fire in waste haulage vehicle,
- Fire in offices/workshop,
- Fire around fuel storage tank,
- Fire involving site plant and equipment,
- Bush fire outside site boundary, and
- Grass/scrub fire inside the site boundary.

Various procedures are in place to prevent fires on-site. These are mainly focused on visual inspection of areas where fires may be a hazard, general housekeeping to minimise the risk of fire, training of personnel and the provision of adequate fire fighting equipment and monitoring of landfill gasses.

7 FIRE MANAGEMENT DURING CONSTRUCTION PHASES

Construction activities will occur during the upgrade of the intersection on Great Southern Highway, development of sealed internal access road in Zone 4, development of site infrastructure in Zone 1 and development of the landfill in Zone 3. The development of landfill in Zone 3 will be undertaken in stages as the volume of waste landfilled accumulates over time. The construction will be undertaken by approved contractors and the staff identified below will be responsible for management of incidents during an event of fire.

7.1 FUEL REDUCTION PRIOR TO CONSTRUCTION

Prior to the commencement of construction activities, controlled burning will be performed to reduce the fuel load near the works areas. Burning or other hazard reduction work will be undertaken during appropriate periods in accordance with local government regulations and DFES recommended guidelines.

Fuel loads in remnant bushland areas will be inspected annually and maintained at less than 8 tonnes per hectare.

7.2 EMERGENCY RESPONSE TEAM

Roles shall be assumed, depending on the personnel available, in the following priority order:

- Project Manager,
- Construction Superintendent,
- Plant Operator/Site Caretaker, and
- Operational Staff.

7.3 EMERGENCY PROCEDURE DURING FIRE

For all types of fires the following principles will be followed:

- The Plant Operator or Site Caretaker will be notified immediately of the fire (type, location and size) by the Operational Staff or other site users,
- Construction Superintendent and the Project Manager will then be notified by Site Caretaker,
- Alert DFES to the severity of the fire event and advise if a coordinated response may be required. Advise DFES immediately if a hazardous materials (HAZMAT) response is likely to be required,
- Site Caretaker will then contact emergency services through 000 based on advice from Project Manager and start recording events,
- If the Project Manager is not immediately contactable and the fire is considered potentially uncontrollable the Construction Superintendent or the Site Caretaker shall contact the LGA or Chief Bush Fire Control Officer (CBFCO) via Communication Centre 000,
- Construction Superintendent to stop all operations, stop all vehicle movements and assess the situation, only attempt to control fire if it is safe to do so,
- Site Caretaker to make sure all personnel on site are accounted for,
- Construction Superintendent must fill Site Emergency Form,
- Site Caretaker shall broadcast the following announcements over the UHF radio system channel XX to initiate evacuation,

"EMERGENCY, EMERGENCY, EMERGENCY"
"ALL PERSONNEL TO EVACUATE TO EMERGENCY ASSEMBLY AREA"
"EVACUATE, EVACUATE, EVACUATE"

- Plant Operator must collect staff and contractors and proceed to the emergency assembly area,
- Construction Superintendent must then evacuate all staff and visitors not involved in fighting the fire,
- The Project Manager will liaise with the Main Roads WA, SITA officials, LGA, CBFCO, and/or DFES in the instance of HAZMAT incident to arrange for supply of plant or equipment as required during an event of fire,
- The Project Manager will contact the senior management to advise on events and actions taken, and
- Should the operations be stopped, the Project Manager, in conjunction with authorised staff from SITA (key person), and if necessary, in consultation with the Main Roads WA, LGA and DFES will decide when the construction activities are to be re-commence.

7.4 SOURCE OF FUEL FOR FIRE DURING CONSTRUCTION

The main fuel source for fire during construction activities would be :

- Hot exhaust systems of plant and equipment being in contact with dry grass areas,
- Bush fire fuels in remnant bushland areas,
- Sparks from metal tracks on plant,
- Any fuel leakage from plant,
- Embers from hot works,
- Use of live worn wires being in contact with fuel sources,
- Inappropriate grounding of any electrical equipment, and
- Smoking outside a designated area.

7.5 FIRE MITIGATION MEASURES DURING LANDFILL CONTRUCTION

The Main Roads WA, DFES, LGA and CBFCO will be notified of any uncontrolled event of fire during construction activities either through the Communication Centre 000 or through direct contact. The information will contain:

- Time of fire,
- Location of fire,
- Nature of fire,
- Any mitigation measures adopted, and
- Information of any affected staff or property.

7.5.1 MUSTER POINTS

The landfill infrastructure is 3.1 km away from the public road and hence two muster points will be allocated for safe evacuation of site users. The first must point will be at the entry gate to Zone 1 and will allow for accounting of all site users accessing the landfill area. The second muster point will be at the main gate to the site in Zone 4 and will allow for verifying all users have evacuated the site safely.

7.5.2 SITE SECURITY

- Site will be securely fenced and site access gates will be closed to deter unauthorised entry of persons,

- A system will be in place for checking site visitors in and out,
- When unmanned the access gates to Zone 4 and Zone 1 will be locked,
- Only authorised site management personnel and the Fire Brigade will have keys to the site after operating hours,
- Signs will be displayed to show the locations of fire extinguishers, hazardous areas and risks of trespassing, and
- Emergency access gates, alternative entries and exits will be clearly identified. Signage will include distances to exits and potential hazards.

7.5.3 SITE INDUCTION

All construction staff will be trained in the site's emergency response procedures during the induction process, including the location of the emergency main gate, contacts list and incident notification.

7.6 HAZARD MANAGEMENT DURING CONTRUCTION

The below hazard management measures will be followed during all construction activities:

- Smoking is permitted only in the designated places,
- Offices are kept clean and tidy, and waste bins emptied on a regular basis,
- All chemicals are clearly labelled and affixed with a placard (where required),
- HAZMAT location and manifest details will be kept at site office and the emergency information cylinder located at the Zones 1 and 4 entry gates and weighbridge,
- Hot work (e.g. oxy-acetylene cutting and welding) will only take place in areas away from potentially flammable materials (minimum distance of 10 m), or with a fire extinguisher equipped spotter nearby. Permits to undertake hot work must be issued by the Project Manager and/or authorised personnel to conduct this work,
- Hot work will only be undertaken by trained and competent personnel,
- Hot work will not be undertaken on days of Total Fire Ban,
- Make frequent inspection around work site to identify fire hazards and address it immediately,
- Respective plant to be shut down during refuelling operations,
- Mufflers, catalytic converters and exhaust systems to be maintained in good working order,
- Equipment parking areas and small stationary engine sites to be cleared of all flammable materials or other fuel sources,
- Use appropriate electrical wiring for all plant or equipment,
- Check electrical equipment are appropriately grounded,
- Avoid use of plant or machinery outside sealed or vegetation clear areas,
- Fire extinguishers to be on each plant, office block and be serviced to have valid currency certificates,
- First aid kit to be made available in site office,
- Any spillage of flammable liquid or material will be cleared up immediately,
- Allow only authorised vehicles into the site, and
- Stop all construction activities during Total Fire Ban.

If possible during a fire event, power supply to the affected area will be switched off, along with any fuel or gas supplies if available. If it is safe to do so, any equipment close to the fire will be moved away, along with any other potentially flammable materials.

7.7 FIRE FIGHTING EQUIPMENT DURING CONSTRUCTION

The following fire fighting equipment should be made available during construction.

- Portable fire extinguishers,
- Water trucks with appropriate hoses and pumps, and
- Back up water supply source near work area for fire fighting.

Fire extinguishers and water will be the main methods of fighting fire during construction. A water truck (with fire fighting abilities including fittings to suit local fire units) will be available on site.

7.8 FIRE EXTINGUISHING MEASURES DURING CONSTRUCTION

Construction staff involved in fighting the fire should consider the following guidelines:

- Use personal protective clothing or equipment, especially considering the use of a respirator fitted with a vapour filter. Many substances produce toxic fumes when ignited (e.g. plastics, solvents, industrial wastes),
- Consider the safest method of attacking the fire taking into consideration the prevailing wind or air currents, the nature of the fire and the combustible materials,
- If not safe to fight the fire, try to prevent it spreading through the use of fire breaks or wetting down the surrounding areas,
- On the arrival of the Fire Brigade, hand over the responsibility for the fire fighting effort to the Fire Brigade's Site Controller. Offer assistance, if required, and
- After the fire has been extinguished, monitor the area to ensure it does not reignite.

7.9 REPORTING INCIDENT

7.9.1 FIRE MAPPING

The extent and location of fires occurring in and around the work site will be mapped and updated after a fire incident.

7.9.2 SCHEDULE

Post fire, the Project Manager will assist with de-briefs to relevant authorities and SITA. The report will contain both fire mapping and the database mentioned above.

8 FIRE MANAGEMENT DURING LANDFILL OPERATION

The landfill facility will contain hazardous materials (HAZMAT) such as flammable liquid in the form of diesel fuel and landfill gas containing combustible methane, hence fire in a landfill can be considered to be a HAZMAT in nature. The below mentioned Allawuna Farm Landfill staff will be responsible for the management of incidents during an event of fire.

8.1 STAFF TRAINING

All landfill operations staff will be required to undertake an appropriate nationally recognised fire and emergency response training course, appropriate for their role in an emergency.

Refresher training will be undertaken biennially or as required.

Fire response drills are to be undertaken annually, and include response to fires in all zones of the property.

8.2 EMERGENCY RESPONSE TEAM

Roles shall be assumed, depending on the personnel available, in the following priority order:

Chief Warden, Deputy Wardens and Wardens:

- Landfill Manager,
- Operations Supervisor,
- Contractor Supervisor,
- Contractor Second in Command,
- Weighbridge Operator, and
- Weighbridge Attendant.

Emergency Controller:

- Landfill Manager,
- Operations Supervisor,
- Weighbridge Operator, and
- Contractor Supervisor.

Emergency Co-ordinator:

- Weighbridge Operator,
- Operations Supervisor, and
- Allawuna Farm Landfill Manager.

8.3 RESPONSIBILITIES

8.3.1 ROLE OF THE WARDENS ON SITE

Wardens:

- Assist with accounting for personnel and locating missing persons (if approved by emergency controller).

Chief Warden:

- Collect visitors/site users sign in book and proceeds to the emergency evacuation point during an evacuation,
- Ensure all personnel are accounted for,
- Liaise with other wardens regarding missing persons,
- Notify emergency controller of situation, i.e. all people accounted/not accounted for,
- Take names and contact numbers of any emergency services personnel accessing the site, and
- Stop any trucks, public or media from entering site.

8.3.2 ROLE OF THE EMERGENCY CONTROLLER

The Emergency Controller will proceed directly to the site of the emergency if safe to do so and take control of the emergency situation.

The responsibilities of the Emergency Controller include:

- Go to the site of the emergency, if possible, and assess the situation - act accordingly. i.e how best to deal with emergency and any special requirements needed including PPE,
- Maintain or establish communications with DFES, emergency services on site and the weighbridge office,
- Carry a mobile phone and UHF radio at all times,
- Appoint an Emergency Co-ordinator to stand by and operate the telephone system (normally the weighbridge operator),
- Advise the Emergency Co-ordinator of the details of the situation and nominate the emergency services, subcontractors and consultants to be notified,
- Notify neighbours of incident if applicable, and
- Complete a Corrective and Preventive Action report using Integrum to describe the circumstances and the action taken immediately after the emergency has passed. Liaise with Landfill Manager and SITA Management to establish the level of alert required.

Brief the Emergency Services as follows:

- Action taken,
- Persons not accounted for,
- Casualties,
- Hazards and potential hazards,
- Co-operate with and assist the Emergency Services, and
- Report to the DER as required by the site licence.

8.3.3 ROLE OF THE EMERGENCY CO-ORDINATOR

The Emergency Co-ordinator (generally the Weighbridge Operator) has the following responsibilities:

- Co-ordinate communications between site and emergency services (See contact numbers in **Section 12**),
- Advise the emergency services of pertinent details including the location, type of emergency, injuries and the assistance required,
- Co-ordinate communication with other parties (e.g. contractors, customers and consultants), as directed by the Emergency Controller,

- The Emergency Co-ordinator is required to operate the telephone system and UHF Radio on Channel XX in the Weighbridge Office,
- If the emergency situation is located in the Weighbridge Office (e.g. a fire) then the Emergency Controller shall utilise the telephone in the Contractors site office. Alternatively, if the landline becomes inoperable then mobile telephones or portable radios may be used,
- Communications are established with the Emergency Controller by way of UHF radio Channel XX or telephone,
- Contact the SITA Landfill Services General Manager and advise him/her of the details of the emergency,
- Direct any media inquiries to the General Manager – Marketing and Strategy, and
- Record events on the Site Emergency Form (**Appendix A:**).

8.3.4 ROLE OF GENERAL MANAGER – MARKETING AND STRATEGY

The General Manager – Marketing and Strategy will assume the responsibility for public relations and contact with the media. All requests by the media for an interview/briefing must be referred to the General Manager – Marketing and Strategy who will facilitate, as appropriate, the response. Refer to the Media Policy and Protocols for further details.

> ⌦ ***Note:***
>
> *Only the Managing Director and the General Manager – Marketing and Strategy are permitted to have contact with the news media. Other senior managers may be authorised to respond to specific media enquiries as appropriate.*

During emergency situations media representatives are not permitted on to the premises.

8.4 EMERGENCY PROCEDURE DURING FIRE

For all types of fires the following principles will be followed:

- The Weighbridge Operator will be notified immediately of the fire (type, location and size) by the Contract Supervisor or the Plant Operator or other site users,
- Operations Supervisor and the Landfill Manager will then be notified by Weighbridge Operator,
- Weighbridge Operator will then contact emergency services through 000 based on advice from Landfill Manager and start recording events,
- If the Landfill Manager is not immediately contactable and the fire is considered potentially uncontrollable the Weighbridge Operator or the Operations Supervisor shall contact the LGA or Chief Bush Fire Control Officer (CBFCO) via Communication Centre 000,
- Operations Supervisor to contact landfill Gas Contractor on the emergency pager xx,
- Weighbridge Operator to stop all operations, stop trucks at the weighbridge and assess the situation, only attempt to control fire if it is safe to do so,
- Operations Supervisor to make sure all personnel on site are accounted for,
- Weighbridge Officer must fill Site Emergency Form,
- Weighbridge Operator shall broadcast the following announcements over the UHF radio system channel XX to initiate evacuation and sound the emergency evacuation siren,

"EMERGENCY, EMERGENCY, EMERGENCY"
"ALL PERSONNEL TO EVACUATE TO EMERGENCY ASSEMBLY AREA"
"EVACUATE, EVACUATE, EVACUATE"

- Operations Supervisor must collect staff and contractors and proceed to the emergency assembly area,
- Operations Supervisor must then evacuate all staff and visitors not involved in fighting the fire,
- The Landfill Manager will liaise with the LGA, CBFCO and/or DFES in the instance of HAZMAT incident to arrange for supply of plant or equipment as required during an event of fire,
- The Landfill Manager will contact the senior management to advise on events and actions taken, and
- Should the landfill be closed, the Landfill Manager, in conjunction with authorised staff from SITA (key person), and if necessary, in consultation with the LGA, DFES and the DER, will decide when the landfill is to be re-opened.

8.5 FIRE FIGHTING PLANT INSPECTION FREQUENCY

The Operations Supervisor will ensure that the fire fighting plant inspection is carried out as per the below **Table 4**.

Table 4: Inspection of Fire Fighting Equipment

Action Item	Frequency
Inspection of currency of fire extinguishers	Biannual
Inspection and maintenance of other fire fighting equipment mentioned in **Section 11.4**.	Biannual
Renewal of Contract for inspection and testing of fire extinguishers	At completion of service contract

The below hierarchy of principle will be followed during an event of fire:

Rescue - Rescue any persons involved that cannot help themselves

Exposures - Protect anything that is in danger of becoming involved in the incident

Confinement - If possible try to confine the incident to the smallest area possible

Extinguishment - Put out the fire

Overhaul - Clean up the mess, look for hotspots

9 FIRE MITIGATION MEASURES DURING LANDFILL OPERATION

DFES, DER, LGA and CBFCO will be notified of any uncontrolled event of fire in any of the four zones either through the Communication Centre 000 or through direct contact. The information will contain:

- Time of fire,
- Location of fire,
- Nature of fire,
- Any mitigation measures adopted, and
- Information of any affected staff or property.

9.1 MUSTER POINTS

The landfill infrastructure is 3.1 km away from the public road and hence two muster points will be allocated for safe evacuation of site users. The first must point will be at the entry gate to Zone 1 and will allow for accounting of all site users accessing the landfill area. The second muster point will be at the main gate to the site in Zone 4 and will allow for verifying all users have evacuated the site safely.

9.2 SITE SECURITY

- Site will be securely fenced and site access gates will be closed to deter unauthorised entry of persons,
- A system will be in place for checking site visitors in and out,
- When unmanned the access gates will be locked,
- The landfill facility will be fenced with a security fence and fitted with lockable gates to prevent unauthorised access and to control windblown litter and vermin,
- Inspection of fencing will be carried out on a monthly basis to identify damage to be rectified at the earliest convenience,
- Only authorised site management personnel and the Fire Brigade will have keys to the site after operating hours,
- Signs will be displayed to show hazardous areas and risks of trespassing, and
- Emergency access gates, alternative entries and exists will be clearly identified.

9.3 SITE INDUCTION

All new employees will be trained in the site's emergency response procedures during the induction process, including the location of the emergency main gate, contacts list and incident notification. Site induction will also be provided to Local Fire Brigades annually upon request to SITA.

9.4 EMERGENCY DRILLS

At least annually, an emergency drill needs to be undertaken at the facility to test and evaluate compliance against the emergency procedures and identify areas where further training is required and/or changes to the emergency procedures are required. The implementation of the drill is the responsibility of the Landfill Manager and the assessment of the drill is to be recorded in the Daily Diary.

Drills will include the participation of DFES nominated fire fighters, who would be the respondents to any landfill fire. The Landfill Manager is to coordinate with DFES to arrange for DFES fire fighting staff to attend drill days to test equipment cross compatibility, familiarise themselves with the site and the landfill staff.

9.5 HAZARD MANAGEMENT

9.5.1 ZONE 1 - SUPPORTING INFRASTRUCTURE

Preventative measures for office/workshop include:

- All structures to be constructed to the appropriate Bushfire Attack Level (BAL) rating for their proximity to bushland as per AS 3959,
- Smoking is permitted only in the designated places,
- Offices are kept clean and tidy, and waste bins emptied on a regular basis,
- All chemicals are clearly labelled and affixed with a placard (where required),
- HAZMAT location and manifest details will be kept at site office and the emergency information cylinders located at the Zone 1 entry gate and weighbridge,
- Hot work (e.g. oxy-acetylene cutting and welding) will only take place in areas away from potentially flammable materials and permits must be issued by the Landfill Manager and/or authorised personnel to conduct this work,
- Hot work will only be undertaken by trained and competent personnel,
- Hot work will not be undertaken on days of Total Fire Ban,
- Fire extinguishers will be serviced and inspected on a six-monthly basis or more frequently if required,
- Smoke alarms will be installed in the office, and
- Any spillage of flammable liquid or material will be cleared up immediately.

If possible during a fire event, power supply to the affected area will be switched off, along with any fuel or gas supplies if available. If it is safe to do so, any equipment close to the fire will be moved away, along with any other potentially flammable materials.

Preventative measures for the fuel storage area include:

- Areas around tanks be kept clean and without any waste build up,
- Grassed areas within 30 m of the fuel store to be regularly mown and maintained to a height of less than 10 cm when the grass is mature,
- No other potentially flammable materials or incompatible substances be stored near the tanks,
- Any spills of fuel be to cleaned up immediately using diatomaceous earth,
- All storage tanks be clearly labelled with the appropriate placards (where required),
- HAZMAT list to be updated regularly representing the type of fuel and quantity stored onsite at a given point of time, and
- All electricity and fuels lines must have the option to be switched off.

Action to be undertaken in the fuel storage area during an event of fire:

- Any fire in the fuel storage area be communicated to the Landfill Manager,
- All electricity and fuel lines be switched off/isolated if possible,
- All personnel will keep well clear of the area until given the all clear by the Landfill Manager,
- Appropriate fire fighting measures to be undertaken in consultation with CBFCO or DFES during an uncontrolled fire, and
- Record the details of any such incident in a register including the source, reason for fire, action and mitigation measure undertaken.

Preventive measures for plant and equipment include:

- Move other plant and equipment away from the affected area,
- All plant be cleaned and maintained regularly to avoid the build-up of waste or other material,
- All belly plates and other more inaccessible areas be checked regularly and cleaned out at each service or more frequently if required,
- Exhaust systems and spark arrestors of the plant and equipment to be maintained properly,
- Plant and equipment be moved away from the active landfill area and any other potential fire areas when not in use and out of waste facility operating hours, and
- Operators to check equipment and surroundings throughout their shift to ensure that no fires or hazards are imminent.

Action to be undertaken on plant and equipment include:

- The operator is to leave the machine as soon as possible, only staying to shut the equipment down if safe to do so, and where possible turn off the battery isolator switch,
- Notify the Landfill Manager on the status of the plant or equipment when left during an event of fire, and
- Inspect the plant or equipment for any faults that may have occurred during fire and operate them only after the fault is rectified and safe to work on.

9.5.2 ZONE 2 - LANDFILL FOOTPRINT AND RETENTION POND

Preventative measures include:

- Training to be provided to the staff to identify risk of fire, operate the fire fighting equipment and the most appropriate equipment to be utilised for a particular type of fire,
- Operators ensure any potential fire situation is recognised quickly, allowing prompt action to extinguish it,
- Equipment fire suppression systems serviced and inspected regularly and/or as required,
- Waste is covered by suitable cover material on a daily basis to ensure that the risk of fire within the waste mass is minimised,
- Waste outside the acceptable materials as per the licence are not permitted in the landfill,
- Storage of flammable goods in the site will require approval from the Landfill Manager and implementation of appropriate procedures in place,
- Smoking is not permitted within Zone 2 of the Allawuna Farm Landfill,
- Water truck and other equipment (**Section 11.4**) for fire fighting are available onsite,
- Where surface cracking is observed or subterranean combustion is suspected the area is to be barricaded off to stop entry until the area has been assessed by the Landfill Manager, and if necessary by emergency services,
- Power supply will be switched off if there is a related fire risk,
- The Landfill Manager will direct plant operators as to the best approach for individual fire incidents,
- Items of plant and equipment will be moved to a safe distance away from the affected area, and
- Unauthorised personnel and visitors must not enter the landfill area during a fire event unless instructed and accompanied by emergency services or onsite personnel and with the appropriate PPE.

9.5.3 ZONE 3 – CROPLANDS AND VEGETATION

The fire fighting resources at the Allawuna Farm Landfill will be made available to the DER, DFES and others in consultation with the Landfill Manager to assist in fighting fires in the remaining area. Trained and competent SITA personnel on site will assist in fire fighting activities. Allawuna Farm Landfill will encourage a culture within its staff and users to undertake best measures to prevent fire which are:

- Create awareness among the staff and users of the waste facility to identify the threat of fire and communicate that to the management for necessary action,
- Smoking will be permitted only in designated areas,
- The plant and machinery used for operation will be parked away from fire risk areas,
- Plant, equipment and machinery for farming will not be operated within Zone 3 during "very high" fire danger days, harvest and movement bans and total fire bans as imposed by the LGA,
- Maintenance and upkeep of fire access roads for emergency services to gain access to the property,
- Conducting appropriate controlled burning activities to limit fuel loads within remnant bushland areas to less than 8 tonnes per hectare,
- Clearing of dry debris from the fire breaks within the perimeter fences and adherence to the LGA firebreak order, and
- Notify DFES or LGA of any hazard identified outside the site boundary.

The movement of heavy plant and equipment will not be undertaken in Zone 3 on days of Total Fire Ban.

9.5.4 ZONE 4 – SEALED INTERNAL ACCESS ROAD

Preventive measures for Zone 4 would be:

- Maintenance and upkeep of sealed access road for emergency services and regular traffic to gain access to the property,
- Clearing of dry debris or fuel source from 20 m wide easement within the perimeter fences, and
- Trimming of overhanging tree branches within or close to the 20 m wide easement.

If separately approved, Zone 4 will have vehicles entering and leaving the landfill facility via the entrance road from Great Southern Highway during Total Fire Ban. Any exemption will not override the LGA's Total Fire Ban unless approved by the LGA or its authorised representative e.g. Chief Emergency Control Officer.

10 EXTINGUISHING METHODS DURING OPERATION

Several extinguishing methods can be adopted to extinguish fire. The method to be utilised will depend on the type, location, access and the intensity of the fire. The proposed fire extinguishing methods for the different fire management zones are described below.

10.1 GENERAL - ALL ZONES

Operations staff involved in fighting the fire should consider the following guidelines:

- Use personal protective clothing or equipment, especially considering the use of a respirator fitted with a vapour filter. Many substances produce toxic fumes when ignited (e.g. plastics, solvents, industrial wastes),
- Consider the safest method of attacking the fire taking into consideration the prevailing wind or air currents, the nature of the fire and the combustible materials,
- If not safe to fight the fire, try to prevent it spreading through the use of fire breaks or wetting down the surrounding areas,
- On the arrival of the Fire Brigade, hand over the responsibility for the fire fighting effort to the Fire Brigade's Site Controller. Offer assistance, if required,
- After the fire has been extinguished, monitor the area to ensure it does not reignite,
- Where applicable, block the stormwater drains, and
- If the fire is amongst the waste consider the use of an excavator to distribute the waste so that fire fighting measures are more effective.

10.2 ZONE 1 - SUPPORTING INFRASTRUCTURE

Fire extinguishers and water will be the main methods of fighting fire in this zone. A water truck (with fire fighting abilities including fittings to suit local fire units) and back up water storage tank (150,000 L tank) to the satisfaction of the fire authority will be maintained onsite.

10.3 ZONE 2 - LANDFILL FOOTPRINT AND RETENTION POND

If upon excavation the landfill fire appears to be well established and emanating from deep within the landfill mass, the landfill vents (smoke plumes) should be covered with soil to limit oxygen availability to the fire. The use of fire suppressant additives to assist in extinguishing a fire, or fire retardants to prevent future reigniting may be appropriate for a landfill fire. Site supervisors will be familiar with the suppressant and/or retardant products available on site and the types of fires and materials they are compatible with. A water based fire retardant may be added to the water in the water truck, hot spots excavated and the landfill mass saturated with fire retardant. The water based fire retardant will be stored in 20 L drums and mixed with water in the water truck during a fire event. The fire retardant will be sourced from suppliers and stocked onsite. If the fire is well established it may be necessary to drill bore holes into the landfill to allow the fire retardant to be injected into the landfill mass. Landfills burning below the surface create large voids within the landfill rendering the surface of the landfill susceptible to subsidence and can potentially become unsafe. Any initial fire fighting activities undertaken on the landfill area shall be coordinated by the Landfill Manager or the fire authority. If time permits exposed waste will be compacted and covered with soil without compromising safety of any staff.

10.4 ZONE 3 – CROPLANDS AND VEGETATION

Small fires in the croplands or remnant bushland vegetation may be controlled by the safe application of water. Fire control should commence from a safe anchor point and then work along the flank of the fire towards the head fire, whilst cutting fire breaks with on-site machinery to separate fuel sources. Fire fighting should only be undertaken by trained and competent staff in the safest manner possible. Fuel sources surrounding the area subjected to fire may also be wetted down using the water truck to limit the spread of fire. While first response to any fire event will always be the responsibility of the trained and competent staff on site, response to any fire event that has the potential to become large and uncontrolled due to the prevailing weather or fuel availability conditions should be undertaken in coordination with DFES and the LGA.

10.5 ZONE 4 – SEALED ACCESS ROAD

Any fuel source surrounding or within the 20 m wide easement subjected to fire will be wetted down using the water truck or hand held fire extinguishers in consultation with the LGA/DFES.

The preventive measures in **Section 9** for identified fire management zones (**Refer Section 5.1**) will be implemented to allow safety of lives and assets.

10.6 MANAGEMENT OF SPECIFIC FIRE TYPES

10.6.1 VEHICLE FIRE

- The two main causes of a vehicle fire are electrical faults or smouldering waste load. Electrical fires are treated as per an equipment fire,
- All smouldering waste loads, if known prior to tipping, should be tipped away from the exposed active area, on a thick layer of cover material. This minimises the risk of a landfill fire,
- When an equipment fire occurs: relocate vehicle into a safe area, extinguish using a dry powder or CO_2 extinguisher, and
- Seek advice from the Landfill Manager before using water (some materials are not compatible with water).

10.6.2 BUILDING FIRE

- Buildings can take as little as 5 minutes to become fully engulfed in flame so early mobilisation of fire authorities is essential,
- Ensure all staff are evacuated from the building and surrounding areas,
- The site generator is located at the southern end of the hardstand, adjacent to the fuel tank. Turn off the main power isolation switch and remove the main fuse at the generator distribution box,
- The site buildings may be equipped with automatic fire suppression systems. Otherwise, if safe to do so the fire can be extinguished using dry chemical or CO_2 extinguishers. Fire extinguishers are located in each building on site at each end of the weighbridge,
- Some building products and soft furnishings emit toxic fumes during a fire. Care should be taken not to enter a room full of smoke to extinguish a fire, and
- On arrival advise the Fire Brigade of steps taken.

10.6.3 LANDFILL FIRE

- Can cause significant impacts on local air quality through odour and smoke. Air monitoring should be conducted for any subterranean fires or large fires that burn for a long period of time,

- Extreme care must be taken when fighting a landfill fire as smoke and fumes may be toxic,
- Use a dry powder or CO_2 extinguishers in the first instance,
- Apply and compact (if possible) thick layer of cover to prevent oxygen from reaching the burning area,
- Seek advice from the Allawuna Farm Landfill Manager before using water or water based fire retardants (some materials are not compatible with water or other chemicals),
- If the above is not sufficient to extinguish the fire:
    - Systematically dig out the affected area, and
    - Extinguish the fire in the excavated material using one of the methods above,
- Subterranean landfill fires are difficult to extinguish. It is important to prevent subterranean fires by removing any ignition sources (e.g. lead acid batteries) and using daily cover. Extinguishing landfill fires quickly and monitoring the area for flare-ups minimises the risk of a subterranean fire,
- If a subterranean fire is detected the area must be isolated in case of a surface collapse resulting from the fire burning out a subsurface cavity,
- Subterranean fires can be extinguished by systematically digging out the affected area and extinguishing the fire in the excavated material,
- Areas affected by fire should be capped after extinguishing to minimise oxygen ingress, and
- Oxygen may be displaced by injecting an inert gas, such as nitrogen, into the fire.

10.6.4 BUSH, GRASS OR CROP FIRES

- Bush, grass or crop fires have the ability to escalate rapidly. The fire authorities should be notified as soon as possible to allow for mobilisation of fire equipment,
- Ensure that you are aware of access roads, fences and gates before attempting to fight these fires,
- On arrival, professional DFES personnel or the Local Fire Brigade will take over control of the fire,
- Earthmoving plant is to be placed at the disposal of the fire controller to assist in fire control and extinguishment efforts,
- Bush, grass and crop fires can be fought by applying water and building fire breaks. The strategy is to contain the fire within the existing fire breaks and prevent it from spreading to adjoining land,
- Bush, grass and crop fires should be "mopped up" to prevent re-ignition and loss of containment which can occur overnight when the site is unsupervised,
- As far as possible, control or eliminate possible sources of fuel or ignition to prevent the fire from spreading, and
- After the fire has been extinguished, monitor the area to ensure it does not reignite.

10.6.5 EQUIPMENT FIRE

- The two main causes of a landfill equipment fire are electrical faults or litter (caught on exhaust or manifold). These types of fires are minimised by regular inspections, servicing, maintenance, and cleaning,
- When an equipment fire occurs:
    - Activate the fire suppression system (where fitted),
    - Extinguish using a dry powder or CO_2 extinguisher, and

- Isolate batteries at the earliest convenience.

- Prevention of secondary fires, including landfill fires, is extremely important. If safe to do so the equipment should be moved to a safe location away from the active tipping face, and
- After the fire has been extinguished, monitor the equipment to ensure it does not reignite.

10.6.6 FUEL STORAGE FIRE

Fuel storage fires have the ability to escalate rapidly.

- The fire authorities should be notified as soon as possible to allow for mobilisation of fire equipment,
- Always treat fuel storage fires with dry powder, Aqueous Film Forming Foam or CO_2 extinguishers. Water will tend to spread the fire,
- If safe to do so endeavour to turn off the valve or stop leak in order to stop the supply of fuel to the fire,
- If all efforts are unable to control the fire, water sprays should be directed to surrounding areas, storage drums and equipment to prevent the spread of the fire and limit heat damage, and
- After the fire has been extinguished, monitor the area to ensure it does not reignite.

11 FIRE MANAGEMENT ASSETS DURING OPERATION

11.1 EMERGENCY ACCESS ROUTES

The main access to the site is through a well laid and maintained 4 m minimum width sealed road which is privately owned. Apart from the private access road through the centre of the property, an alternate fire break road is available for use along south west boundary (Refer **Drawing ALLA-FMP-08**). This provides access to the landfill footprint from the southern end. The alternative route has a minimum trafficable surface of 4 m and have less than maximum average grade of 1:7. The emergency access route will comply with the *Vehicular Access Performance Criteria* mentioned in *Element 2 Section A2.7 of the Bush Fire Protection Guidelines – Edition 2.* The main access road will have 1.2 m high farm fence on both sides, one entry gate and six (6 m wide) emergency access gate while proceeding to the landfill gate (**Drawing ALLA-WA-31**).

11.2 ACCESS GATES

The landfill footprint and supporting infrastructure will have a 2.0 m high fence topped with barbed wire along its perimeter as shown in **Drawing ALLA-FMP-06**. Fourteen access points made of thirteen emergency access gates and one main entry gate will be provided along the security fence and gates will be locked at all times when the site is unattended to prevent vandalism and unauthorised entry. DFES and Fire Brigade will be issued with a master key to all these access gates to be used in the event of an emergency. All eight emergency access gates will be a minimum 6 m wide and will be labelled as "Emergency Access Only" and the main gate will be sign posted as "Main Entry". The access points and the emergency contact numbers will be displayed on a cylinder attached to a post located outside the main gate to the site in Zone 3. The emergency maps of the site will also clearly identify the water sources on the site, including the water tanks and stormwater dam.

11.3 FIRE BREAKS

The Shire requires having a fire break of minimum 2.1 m for rural lands. Given the fire hazards outlined in **Section 5.2**, fire breaks of minimum 4 m will be maintained around zones 1 to 2 and 4 m wide fire access roads will be maintained in Zone 3. Minimum 4 m wide firebreak will be maintained around the perimeter of the site. The fire breaks will be clear of trees, bushes or any flammable materials leaving cleared earth. The site is 1,516 ha in total thus the fire breaks will be provided to subdivide the lot into areas less than 300 ha for better risk management, all other fire breaks used for the subdivision will be 2.1 m to meet the LGA's fire break requirements. Regular checks and maintenance will be carried out to allow suitable clearance of trees from power lines.

11.4 EQUIPMENT AND UTILITIES

The fire fighting equipment will be made available in the offices, contractors shed and on each plant. The water tank for exclusive use of fire fighting is located within Zone 1 as shown on **Drawing ALLA-FMP-3**.

11.4.1 WATER TANKS / RETICULATION

One 150,000 L water tank and one 100,000 L water tank is proposed for the facility. The 150,000 L water tank is dedicated for fire fighting purposes and the other for site water reticulation. The tanks will be topped up using the site water truck. The use of fire retardants for the fighting of landfill (waste) fires is also proposed and the retardant will be stored in 20 L drums onsite for mixing prior to application.

Water in the 30,000 kL stormwater dam can also be used for refilling the water truck or fire fighting tank after consultation with the Landfill Manager and determining if this additional water source is suitable.

11.4.2 WATER TRUCK

A water truck will be available for dust suppression and use when fire fighting. The water truck will have a capacity to carry 14,000 L and can be coupled to the 150,000 L water tank through fitting compatible with the DFES and the local Fire Brigade fleet for easy filling of the tank. 50 mm diameter heavy duty hose will be used for coupling the water truck to the fire service tank and 20 mm diameter heavy duty hose will be used for hand fire fighting.

The water truck will be configured for all terrain access to any part of the site that may require a fire response.

The DFES compatible fitting will also ensure that the dedicated fire fighting tank is not used for any other purpose. The water truck will be fitted with a pump for pressurised release of water for fire retardation.

11.4.3 FIRE EXTINGUISHERS

Portable fire extinguishers will be provided in the office, workshop and also on the plant and equipment, including personnel vehicles.

11.4.4 PERSONAL PROTECTIVE EQUIPMENT

The minimum level of PPE required for the site is steel capped boots and safety vests. Wet weather clothing, gloves, hard hats and respiratory devices will be available at the site. Dust masks will be available for protection from nuisance dust. Half face air purifying respirators fitted with Class P2 cartridges in accordance with *Australian Standard 1716* will be available for protection against mechanical and thermally generated particulates.

The minimum PPE to be worn during an event of fire will be jacket, pants, boots, gloves, helmet, respirator and goggles at the approved standard. The equipment list will be displayed within the facility informing the staff about the stored location. Fire response staff will be trained in the correct use and maintenance of all fire fighting PPE. The staff will also be made aware of the equipment (**Section 11.4**) available for fire fighting and the operating procedures.

11.5 MONITORING AND PREVENTION OF FIRES ORIGINATING FROM LANDFILL

11.5.1 GAS COMPOSITION MONITORING

Waste buried in the landfill can produce methane gas during anaerobic decomposition. Monitoring of gas composition can provide useful data for the management of fire risk within the landfill and the necessary precautions to adopt during an event of fire. As part of the landfill gas management, methane, oxygen, carbon monoxide and hydrogen sulphide will be monitored. High levels of carbon monoxide will indicate the existence of subsurface fire. Methane monitoring will provide information for the timing of the introduction of landfill gas flaring. The monitoring of oxygen levels determines the performance of the composite liner system and landfill cap to inhibit the ingress of air from outside the landfill due to the removal by vacuum pumping of landfill gas.

11.5.2 WEATHER MONITORING

The weather forecast will be monitored daily and necessary precautions will be adopted when extreme weather conditions have been predicted.

11.5.3 PERFORMANCE INDICATORS

The frequency in occurrence of fire in the identified fire management zones will be a direct indication of fire prevention and fire fighting performance. The indicators have been listed in **Section 11.5.4**. Performance monitoring will allow assessment of adequacy for existing fire breaks, precautionary measures and the fire fighting equipment.

11.5.4 DATABASE MANAGEMENT

All the events will be tabulated and will contain at least the following:

- Time of fire,
- Conditions prevailing during the event of fire (temperature, wind speed and direction, recent rain history),
- Any variations from the suggested precautionary measures,
- Fire fighting measures adopted,
- Suitability and success of fire fighting measures, and
- Time taken to arrest the fire.

The data will form the basis of performance indicators and the reviewing of current fire management procedures.

11.5.5 PERFORMANCE REVIEW

The performance indicator will trigger the need to review the FMP after a significant fire event. Regardless of the number of fire events, the FMP will be reviewed minimum annually and will be modified to address the incidences fires in all the fire management zones identified.

11.5.6 CHECK LIST

A check list has been prepared for monitoring all zones (**Appendix B**:) and is adapted from the *International Solid Waste Associates Chapter 9 Table 9.3*. Another checklist has been prepared to reflect the Annual Compliance Checklist for Performance Criteria and Acceptable Solutions in accordance with *Appendix 4 of the Bush Fire Protection Guideline* as **Appendix C:**. The above checklists will be reviewed every six months and before each summer season to ensure its relevance to current site layout and conditions.

12 EMERGENCY CONTACTS DURING CONSTRUCTION AND OPERATION

The emergency contact numbers will be available, along with a fire zone map, from within the emergency information cylinder located at the main gate to the site, entry gate to landfill infrastructure (i.e Zone 1) and at the weighbridge. Emergency contact numbers will also be displayed on the sign both at the main gate to the landfill and on the entrance road from Great Southern Highway. All initial calls will be made through 000 or State Emergency Services 132500.

Table 5: Emergency Contact Numbers

Contact	Primary Contact	Secondary Contact
Ambulance	000	
Burges Siding Brigade	0427 086 586	9641 1438
Chief Bush Fire Control Officer	0429 411 449	9641 1449
Community Emergency Services Manager	0427 057 719	
Department of Fire and Emergency Services (Northam)	9690 2300	
Fire	000	
Life Threatening Emergencies	000	
Police	000	
Shire Office	9641 2233	
Shire Ranger	0417 129 601	9641 2489
SITA - Landfill Manager	TBA	
SITA - Operations Supervisor	TBA	
York Hospital	9641 0200	
York Police Station	9693 1000	
York Volunteer Emergency Services	0429 932 025	9641 1698

12.2 DEPARTMENT RESPONSIBLE FOR EACH ZONE

Table 6: Zone Responsibility

Zones	Department
Zone 1	DFES / Trained SITA Staff / Local Bush Fire Brigade
Zone 2	DFES / Trained SITA Staff
Zone 3	DFES / Trained SITA Staff / Local Bush Fire Brigade
Zone 4	DFES / Local Bush Fire Brigade / Trained SITA Staff

12.3 LOCATION OF FIRE UNITS

Table 7: Location of Fire Units

Fire Unit	Approximate Distance (km)	Approximate Time to Reach Allawuna Farm Landfill
Burges Siding Brigade	8 km	20 minutes
Local Town Station	22 km	35 minutes
Perth Metropolitan	70 km	60 minutes

The Bush Fire Control Officers can be contacted on the phone numbers listed in **Appendix D:**.

13 SITE ACTIVITY DURING FIRE BAN

The operation of the waste facility during days declared as Total Fire Ban under *Bush Fires Act 1954 Section 22C* (Bush Fires Act 1954) and/or Harvesting and Total Vehicle Movement Ban by the LGA will be undertaken with strict adherence to the following:

- Only work which cannot reasonably be postponed to a time with safer weather conditions will be undertaken,
- Weather conditions are to be continually assessed and warnings observed,
- All fire breaks are to be maintained in accordance with the LGA's fire break notice,
- One (1) person is to undertake the role of "fire spotter" for the duration of the Total Fire Ban or Harvesting and Total Vehicle Movement Ban period,
- One water truck of at least 14,000 L fitted with 200 L foam injection systems with remote control cannon to be available at all times at the waste facility,
- The 150,000 L water tank dedicated for fire fighting purposes is maintained full of water at all times and will be fitted with a measuring device to visually show that the tank is full,
- All vehicles and stationary motors are to be inspected prior to leaving any formed road to ensure that the exhaust systems are in a sound condition,
- All vehicles and stationary motors are to be refuelled on clear ground and in an appropriate method to avoid the release of static electricity,
- The entrance road and access to the work areas is to be regularly checked to ensure that no windblown vegetation can come into contact with exhaust or catalytic converters fitted to any vehicle,
- The vehicles and plant are to be sited/parked in areas free from vegetation and combustible material, and
- At least two (2) personnel are to remain at the work site for at least thirty (30) minutes after the works have been completed to ensure the site remains safe and the site is to be fully inspected for any potential fire activity prior to their departure.

13.1 NOTIFICATION

When separately approved landfill operations are undertaken in Zone 1, Zone 2 and Zone 4 on days of Total Fire Ban or Harvesting and/or Total Vehicle Movement Ban, the Community Emergency Services Officer and LGA is to be notified on the day and prior to the work commencing.

14 REPORTING

14.1 FIRE MAPPING

The extent and location of fires occurring in and around the site will be mapped and updated annually. This will provide an indication of assessing the fire management zones and the need for additional precautionary measures to be adopted within the identified zones.

14.2 SCHEDULE

Any risk of fire or hazard identified within zones 1 to 2 or on remaining site will be reported as soon as possible to the Communication Centre through 000, the LGA and to DFES as soon as possible.

Post fire, SITA will assist with de-briefs to relevant authorities. Post fire, SITA will annually report on all events of fire to the DER, LGA, DFES or as described in the site approvals or licencing conditions. The report will contain both fire mapping and the database mentioned above (**Section 11.5.4**).

15 REFERENCES

Australia, G. o. (2013). *Bush Fires Act 1954.* Western Australia: Government of Western Australia.

Australia, G. o. (2014). *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.* Western Australia: Government of Western Australia.

Authority, E. P. (2005). *Guidance for the Assessment of Environmental Factors No. 3.* Western Australia: Environmental Protection Authority.

Commission, W. A. (2010). *Planning for Bush Fire Protection.* Western Australia: Western Australian Planning Commission and Fire and Emergency Services Authority.

York, S. o. (2013, September 03). Town Planning Scheme No. 2. York, Western Australia, Australia.

16 DRAWINGS

SITA AUSTRALIA

ALLAWUNA FARM LANDFILL

Lots 4869, 5931, 9926 & 26934 Great Southern Highway, Saint Ronans

FIRE MANAGEMENT PLANS

LOCALITY PLAN
NOT TO SCALE

DRAWING SCHEDULE - CIVIL

DRAWING No.	REVISION	DESCRIPTION
ALLA - FMP - 01	A	COVER SHEET
ALLA - FMP - 02	A	SITE PLAN
ALLA - FMP - 03	A	INFRASTRUCTURE AREA LAYOUT PLAN
ALLA - FMP - 04	A	LANDFILL CELL 1 AND 2 LAYOUT PLAN
ALLA - FMP - 05	A	LEACHATE POND LAYOUT PLAN
ALLA - FMP - 06	A	FENCE LAYOUT PLAN
ALLA - FMP - 07	A	STORMWATER CATCHMENT PLAN AND CALCULATIONS
ALLA - FMP - 08	A	EMERGENCY ACCESS ROUTES AND FIRE MANAGEMENT ZONES

CLIENT REVIEW
4 March 2015

Bowman and Associates Pty Ltd
ABN: 22 112 399 514
Mail: PO Box 2059, Rossmoyne WA 6148
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Phone: (08) 9414 9670
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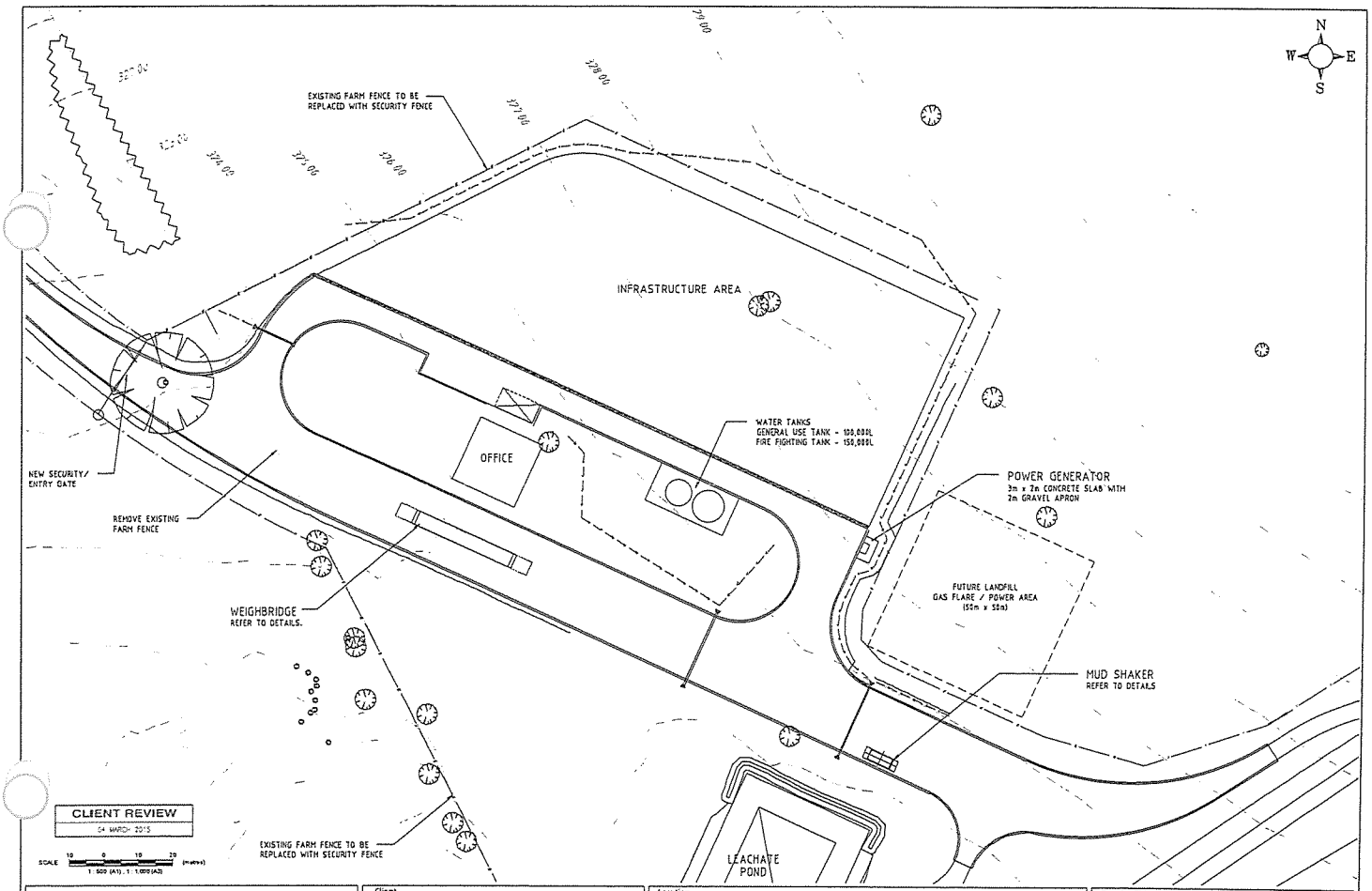
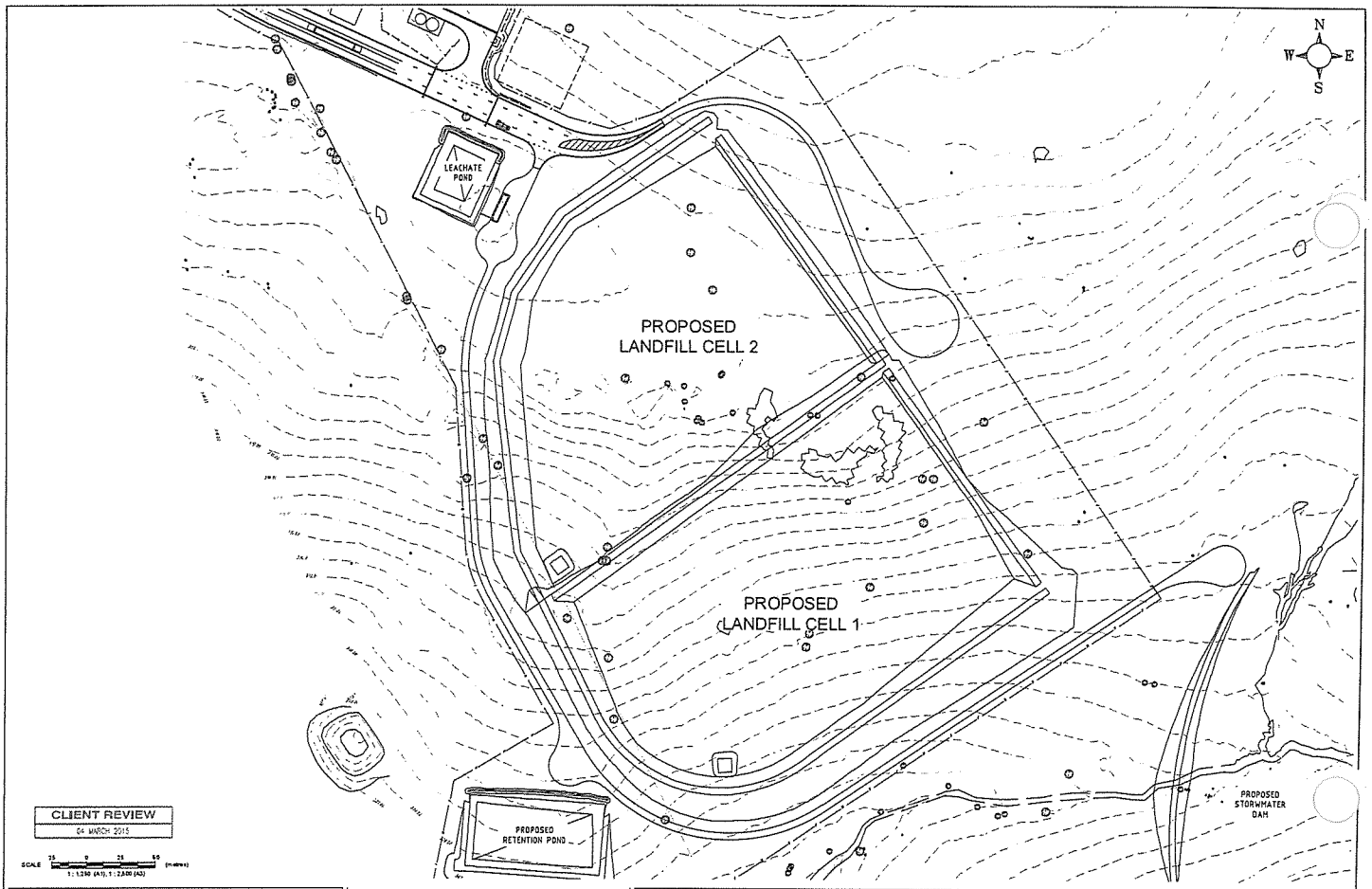
Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Cover Sheet

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
04/03/15	N.T.S.	B.W.B.	S.B.Y.	Allawuna Farm Landfill	ALLA - FMP - 01	A	A1

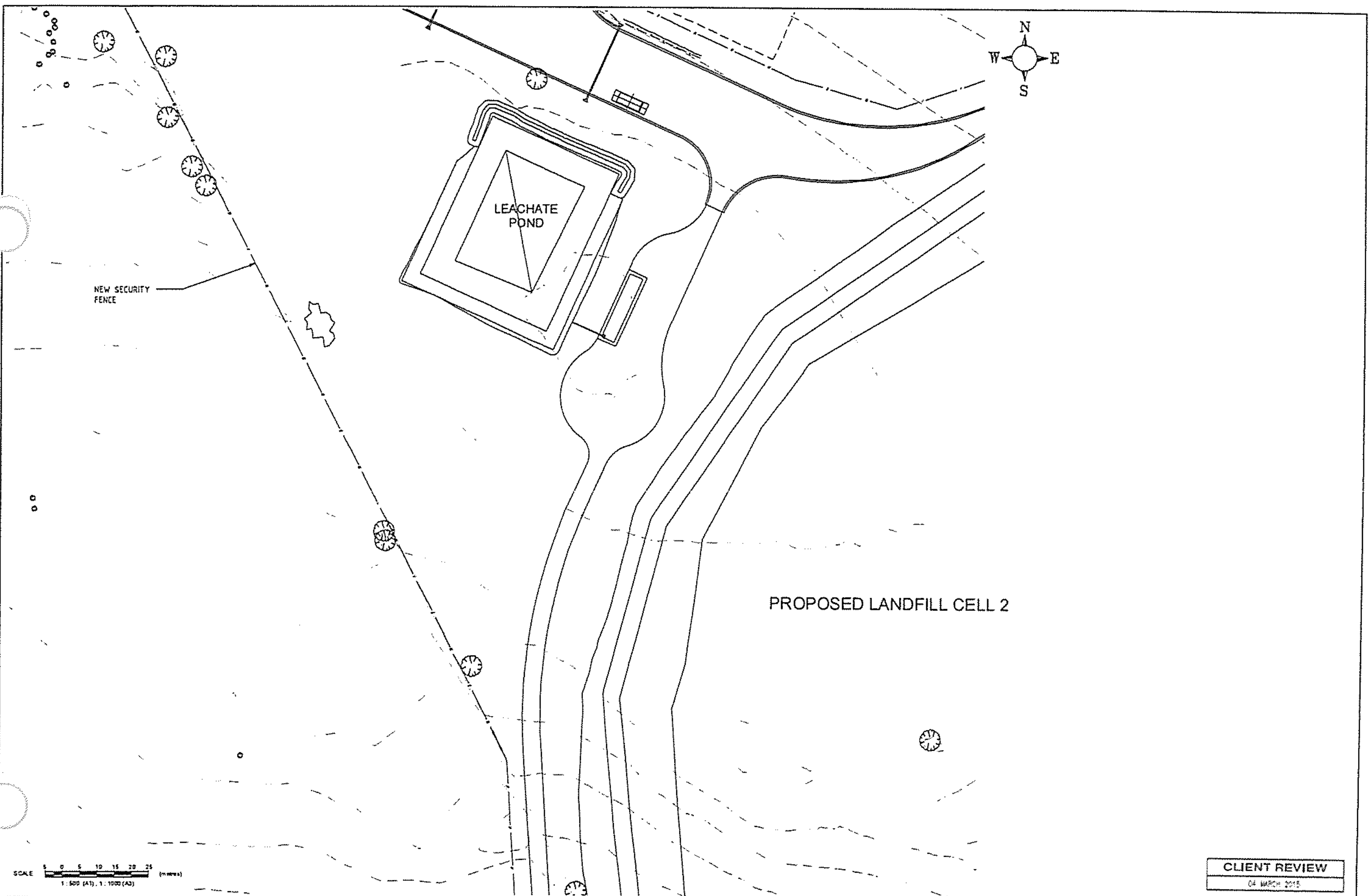
Bowman and Associates Pty Ltd ABN: 22 112 399 514 Mail: PO Box 2059, Rossmoyne WA 6148 Office: 8/649 Bedfor Drive, Success WA 6164 Phone: (08)9414 9670 Web: www.bowmanassociates.com.au	Client: SITA Australia				Location: Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans		Drawing Title: Site Plan
	Date: 04/03/15	Scale: 1:10,000	Design By: B.W.B.	Drawn By: S.B.Y.	Project: Allawuna Farm Landfill	Drawing Number: ALLA - FMP - 02	Revision: A	Drawing Size: A1



Bowman and Associates Pty Ltd ABN: 22 112 399 514 Mail: PO Box 2059, Rossmoyne WA 6148 Office: 8/640 Bridge Drive, Success WA 6164 Phone: (08) 9414 9670 Web: www.bowmanassociates.com.au	Client: SITA Australia			Location: Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans		Drawing Title: Infrastructure Area Layout Plan	
	Date: 04/03/15	Scale: 1 : 500	Design By: B.W.B.	Drawn By: S.B.Y.	Project: Allawuna Farm Landfill	Drawing Number: ALLA - FMP - 03	Revision: A	Drawing Size: A1



Bowman and Associates Pty Ltd ABN: 22 112 399 514 Mail: PO Box 2959, Rossmoyne WA 6148 Office: 8/649 Bedfar Drive, Success WA 6164 Phone: (08) 9414 9670 Web: www.bowmanassociates.com.au	Client: SITA Australia			Location: Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans		Drawing Title: Landfill Cell 1 and 2 Layout Plan	
	Date: 04/03/15	Scale: 1:1,250	Design By: B.W.B.	Drawn By: S.B.Y.	Project: Allawuna Farm Landfill	Drawing Number: ALLA - FMA - 04	Revision: A	Drawing Size: A1



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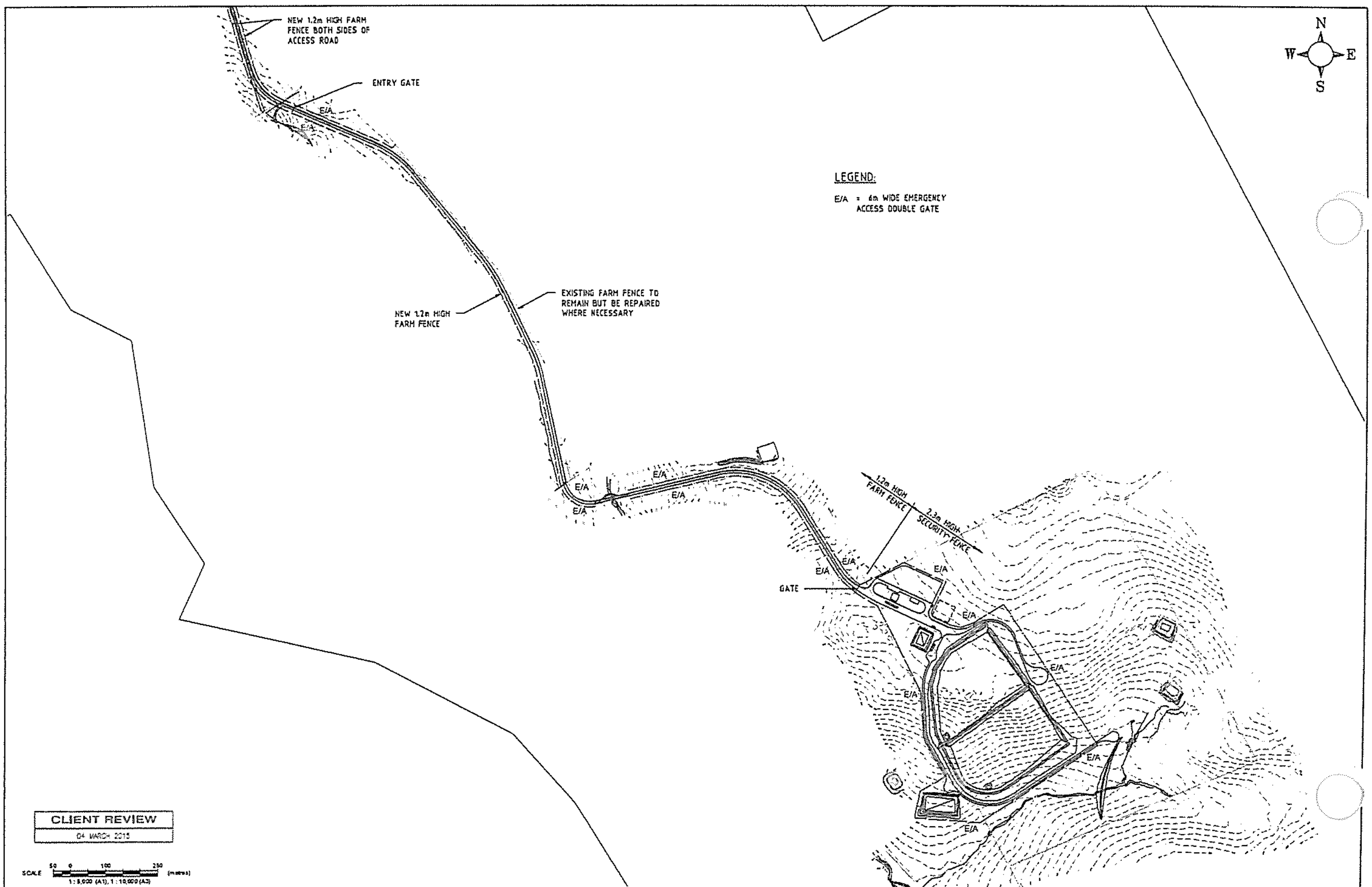
Client	SITA Australia	Location	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Drawing Title	Leachate Pond Layout Plan		
Date	04/03/15	Scale	1 : 500	Design By	B.W.B.	Drawn By	S.B.Y.
Project	Allawuna Farm Landfill	Drawing Number	ALLA - FMP - 05	Revision	A	Drawing Size	A1



Bowman and Associates Pty Ltd	Client	Location	Drawing Title
ABN: 22 112 399 514	SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Fence Layout Plan
Mail: PO Box 2059, Rossmoyne WA 6148; Phone: (08) 9414 9670; Office: 8/640 Beeliar Drive, Success WA 6164; Web: www.bowmanassociates.com.au			

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
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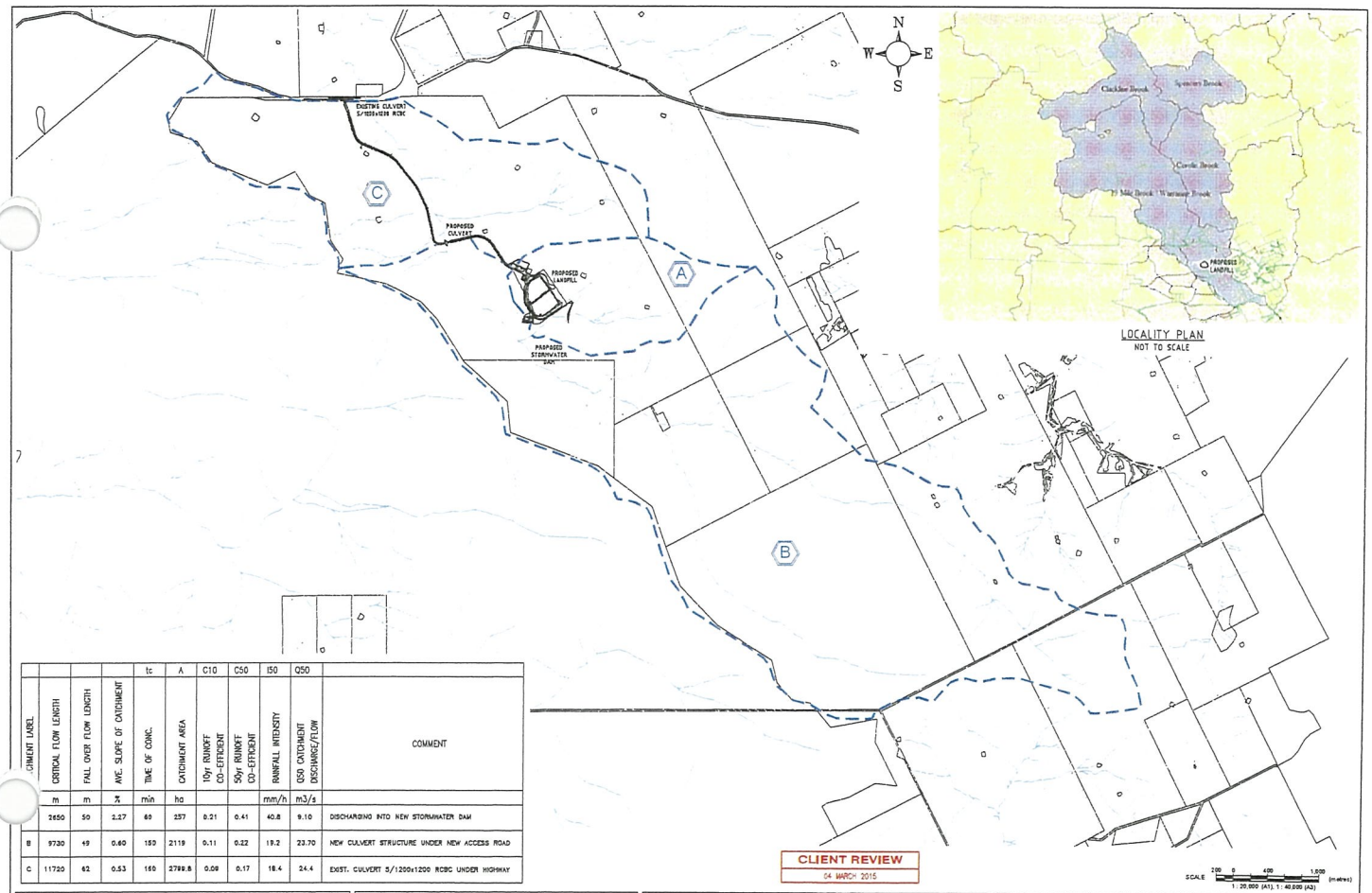
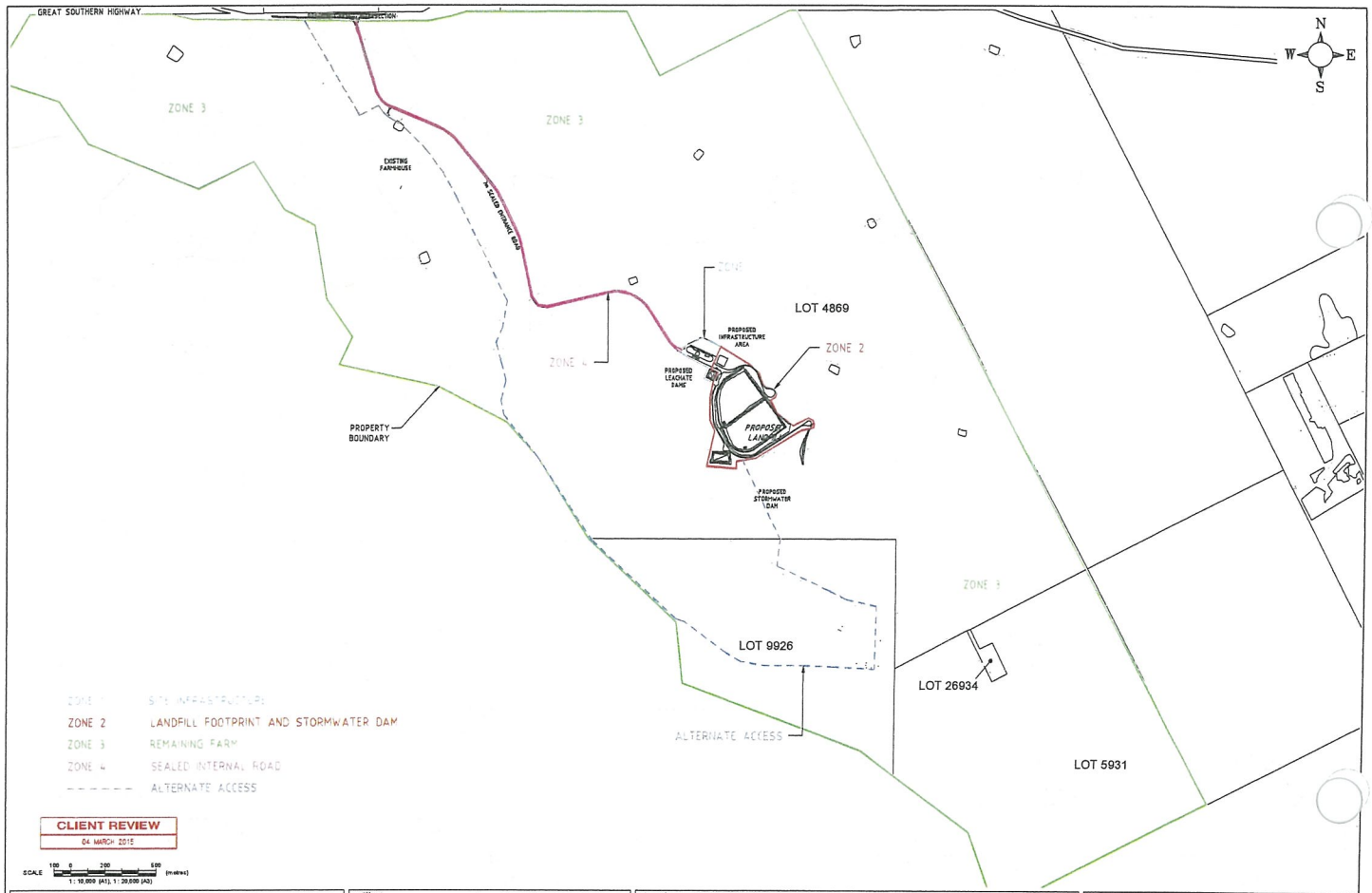


CATCHMENT LABEL	CRITICAL FLOW LENGTH	FALL OVER FLOW LENGTH	AVE. SLOPE OF CATCHMENT	tc TIME OF CONC.	A CATCHMENT AREA	C10 10yr RUNOFF CO-EFFICIENT	C50 50yr RUNOFF CO-EFFICIENT	I50 RAINFALL INTENSITY	Q50 Q50 CATCHMENT DISCHARGE/FLOW	COMMENT
	m	m	%	min	ha			mm/h	m3/s	
	2650	50	2.27	60	257	0.21	0.41	40.8	9.10	DISCHARGING INTO NEW STORMWATER DAM
B	9730	49	0.60	150	2119	0.11	0.22	19.2	23.70	NEW CULVERT STRUCTURE UNDER NEW ACCESS ROAD
C	11720	62	0.53	160	2799.8	0.09	0.17	18.4	24.4	EXIST. CULVERT 5/1200x1200 RCBC UNDER HIGHWAY

Bowman and Associates Pty Ltd
ABN: 22 112 399 514
Mail: PO Box 2059, Rossmoyne WA 6148
Office: 8/640 Bridge Drive, Success WA 6164
Phone: (08)9414 9670
Web: www.bowmanassociates.com.au

Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Stormwater Catchment Plan & Calcs

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
04/03/15	1:20,000	B.W.B.	S.B.Y.	Allawuna Farm Landfill	ALLA - FMP - 07	A	A1



Bowman and Associates Pty Ltd
ABN: 22 112 300 514
Mail: PO Box 2059, Rossmoyne WA 6148
Office: 8/640 Bedfar Drive, Success WA 6164
Phone: (08) 9414 9670
Web: www.bowmanassociates.com.au

Client	Location	Drawing Title
SITA Australia	Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Site Plan

Date	Scale	Design By	Drawn By	Project	Drawing Number	Revision	Drawing Size
04/03/15	1:10,000	B.W.B.	S.B.Y.	Allawuna Farm Landfill	ALLA - FMP - 08	A	A1

17 APPENDICES

Appendix A: Site Emergency Form

SITE EMERGENCY FORM

Stop site visitors at weighbridge until it is determined whether an evacuation is required and it is established the site can function safely.

Emergency details:

Emergency Date and Time: (Include time commenced and concluded)	
Location:	
Emergency Services Contacted: (Include time called and arrival time)	
What has happened:	
Are all personnel accounted for: (Check with people on the scene)	
Is evacuation required: (Record time evacuation is announced)	
Number persons injured:	
Vehicles involved:	
Fire – where:	
Bomb threat:	
Electrical:	
Gas:	
Environmental:	
Any access roads blocked:	
Are emergency assembly points safe:	
Comments:	

Appendix B: Check List

ALLAWUNA FARM LANDFILL FIRE MANAGEMENT CHECKLIST

Zone 1 – Supporting Infrastructure	Yes	No
Work place is clean and orderly		
Emergency exit signs properly illuminated		
Fire alarms and fire extinguishers are visible and accessible		
Fire extinguishers are certified and within test expiry dates		
Emergency exits are free of obstruction		
The access roads to office/buildings are clear and unobstructed		
Adequate supply of water available		
Automatic fire suppression equipment (where fitted) are in good condition and in test expiry dates		
All flammable materials are stored appropriately		
Emergency contact numbers are displayed and current at both the main gate to the site and at the landfill entry		
Grass is cut and area is free of litter		
Induction training for new employees has been carried out		
Staff are educated with fire prevention and extinguishment procedures		
Emergency evacuation plan is known to all staff		
Visitors are informed of evacuation procedures		
Necessary PPE is available on site		
Zone 2 – Landfill Footprint		
Stockpile of earth is available close to the tipping face		
Heavy equipment is available to move earth		
All waste, apart from waste received that day, is adequately covered		
Landfill areas that have not yet been capped do not have any waste exposed		
Temporary litter screens, litter traps and litter fences are free of litter		

Stormwater drains and culverts are free of litter		
Grass along stormwater drains is cut or adequately maintained		
Emergency access gates to landfill footprint are unobstructed and maintained		
All equipment maintenance is up to date		
Fire extinguishers on mobile plant are certified and within test expiry dates		
All necessary precautions against occurrences of fire are carried out		
Zone 3 – Croplands and Vegetation		
Temporary litter screens, litter traps and litter fences are free of litter		
Any windblown debris from the landfill is removed from the surrounding bush and perimeter fences		
Plant and machinery used for operation will be parked at least 20 m from bush and other high fire risk areas		
Fire breaks within the perimeter fences are cleared of any debris		
Fire access routes are maintained and free from obstruction		
Any fire hazard is reported to the office and actioned		
Zone 4 – Sealed Access Road		
Emergency contact numbers and fire management maps are available in the emergency cylinder at the main gate/muster point		
Easement perimeter fences are cleared of any debris		
Any fire hazard is reported to the office and actioned		
Emergency access gates along the sealed access road are unobstructed and maintained		

Appendix C: Annual Compliance Check List

THE LEADER IN RESOURCE RECOVERY

Annual Compliance Checklist

for

Performance Criteria and Acceptable Solutions

in Accordance with

Appendix 4 of the Bush Fire Protection Guideline

Date: 03/04/2014

Element 1: Location

A1.1: The subdivision/development is located on land that is not subject to either an extreme bush fire hazard land classification or requires construction standards to BAL-40 or BAL-FZ.

Does the proposal comply with the performance criteria by applying acceptable solution A1.1?

Yes ☑ No ☐

Element 2: Vehicular Access

A2.1: Two different vehicular access routes, both of which connect to the public road network, are available to all residents/the public at all times.

Does the proposal comply with the performance criteria by applying acceptable solution A2.1?

Yes ☑ No ☐

A2.2: Public roads meet the following requirements:

- **minimum trafficable surface: 6 metres**
- **horizontal clearance: 6 metres**
- **vertical clearance: 4 metres**
- **maximum grades: 1 in 8**
- **maximum grade over <50 metres: 1 in 5**
- **maximum average grade: 1 in 7**
- **minimum weight capacity: 15 tonnes**
- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres**

Does the proposal comply with the performance criteria by applying acceptable solution A2.2?

Yes ☑ No ☐

There are no public road within the proposed site.

A2.3: Where used, however, cul-de-sac standards are to be as follows:

- **maximum length: 200 metres (if emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than 8 lots are serviced)**
- **minimum trafficable surface: 6 metres**

- **horizontal clearance: 6 metres**
- **maximum grades: 1 in 8**
- **maximum grade over <50 metres: 1 in 5**
- **maximum average grade: 1 in 7**
- **minimum weight capacity: 15 tonnes**
- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres as per turn around area requirements – including 21 metre diameter head.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.3?

Yes ☑ No ☐

There are no cul-de-sac in the access road. This clause is not applicable as the internal roads are inter connected and have sufficient open spaces for navigating vehicles.

A2.4 Battle axe access legs meet the following requirements:

- **maximum length: 600 metres**
- **minimum width: 6 metres**
- **minimum trafficable surface: 4 metres**
- **horizontal clearance: 6 metres**
- **vertical clearance: 4 metres**
- **maximum grades: 1 in 8**
- **maximum grade over <50 metres: 1 in 5**
- **maximum average grade: 1 in 7**
- **minimum weight capacity: 15 tonnes**
- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.4?

Yes ☑ No ☐

This clause is not applicable for the site.

A2.5 Constructed private driveways meet the following requirements:

- **required where house site is more than 50 metres from a public road**
- **minimum trafficable surface: 4 metres**
- **horizontal clearance: 6 metres**
- **vertical clearance: 4 metres**
- **maximum grades: 1 in 8**
- **maximum grade over <50 metres: 1 in 5**
- **maximum average grade: 1 in 7**
- **minimum weight capacity: 15 tonnes**
- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres**

- **passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of 2 metres (ie the combined width of the passing bay and constructed private driveway to be minimum 6 metres)**
- **turn around areas designed to accommodate 3.4 fire appliances and to enable them to turn around safely: every 500 metres and within 50 metres of a house.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.5?

Yes ☑ No ☐

The internal access road from Great Southern Highway to the landfill is 7 m wide sealed road and will have two way access at all times.

A2.6: Emergency access ways, providing alternative links to public roads during emergencies meet the following requirements:

- **minimum trafficable surface: 6 metres**
- **horizontal clearance: 6 metres**
- **vertical clearance: 4 metres**
- **maximum grades: 1 in 8**
- **maximum grade over <50 metres: 1 in 5**
- **maximum average grade: 1 in 7**
- **minimum weight capacity: 15 tonnes**
- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres**
- **must be signposted.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.6?

Yes ☑ No ☐

The alternate route for emergency access will be maintained to have minimum 6 m trafficable surface. Creek crossing on the alternate route is only 3 m wide, however the creek is dry in summer allowing traffic to pass. Necessary sign posts will be erected to direct the users to nearest emergency gate, direction to landfill or to exit the site.

A2.7: Fire services access routes, providing links between public road networks for fire fighting purposes, meet the following requirements:

- **surface: all weather**
- **dead end: not permitted**
- **minimum trafficable surface: 6 metres**
- **horizontal clearance: 6 metres**
- **vertical clearance: 4 metres**
- **maximum grades: 1 in 7**
- **maximum grade over <50 metres: 1 in 4**
- **maximum average grade: 1 in 5**
- **minimum weight capacity: 15 tonnes**

- **maximum crossfall: 1 in 33**
- **curves minimum inner radius: 12 metres**
- **turn around areas designed to accommodate 3.4 appliances and to enable them to turn around safely: every 500 metres**
- **erosion control measures and long term maintenance arrangements in place**
- **access to public road network: every 1000 metres**
- **allow for two way traffic.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.7?

Yes ☐ No ☑

The proposed site is located 3.1 km from the nearest public road which is the Great Southern Highway, hence this criteria cannot be met.

A2.8 All gates used to restrict traffic on emergency access ways and fire service access routes meet the following requirements:

- **minimum width 3.6 metres**
- **design and construction: to be approved by relevant local government**
- **emergency access way gates: must not be locked**
- **fire service access route gates: may be locked but only with a common key that is available to local fire service personnel**
- **Signposted.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.8?

Yes ☑ No ☐

A2.9 Firebreak widths Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum 3 metres width.

Does the proposal comply with the performance criteria by applying acceptable solution A2.9?

Yes ☑ No ☐

A2.10 Signs are erected where emergency access ways and fire services access routes adjoin public roads, and meet the following requirements:

- **minimum height above ground: 0.9 metres**
- **design and construction: to be approved by relevant local government**
- **lettering height: 100 millimetres**
- **to display the following wording (as appropriate):'Fire Service Access – No Public Access' or 'Emergency Access Only'.**

Does the proposal comply with the performance criteria by applying acceptable solution A2.10?

Yes ☑ No ☐

Appropriate sign posts will be installed prior to commencement of operation.

Element 3: Water

A3.1: The development is provided with a reticulated water supply, together with fire hydrants, in accordance with the specifications of the relevant water supply authority and FESA.

Does the proposal comply with the performance criteria by applying acceptable solution A3.1?

Yes ☐ No ☑

The proposal being a landfill development within a large site used for farming will not have reticulated water supply. Water will be available in tanks for use at all times.

A3.2: Water tanks with a hydrant or standpipe are provided and meet the following requirements:

- **volume: 50,000 litres per tank**
- **ratio of tanks to lots: 1 tank per 25 lots (or part thereof)**
- **tank location: tanks are located to allow a 2.4 appliance to achieve a 20 minute turn around time at legal road speeds from the tanks to the furthest dwelling site within the residential development**
- **tank construction: above ground tanks are constructed of concrete or metal and the stands of raised tanks are constructed using non-combustible materials and heat shielding where appropriate (ie heat shielding will be required in the case of metal tank stands)**
- **It is the responsibility of the local government to ensure that these tanks are full of water**
- **pipe construction: galvanised or copper pipe are used above ground, although PVC pipe may be used if buried 300 millimetres below ground**
- **couplings are to be in accordance with the FESA guidelines available at www.fesa.wa.gov.au**
- **procedures are put in place to ensure water tanks are maintained at full capacity at all times**
- **hardstand and turn around area suitable for a 3.4 appliance are provided within 3 metres of each water tank**
- **water tanks and associated facilities are vested in the relevant local government.**
-

Does the proposal comply with the performance criteria by applying acceptable solution A3.2?

Yes ☑ No ☐

A3.3: A dam (or dams) with permanent water all year (including during drought years) is provided and meets the following requirements:

- **volume: 200 cubic metres of water storage at the driest time of the year for every 25 lots (or part thereof)**
- **dam (or dams) is either vested in the relevant local government, or has a caveat placed on it to ensure fire services access.**

Does the proposal comply with the performance criteria by applying acceptable solution A3.3?

Yes ☐ No ☑

A dedicated 150,000 L tank is provided for fire fighting and additional water may be sourced from the 100,000 L tank or 120,000 kL stormwater dam. The tanks and stormwater dam can be accessed by the fire services and the arrangement has been included in the management plan of the facility.

Element 4: Siting of Development

A4.1: Hazard separation – moderate to extreme bush fire hazard level

Every building is sited a minimum distance of 100 metres from any vegetation classified under table 1 and figure 1 as forests, woodlands, closed shrub, open shrub, mallee/mulga and rainforest (ie in an area with an moderate or extreme bush fire hazard level) or has its construction standard increased to align with the appropriate bush fire attack level for that location. Under AS 3959, the distance between the predominant vegetation and the building can be reduced but, the construction standard must be increased.

Does the proposal comply with the performance criteria by applying acceptable solution A4.1?

Yes ☑ No ☐

A4.2: Hazard separation - low bush fire hazard level

Every building is sited a minimum distance of 20 metres from any vegetation classified under table 1 and figure 1 of appendix 1 as grassland (ie in an area with a low bush fire hazard level).

Does the proposal comply with the performance criteria by applying acceptable solution A4.2?

Yes ☑ No ☐

A4.3: Building protection zone

Every building is surrounded by a building protection zone that meets the following requirements:

- **width: 20 metres measured from any external wall of the building**
- **location: within the boundaries of the lot on which the building is situated**
- **fuel load: reduced to and maintained at 2 tonnes per hectare**
- **trees (crowns) are a minimum of 10 metres apart**
- **trees are low pruned at least to a height of 2 metres**
- **no tall shrub or tree is located within 2 metres of a building (including windows)**
- **there are no tree crowns overhanging the building**
- **fences and sheds within the building protection zone are constructed using non-combustible materials(eg colourbond iron, brick, limestone)**
- **shrubs in the building protection zone have no dead material within the plant**
- **tall shrubs in the building protection zone are not planted in clumps close to the building ie within3 metres**
- **trees in the building protection zone have no dead material within the plant's crown or on the bole.**

Does the proposal comply with the performance criteria by applying acceptable solution A4.3?

Yes ☑ No ☐

A4.4: Hazard separation zone

Every building and its contiguous building protection zone is surrounded by a hazard separation zone that meets the following requirements:

- **minimum width: 80 metres in the case of vegetation classified under table 1 and figure 1 as forests, woodlands, closed shrub, open shrub, mallee/mulga and rainforest, measured from the outer edge of the building protection zone**
- **location: within the boundaries of the lot on which the building is situated or, where this is not possible or desirable, within the boundaries of the overall residential development in which the building is proposed to be located**
- **fuel load: reduced to and maintained at between 5 and 8 tonnes per hectare for jarrah/marri dominated forest and woodlands, below 12-15t/ha in mallee heath and below 15t/ha in karri forest**
- **trees (crowns) are a minimum of 10 metres apart**
- **trees in the hazard separation zone have no dead material within the plant's crown or on the bole.**

Does the proposal comply with the performance criteria by applying acceptable solution A4.4?

Yes ☑ No ☐

A4.5: Reduction in bush fire attack level due to shielding

A reduction in the bushfire attack level (BAL) due to shielding from direct flame contact or radiant heat via a stand alone non-combustible structure shall be considered achieved when the following applies:

- **A building elevation that is not exposed to the source of bushfire attack can be classified to the next lower bushfire attack level for those elevations.**
- **A reduction in the bushfire attack level (see (a) above) and the according construction standards cannot fall below BAL-12.5.**
- **An elevation is deemed to be exposed to the source of the bush fire if any of the straight lines between that elevation and source of bush fire attack is not obstructed by another part of the building, for this method, only the side(s) furthest from the vegetation will gain the reduction.**

Does the proposal comply with the performance criteria by applying acceptable solution A4.5?

Yes ☑ No ☐

No residential building is proposed and the proposed portable office does not fall in between continuous line of any source of bush fire attack.

Element 5: Design of Development

A5.1: For development that complies with acceptable solutions A4.1, A4.2, A4.3 and A4.4 there are no special design requirements.

Does the proposal comply with the performance criteria by applying acceptable solution A5.1?

Yes ☑ No ☐

A5.2: For development that does not comply with acceptable solutions A4.1, A4.2, A4.3 and A4.4 there is no acceptable solution. All such proposals must be assessed under performance criterion P5.

Does the proposal comply with the performance criteria by applying acceptable solution A5.2?

Yes ☑ No ☐

Appendix D: Bush Fire Control Officer Contact Number

BUSH FIRE CONTROL OFFICERS

Burges Siding Brigade		
Stephen Chipper – Captain	9641 1438	0427 086 586
Andrew Boultbee	9641 1413	0418 908 867
Glen Davies (DCBFCO)	9641 1029	0488 198 877
Peter Monger		0414 778 419
Greenhills Brigade		
Jeremy Marwick – DCBFCO/Captain	9641 4071	0428 411 024
Charles Boyle	9641 4021	0409 882 498
Paul Jenkinson	9641 4063	039 927 209
Graham Penny	9641 6067	
David Jenkinson	9641 4090	0428 176 924
Simon Penny	9641 6068	0417 990 616
Norm Whitburn	9646 1021	0428 444 487
Peter Keeble	9641 6044	0428 304 989
Gary Sargent	9641 7030	0408 906 520
Malebelling Brigade		
Bruce Gentle – Captain	9641 1030	0417 987 054
Wayne Collins – DCBFCO	9641 7010	0417 099 589
Tim Springbett		0428 417 018
Chris Joyce	9641 7026	0417 178 782
Peter Boyle	9641 1186	0429 882 496
Peter Humphrey	9641 1414	
Eddie Humphrey	9641 2341	0429 412 341
Talbot Brook Brigade		
Terry Davies (CBFCO)	9641 1449	0429 411 449
Denis Luelf	9643 1050	
Steve McDowall		0427 713 242

BUSH FIRE CONTROL OFFICERS

Laurie Fairclough		0427 431 014
York Volunteer Emergency Services (Bushfire & SES)		
Warrick McGregor – OIC	9641 1698	0429 932 025
Richard Boultbee	9641 2696	0429 106 081

supplementary report

Allawuna Farm

Lots 4869, 5931, 9926 & 26934 Great Southern Highway
St Ronans, Shire of York

ALLAWUNA LANDFILL FACILITY

SITA Australia

February 2015

larry smith planning
urban and strategic planning & design

Allawuna Farm

Lots 4869, 5931, 9926 & 26934, Great Southern Highway,
Saint Ronans, Shire of York

ALLAWUNA FARM LANDFILL SUPPLEMENTARY REPORT

February 2015

Prepared for

for SITA Australia

Prepared by

larry smith planning
golder associates
&
bowman & associates

Larry Smith Planning
Urban and Strategic Planning & Design
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supplementary report - key outcomes

Introduction:

- Since lodging its Planning Application for the Allawuna Farm Landfill with the Shire of York in December 2013, SITA has progressed a number of matters relating to the proposed Allawuna Farm Landfill including local employment opportunities and fire management.
- SITA has also engaged Golder Associates to undertake further, more detailed site investigations and particularly into groundwater and sub-soil conditions.
- The additional investigations undertaken by Golder Associates have provided a more detailed understanding of sub-surface soil and groundwater conditions and have resulted in modifications to the Landfill design that will further minimise any potential risk to the local environment.
- Geotechnical investigations of the Landfill footprint and areas adjacent to the Landfill footprint confirm previous advice from the Department of Water that there is no paleochannel within the vicinity of the Landfill.

Modifications:

- The modifications to the Landfill:
  - Do not change the position of the Landfill within the Allawuna Farm;
  - Do not change the composite liner system designed to protect the surrounding environment from the potential impacts of leachate and Landfill gas migration;
  - Do not change the type or forecast annual tonnages of waste that will be accepted;
  - Do not change the facility operating hours;
  - Do not change the traffic movements;
  - Reduce the area of the Landfill footprint by approximately 31% from 52ha to 36ha;
  - Reduce the maximum height of waste deposited from 355m to 350.5m ;
  - Reduce the overall volume of waste placed by approximately 46% from approximately 11.1 million cubic metres of waste (10.1 million tonnes) to 5.1 million cubic metres (4.6 million tonnes);
  - As a consequence of the reduction in the volume of waste, reduce the nominal life of the Landfill from 37 years to approximately 20 years, based on forecast annual tonnages of between 150,000 and 250,000 tonnes of waste per annum;
  - Raise the floor of the Landfill to ensure a minimum clearance of at least 2m between the base of the Landfill and the maximum estimated winter groundwater level;
  - Require, as a consequence of the reduction in material excavated from the raised Landfill, sequential development of three borrow areas comprising a total of approximately 20ha commencing from approximately Year 10 onwards; and
  - Reduce the size and extent of the leachate ponds and stormwater dam required.
- The modified Landfill proposal does not differ in essence to the original application.

Impacts:

- The modified Landfill does not impact drinking water and is not within a Prescribed Drinking Water Supply Area. The Department of Water confirms that the Landfill is not within the Mundaring Weir Catchment Area.
- Modifications to the design and operation of the Landfill do not impact previous detailed odour modelling which demonstrated that all odour generated would be maintained well within the Farm boundary.

- Similarly, the modified Landfill does not impact the comprehensive noise assessment which found that predicted noise levels at the nearest residence were within the guideline limits for times of day during both the construction and operational phases of the Landfill.
- The visual, landscape and tourism values of the location continue not to be impacted by the modified Landfill as a consequence of its isolation and the topography and vegetation of the surrounding landscape which screens the site from all locations of social or tourist importance.

Fire Management Plan:

- A Fire management Plan has been prepared in consultation with the Department of Fire and Emergency Services (DFES).

Community Benefits:

- SITA has entered into a Heads of Agreement with Avon Waste, a locally based waste management contractor, for the provision of Landfill Management Services which will result in significant local employment opportunities, provide a significant impetus to the local and regional economy and will encourage the development and diversification of businesses that will strengthen and broaden the economic base of the York region. The opportunity also exists for one or more local contractors in the York region, including Avon Waste, to provide waste haulage functions to SITA.
- Firefighting equipment retained on-site will be available to assist with local fire management when not required on-site.

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1. introduction

Since lodging its Planning Application for the Allawuna Farm Landfill with the Shire of York in December 2015, SITA has progressed a number of matters relating to the proposed Allawuna Farm Landfill including:

- Entering into a Heads of Agreement with a local contractor for the provision of Landfill operation services;
- Prepared a Fire Management Plan; and
- Engaged Golder Associates to undertake further, more detailed site investigations and particularly into groundwater and sub-soil conditions.

The additional investigations undertaken by Golder Associates have provided a more detailed understanding of sub-surface soil and groundwater conditions and have resulted in modifications to the Landfill design that will further minimise any potential risk to the local environment.

As a consequence, on the 17 November, 2014 SITA withdrew its Works Approval Application with the Department of Environmental Regulation (DER) with the object of lodging a revised application for Works Approval in early April 2015. A copy of the Works Approval Application will be forwarded following lodgement.

Plans D001 to D013 accompanying this Supplementary Report describe the proposed modified Landfill.

The modified Landfill proposal does not differ in essence to the original application.

This Supplementary Report, which has been prepared by *Larry Smith Planning* – Urban and Strategic Planning & Design, *Golder Associates* – Environmental Engineers and *Bowman & Associates* – Environmental Engineers:

- Identifies additional relevant material and other matters progressed by SITA since lodgement of the Planning Application in December 2013;
- Addresses the outcomes of the further, more detailed site investigations; and
- Describes and discusses the resulting modifications to the design and operation of the Landfill.

For convenience, this Report follows the format and headings of the December 2013 Allawuna Farm Landfill Planning Report and includes references to the relevant December 2013 section and sub-headings in parentheses { }.

2. site environment

{Section 7}

This section comments on the outcomes of the further, more detailed site investigations, where that produces different information to that presented in the original Planning Application.

Additional site investigations have included:

- Sixty nine test pits excavated to approximately 4m depth or refusal within the area of the original Landfill footprint;
- Additional 25 Cone Penetrometer Tests within and outside of the area of the Landfill footprint;
- Additional 6 new Boreholes both up and down gradient of the proposed modified Landfill footprint;
- Electrical Resistivity Mapping and Magnetic Survey of the original Landfill footprint; and
- A range of geotechnical testing for the physical and geochemical properties of the soil.

2.1 surface water

{7.4}

The Landfill footprint intersects the upper reaches of a small seasonally dry creekline in the south-eastern portion of the footprint, in the location of the final Landfill cell. The creekline will be diverted around the final Landfill cell during the construction of that cell. A stormwater dam will be constructed in this dry creekline, together with a diversion structure to allow water to be diverted around the dam, should water not be required for construction or Landfill management purposes. This dam will collect water from the upstream catchment which is considered to be only clean water.

Water from subsurface drainage or interim capped areas will be contained in a retention pond, located outside of the creekline. Water collected in the retention pond will be tested and released if the water quality meets the guideline criteria. If the water quality does not meet the relevant criteria it will not be released, but be used within the Landfill cells for dust suppression or evaporated from the pond.

2.2 surface water and groundwater interaction

{7.5}

Groundwater is present throughout the site, predominantly unconfined (i.e. with a water table). Locally, groundwater may be perched on hillsides or hilltops, at locations where infiltrating rainfall reaches the less permeable, clayey material. Some of the clayey materials may have more permeable pathways through them due to tree root cavities and relic structures within the clay.

Some groundwater may be confined locally beneath the clayey parts of the lateritic regolith, particularly in the transition zone between weathered and fresh bedrock. In that zone, below the residual lateritic profile, weathered to fresh bedrock provides a fractured rock setting where groundwater storage and movement is within fractures and defects within the rock.

Recharge will occur where rain falling on sandier more permeable materials infiltrates down to the water table. Perched groundwater may be ephemeral, draining fully during summer months. Rain falling on clayey materials will run off more readily and infiltrate more slowly. In this way after rainfall, some

locations on the site may appear damp or boggy during winter months, until the transient shallow groundwater level attenuates through a combination of infiltration, lateral migration and evaporation.

Deeper groundwater may be derived from infiltration further up the catchment from the proposed Landfill site, with lateral movement down the drainage system.

The additional site investigations have confirmed groundwater levels over the Landfill site and the Landfill footprint has been raised to ensure a minimum clearance of at least 2m between the base of the Landfill and the maximum estimated winter groundwater level.

2.3 paleochannel

Additional geotechnical investigations of the Landfill footprint and areas adjacent to the Landfill footprint to the north, west and south confirm that on the balance of available information, and consistent with previous advice from the Department of Water, that there is no regionally continuous or significant paleochannel beneath or within the vicinity of the Landfill.

2.4 water catchments

{7.7}

The site is not within a Prescribed Drinking Water Supply Area and is not within the Mundaring Weir Catchment Area. The Department of Water confirms that the Mundaring Weir catchment divide is approximately 1,000m to the west of the Landfill footprint.

2.5 potentially sensitive agriculture

{7.11}

The Department of Agriculture and Food confirm that the "potential for contamination of the food supply chain from the Allawuna site is expected to insignificant" and that there is a higher risk of contamination from poorly managed on-farm refuse tips.

3. modified waste management facility

{Section 8}

This section discusses the modifications to the Landfill arising from the more detailed site investigations, where that produces different information to that presented in the original Planning Application.

3.1 overview

{8.1}

The overall layout of the modified Landfill remains generally the same as that for the original Landfill.

The modifications to the Landfill:

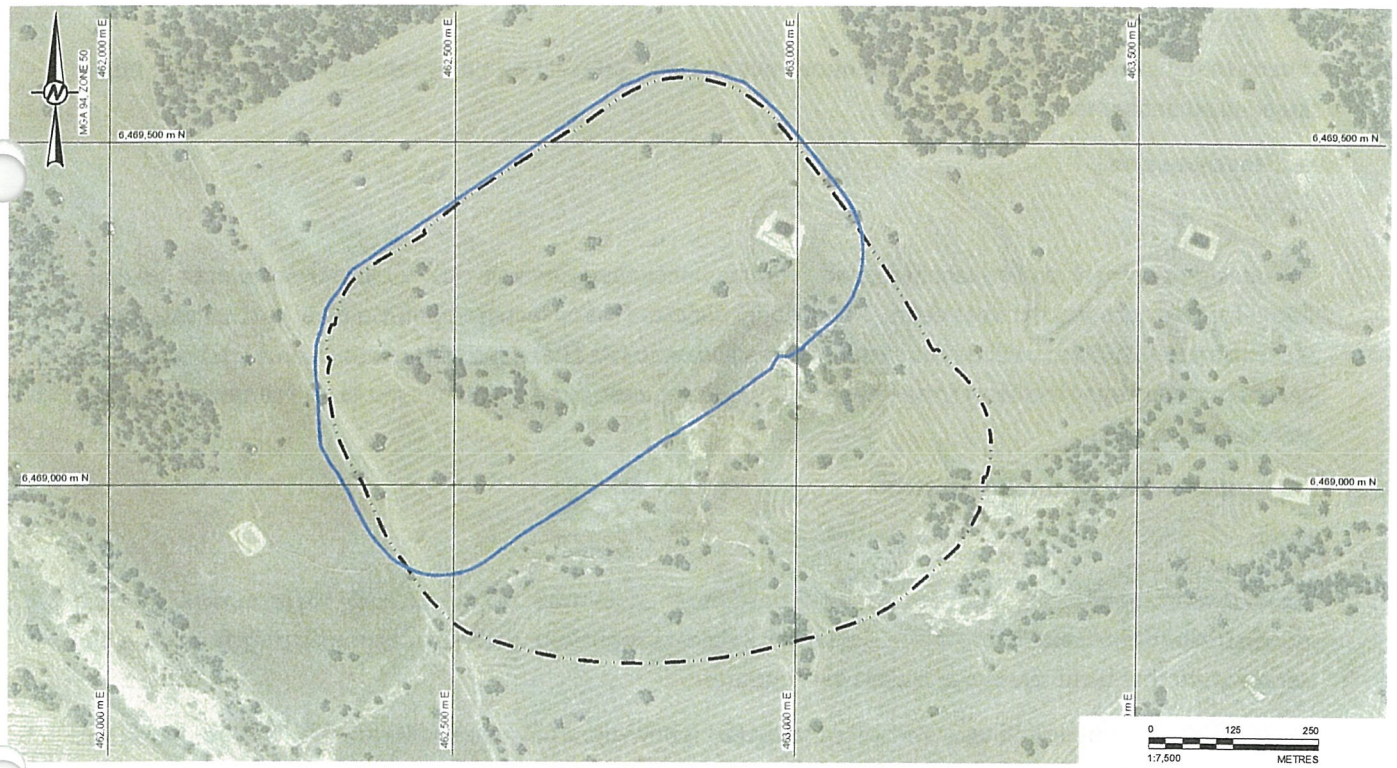
- Do not change the position of the Landfill within the Allawuna Farm [Figure 1 : Comparison Modified and Original Landfill Footprints];
- Do not change the composite liner system designed to protect the surrounding environment from the potential impacts of leachate and Landfill gas migration;
- Do not change the type or forecast annual tonnages of waste that will be accepted;
- Do not change the facility operating hours;
- Do not change the traffic movements;
- Reduce the area of the Landfill footprint by approximately 31% from 52ha to 36ha;
- Reduce the maximum height of waste deposited from 355m to 350.5m ;
- Reduce the overall volume of waste placed by approximately 46% from approximately 11.1 million cubic metres of waste (10.1 million tonnes) to 5.1 million cubic metres (4.6 million tonnes);
- As a consequence of the reduction in the volume of waste, reduce the nominal life of the Landfill from 37 years to approximately 20 years, based on forecast annual tonnages of between 150,000 and 250,000 tonnes of waste per annum;
- Raise the floor of the Landfill to ensure a minimum clearance of at least 2m between the base of the Landfill and the maximum estimated winter groundwater level;
- Require, as a consequence of the reduction in material excavated from the raised Landfill, sequential development of three borrow areas comprising a total of approximately 20ha and providing 856,000 cubic metres of material; and
- Reduce the size and extent of the leachate pond and stormwater dam required.

Given the above, it is considered that the modifications to the Landfill do not result in a proposal that is different in essence to the original application.

3.2 design & stability

{8.4.1}

The modified Landfill has been confined to the northern half of the original footprint to avoid the lower areas of the valley where the depth to the winter watertable is the shallowest and has been reduced from



LEGEND

- ORIGINAL LANDFILL FOOTPRINT (BOWMAN AND ASSOCIATES - DECEMBER 2013)
- MODIFIED LANDFILL FOOTPRINT (GOLDER ASSOCIATES - JANUARY 2015)

CLIENT
SITA AUSTRALIA
••
••

CONSULTANT
Golder Associates

YYYY-MM-DD	2014-02-26
DESIGNED	E.KING
PREPARED	L.DuPREEZ
REVIEWED	L.DuPREEZ
APPROVED	L.SMITH

PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
COMPARISON BETWEEN MODIFIED AND ORIGINAL LANDFILL FOOTPRINTS

PROJECT NO	DOCUMENT NO	REV	FIGURE
147645033	PLANNING - FEB 2015	A	F001

25mm

eleven cells to six cells having an approximate three to five year lifespan [Figure 2 : Modified Landfill Cell Layout].

Modelling of the design surfaces of the Landfill indicate that the design exceeds or meets the minimum Factors of Safety set for varying short term (operational) and long term (closure) conditions.

The overall height of the waste has been reduced from 355m AHD to 350.5m AHD [Figure 3 : Modified Landfill Final Form; Figures 4 & 5 : Modified Landfill Sections]

3.3 landfill liner

{8.4.2}

The design of the composite liner system remains unchanged. Where more permeable subgrade below the liner is encountered, it will be removed and replaced with a compacted engineered fill layer consisting of clayey material sourced from the site.

The synthetic liner system will be continuous over all cells and will be tied to the top of the external bund slope in an anchor trench.

3.4 leachate pond

{8.5.3}

The design approach to the leachate pond remains unchanged and the size is based on a water balance model for two consecutive wet years. The model indicates that a leachate pond capacity with a capacity of approximately 3,400 m^3 will be required. An area allowance has been made for expansion of the number of leachate ponds over the life of the site, should it be required, due to changes in waste tonnages or other unforeseen aspects.

3.5 groundwater monitoring system

{8.5.4}

Groundwater monitoring will be carried out through a number of monitoring bores upstream and downstream of the Landfill footprint, as per the original submission. Groundwater monitoring bores will be sampled and the water quality analysed every quarter.

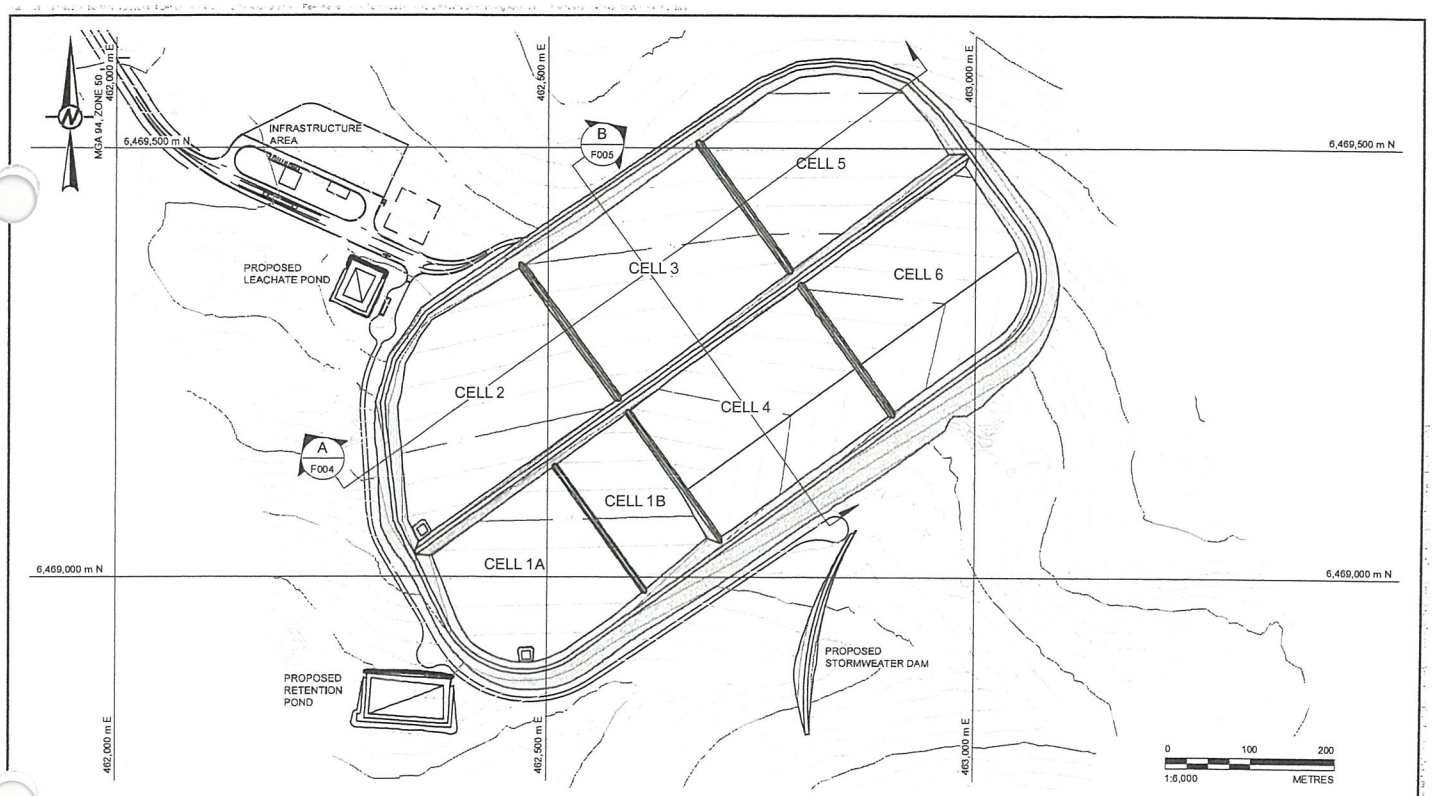
In addition subsurface drainage will be constructed below the areas where fill material will be placed as well as in any visible seepage areas. Drainage water from the subsoil drains will be collected and pumped into a holding dam (retention dam), after which the water quality will be established and managed in accordance with the water management strategy for the Landfill.

3.6 surface water management

{8.6}

The surface water drainage is designed to prevent the interaction of stormwater and leachate. Clean runoff is diverted around the Landfill footprint to minimise the total volume of leachate that requires management.

A detention dam, similar to the previous design, will be constructed, slightly upstream of the previous location, to collect stormwater for use during construction as well as dust suppression during operation.



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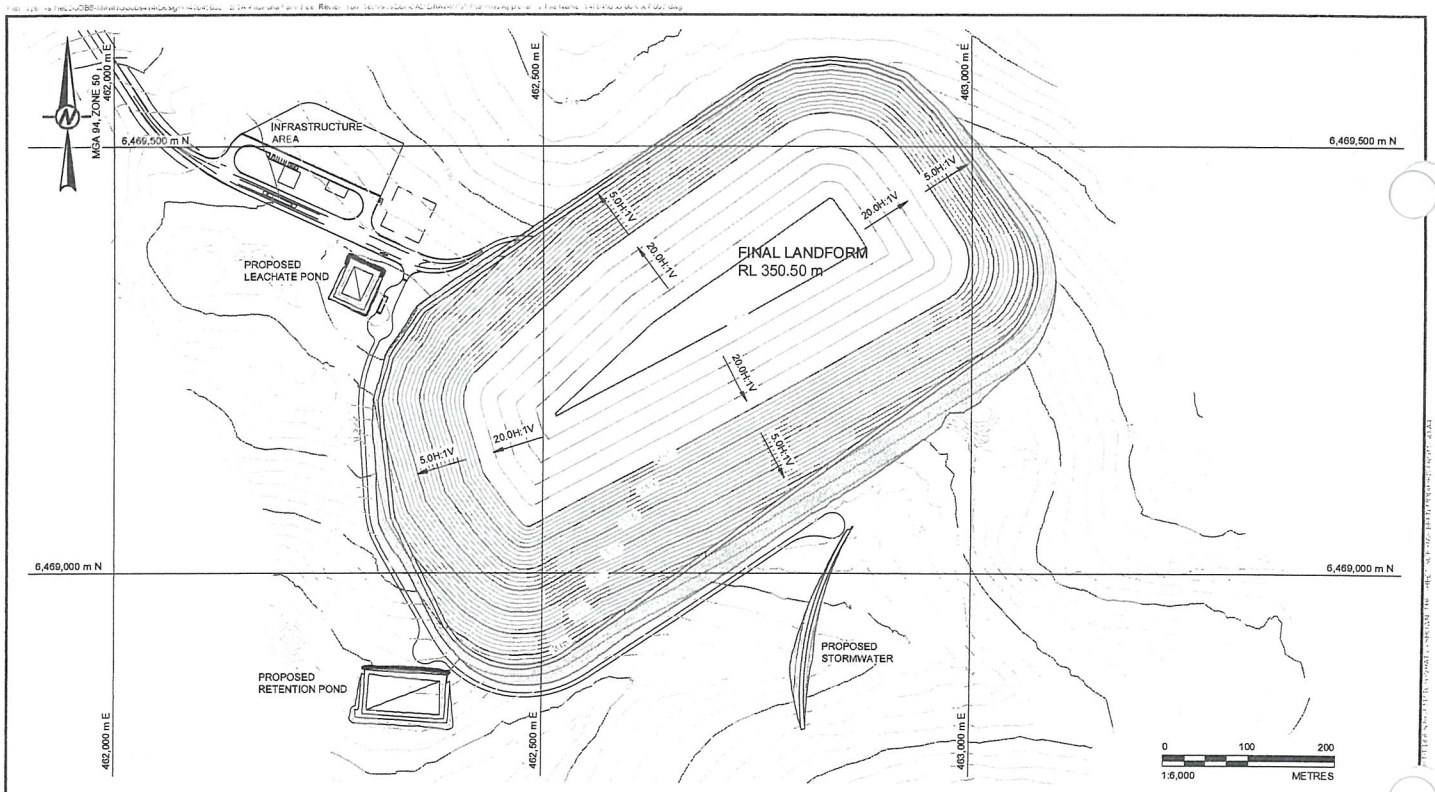
REVIEWED	L.DuPREEZ
APPROVED	L.SMITH

PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MODIFIED LANDFILL CELL LAYOUT

PROJECT NO.	DOCUMENT NO.	REV.	FIGURE
147645033	PLANNING - FEB 2015	A	F002

25 mm



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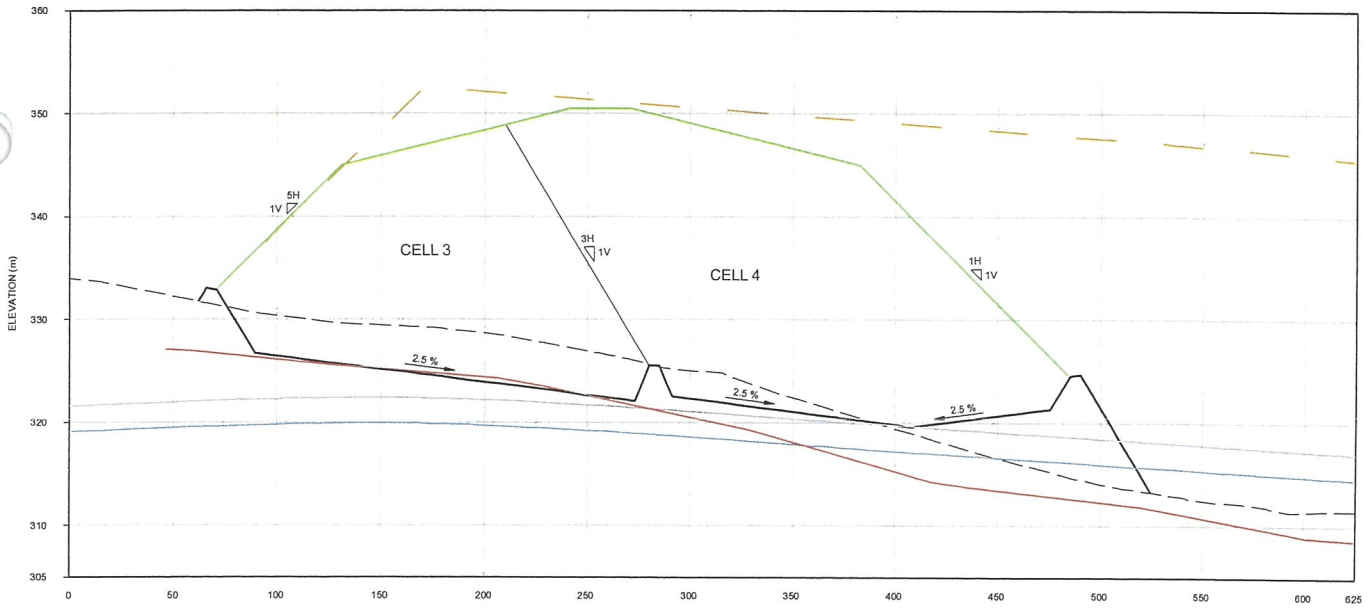
APPROVED	L.SMITH

PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MODIFIED LANDFILL
FINAL LANDFORM

PROJECT NO	DOCUMENT NO	REV	FIGURE
147645033	PLANNING - FEB 2015	A	F003



HOR. SCALE 1:2,500 / VERT. SCALE 1:500 — A / F002 — SECTION

1:500: 0, 10, 20 METRES

1:2,500: 0, 50, 100 METRES

LEGEND

- PREVIOUS ULTIMATE LANDFILL SURFACE
- ULTIMATE LANDFILL SURFACE
- PROPOSED DESIGN SURFACE (TOP OF GEOMEMBRANE LINER)
- EXISTING GROUND SURFACE
- ESTIMATED SOIL EXCAVATION SURFACE
- ESTIMATED GROUNDWATER SURFACE +2.5 m
- ESTIMATED GROUNDWATER SURFACE

CLIENT
SITA AUSTRALIA
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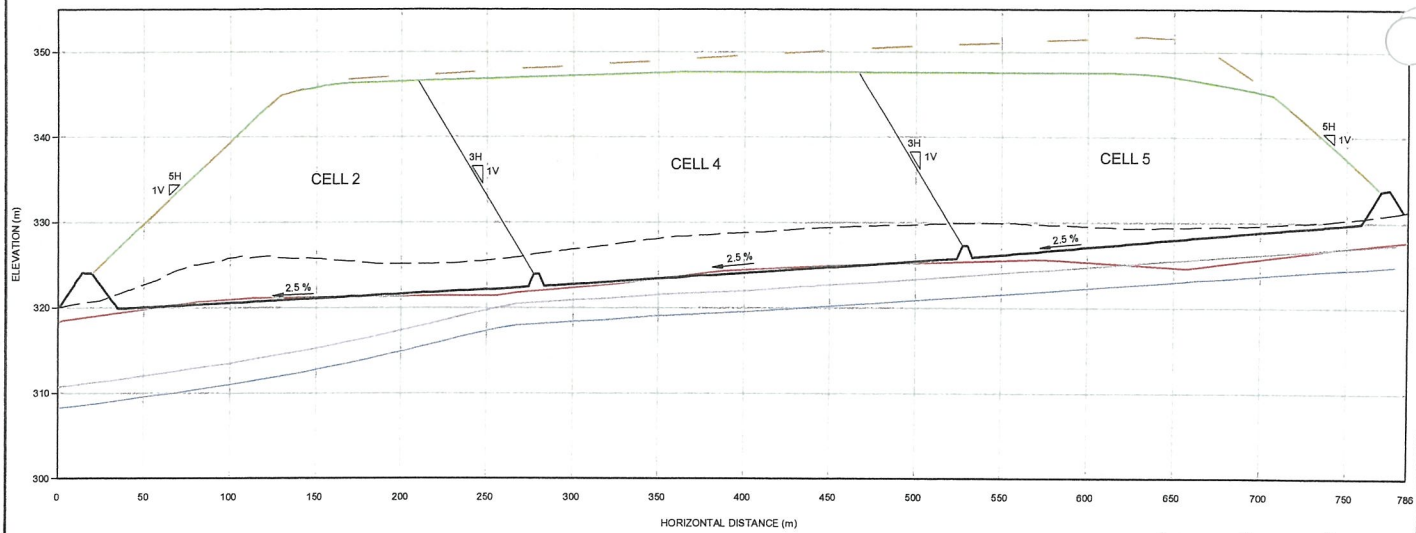
APPROVED	L.SMITH

PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MODIFIED LANDFILL
SECTION NORTH / SOUTH

PROJECT NO.	DOCUMENT NO.	REV.	FIGURE
147645033	PLANNING - FEB 2015	A	F004

25 mm



HOR. SCALE 1:3,000 / VERT. SCALE 1:600 — B — SECTION F002

0 10 20
1:600 METRES

0 50 100
1:3,000 METRES

LEGEND

- PREVIOUS ULTIMATE LANDFILL SURFACE
- ULTIMATE LANDFILL SURFACE
- PROPOSED DESIGN SURFACE (TOP OF GEOMEMBRANE LINER)
- EXISTING GROUND SURFACE
- ESTIMATED SOIL EXCAVATION SURFACE
- ESTIMATED GROUNDWATER SURFACE +2.5 m
- ESTIMATED GROUNDWATER SURFACE

CLIENT
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PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MODIFIED LANDFILL
SECTION EAST / WEST

PROJECT NO	DOCUMENT NO	REV	FIGURE
147645033	PLANNING - FEB 2015	A	F005

3.7 landfill gas

{8.7}

A landfill gas collection system will be used to extract and control landfill gases generated. Modelling (GasSim) of the modified Landfill indicates a peak of approximately 2,500m3 / hour of gas production.

During the initial years, landfill gas will be burnt to flare within a controlled facility. As volumes increase, electricity generation will be investigated.

3.8 borrow areas

Earthwork modelling based on the revised, higher Landfill floor level has identified an imbalance in material required for construction, daily cover and capping, necessitating the recovery of additional materials from elsewhere within Allawuna Farm. It is projected that the additional materials will be required from Year 10 onwards.

A total of 856,000 cubic metres of material is required and will be recovered from three borrow areas in close proximity of the Landfill and totalling 19.9 ha in area [Figure 6A : Materials Borrow Areas – Location].

The borrow areas are currently characterised as the crest of a hill or sloping paddocks within the Farm. The crest will be excavated / "flattened" to the surrounding contours, whereas the sloping paddocks will be reshaped to form shallow wide valleys, to recover the additional material [Figure 6B : Materials Borrow Area – Typical Section]. The maximum depth of excavation is in the order of approximately 5m, reducing to 0m over the length of the excavation.

The top soil from these areas will be stripped and stockpiled for re-spreading during rehabilitation.

The borrow areas will be developed and rehabilitated sequentially, as demand requires, and are expected to be suitable for cropping as well as grazing.

3.9 staging of construction

{8.10}

The modified Landfill will be constructed and rehabilitated progressively and will comprise a total of six cells with each cell having an expected life of three to five years.

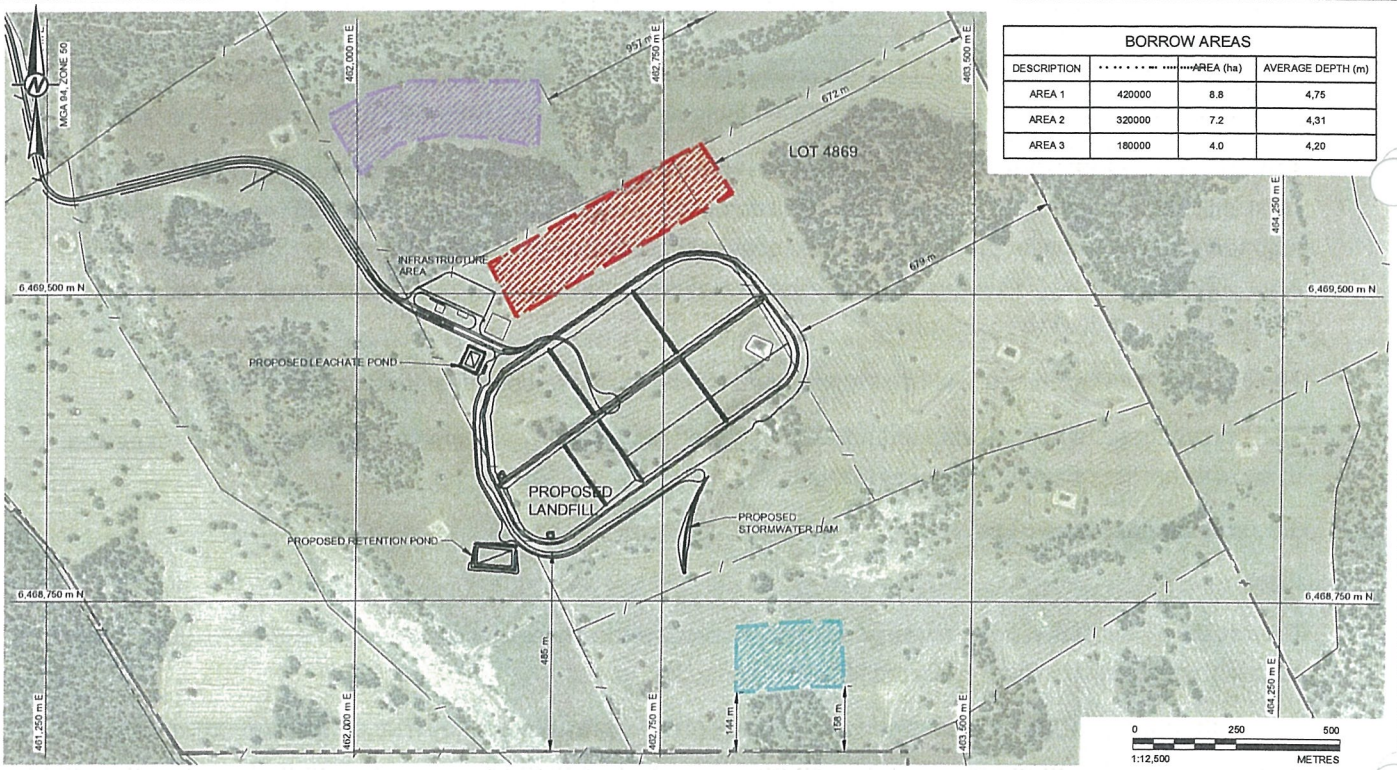
It is proposed that Cells 1 and 2 be constructed in the south western portion of the Landfill footprint. Subsequent Cell development will occur towards the north east of the first two cells in the order shown [Figure 2 : Modified Landfill Cell Layout].

3.10 capping, landscaping and aftercare

{8.11}

The cap will meet the design requirements of Class II Landfill and will consist of the following from bottom to top:

- 300mm thick intermediate earthen cover immediately above the last layer of waste;
- Geocomposite Clay Liner (GCL);
- LLDPE Geomembrane liner;
- Geotextile layer, if required;



BORROW AREAS			
DESCRIPTION	AREA (m²)	AREA (ha)	AVERAGE DEPTH (m)
AREA 1	420000	8.8	4,75
AREA 2	320000	7.2	4,31
AREA 3	180000	4.0	4,20

LEGEND:

- BORROW AREA 1
- BORROW AREA 2
- BORROW AREA 3
- CADASTRAL BOUNDARY
- EXISTING FENCE

CLIENT
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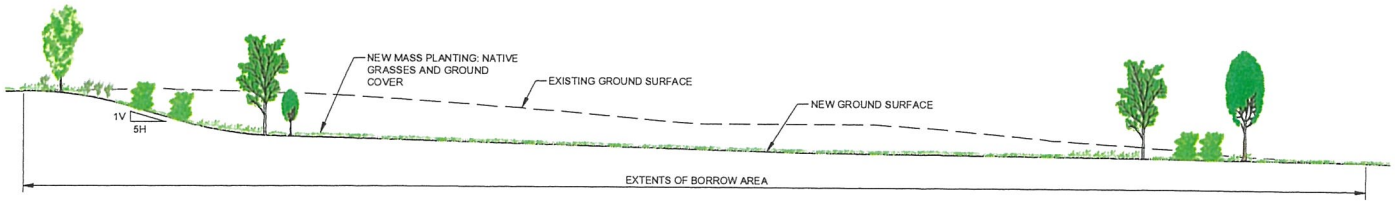
APPROVED	L.SMITH

PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MATERIAL BORROW PITS

PROJECT NO	DOCUMENT NO	REV	FIGURE
147645033	PLANNING - FEB 2015	A	F006A



TYPICAL BORROW SECTION
SCALE 1:1,250 m

0 25 50
1:1,250 METRES

CLIENT
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PROJECT
ALLAWUNA FARM LANDFILL
••
••

TITLE
MATERIAL BORROW PITS TYPICAL SECTION

PROJECT NO	DOCUMENT NO	REV	FIGURE
147645033	PLANNING - FEB 2015	A	F006B

25 mm

- Geocomposite drainage layer; and
- 1000mm thick sub-soil, topsoil and mulch layer.

The final capped landform will be constructed at minimum gradient of 1:20 and a maximum gradient of 1:5 to facilitate drainage of stormwater while maintaining stability.

4. environmental impacts

{Section 9}

This section discusses the environmental impacts of the modified Landfill arising from the more detailed site investigations, where that produces information different to that presented in the original Planning Application.

4.1 groundwater & surface water quality

{9.8}

A minimum of at least 2m separation will be maintained between the liner and the maximum estimated winter groundwater table. If required subsurface drains will be installed below the Landfill to maintain a 2m separation from the waste. The water from the subsurface drains will be contained in a retention pond, where the water quality will be established and the appropriate actions taken as per the water management strategy for the site.

A regular bore sampling and testing program, coupled with a detailed response plan for evidence of contamination will be included in the water management strategy for the site.

4.2 fire

{9.9}

A Fire Management Plan has been prepared in consultation with the Department of Fire and Emergency Services (DFES). The Plan, which is discussed further at Section 5 optimises the prevention of fire in the first instance and addresses fire response for public safety and minimisation of related damage to the facility. The operational measures to be developed in the Fire Management Plan will minimise the risk of fire.

4.3 visual & landscape

{9.10}

The final waste levels of the modified Landfill have altered to the effect that the maximum height of waste has been reduced by 4.5m.

Plan D013 provides a cross-section through the highest point of the Landfill from a point adjacent to the North-West farm boundary adjoining the Mt Observation exit loop and demonstrates that the Landfill site continues to be screened fully from this location by the intervening landform and vegetation.

Given the above, the visual and landscape values of the location continue to not be impacted by the modified Landfill as a consequence of its isolation and the topography and vegetation of the surrounding landscape which screens the site from all locations of social or tourist importance.

4.4 impact on district agriculture

The objectives of the General Agriculture Zone of the Shire of York TPS 2 include:

"To ensure the continuation of broad-hectare agriculture as the principal land use in the district encouraging where appropriate the retention and expansion of agricultural activities."

Land capability data for Allawuna Farm and the broader Shire of York has been sourced from the Department of Food and Agriculture WA (DAFWA) as well as data from the Department's Northam Office in relation to the extent of cropping within the Shire of York in 2014.

4.4.1 land capability:

DAFWA have prepared broad scale Land Capability mapping for the primary agricultural areas of the South West of WA based primarily on the varying soil types within a district but also taking into account a range of other land qualities.

The mapping assesses the capability of each soil unit within the district against the prime agricultural activities of grazing, cropping (minimal tillage), perennial horticulture and annual horticulture and classifies the capability of each soil unit for each activity on a scale of Class 1 (Very High) to Class 5 (Very Low). Typically, soil units of Class 3 (Fair) or higher are considered as being suitable for that activity.

The primary agricultural activities within the Shire of York are grazing of stock animals (typically sheep for both wool and meat and cattle) or dry land cropping and primarily wheat and barley.

Land Capability mapping has been obtained from DAFWA for the Shire of York and specifically capability for dry land cropping as cropping is typically a higher value agricultural output than grazing of livestock; capability for cropping is heavily reliant on soil type and very little of the Shire is not suited to grazing; and

Therefore, removal of land suitable, albeit temporarily, for cropping may impact greater on the broader agricultural values of the Shire.

It is apparent from the Land Capability Mapping for Dry Land Cropping (minimal tillage) within the Shire of York that:

- Most of the cleared agricultural land within the Shire is predominantly of Fair (Class 3) capability for cropping;
- Only small areas of the Shire have greater than 20% of soils with a (Class 2 – High) for cropping; and
- No lands within the Shire show a Very High (Class 1) capability for cropping.

The soils comprising the Allawuna Farm and the Landfill footprint are identified as having predominantly Class 3 – Fair capability for cropping and therefore are of no higher agricultural value than much of the rest of the agricultural lands within the Shire.

The gross area of the Shire is approximately 212,000ha and includes significant areas of National Parks and nature reserves. Area data provided by DAFWA indicate for the Shire of York:

- Zero hectares of Class 1 (Very High Capability) cropping land;
- 14,438ha of Class 2 (High Capability) cropping land;
- 86,549ha of Class 3 (Fair Capability) cropping land; and
- 21,240ha of remnant vegetation on private land.

The total area of arable land impacted by the Landfill inclusive of the landfill footprint, access roads, leachate pond, stormwater dam, support infrastructure and the three borrow areas comprises approximately 81ha or 0.08% of all arable land within the Shire having a capability rating of Class 3 (Fair) or better for Dryland Cropping. This 81ha figure includes the fenced, secured area around the landfill and

support infrastructure, not just the landfill and support infrastructure footprint which is approximately 69ha inclusive of the three borrow pits.

4.4.2 land under crop:

Data from the DAFWA Northam Office shows crop planting within the Shire of York at the start of the 2014 season totaling 54,000ha; comprising 32,000ha of wheat, 9,000ha of barley and 13,000ha of other crops (Canola, Oats, Lupins and Field Peas) with an estimated gross yield of 164,000 tonnes.

It is evident from the DAFWA data that only half of the land having a Fair or better capability of being planted to crop within the Shire of York is actually utilised for cropping.

The lessee of Allawuna Farm planted 1,000ha of barley in the 2013 season with a gross yield of 3,000 tonnes for an average yield of 3 tonnes per ha.

At the same crop yield, the total Landfill footprint would yield in the order of 150 tonnes or 0.003% of the gross crop yield within the Shire and a similar percentage of the total land under crop in the Shire in 2014.

4.4.3 impact:

It is evident that the Allawuna Landfill will have little or no impact on the "... *the continuation of broad-hectare agriculture as the principal land use in the district..*" as the land temporarily lost to agricultural production represents only:

- 0.08%of arable land within the Shire having a capability rating of Class 3 (Fair) or better for cropping;
- 0.15% of the gross crop yield within the Shire based on estimates for crop yield within the Shire for the 2014 season; and
- On completion, the Landfill will be re-habilitated and may be used for agricultural use.

Furthermore, the Allawuna Landfill will have little or no impact on the "*..expansion of agricultural activities..*" as:

- Only half of the land having a Fair or better capability of being planted to crop within the Shire of York is actually utilised for cropping; and
- Clearing restrictions on remnant vegetation on private land – of which there is some 21,000ha within the Shire – is a far greater restraint on expansion of agricultural activities within the district as it is on Allawuna Farm itself.

It is also noted that both State and Regional Planning Strategies have consistently recognised the need for rural areas to remain flexible to accommodate a wide range of non-rural activities.

4.5 impact on shire of york administration resources

It is considered that the obligations of the Shire of York during the construction and operations phases of the Landfill will not be unusual or unduly onerous as the Landfill will be regulated primarily by the Department of Environment Regulation (DER) through the Works Approval and Environmental Licence.

It is expected that the Shire's operational oversight will be limited to:

- Oversight of planning approval conditions;
- Assessment and if acceptable, issue of building licences for any structures erected on site during

the construction phase; and

- Periodic inspection of the site to ensure it complies with the Local Government Act firebreak order.

There are currently three DER regulated facilities in the Shire:

- Shire of York Waste Treatment Facility – liquid waste facility – Lot 8 on Diagram 42561 Great Southern Highway – licensed since 1998;
- Shire of York Waste Transfer Station – Lot 606 on Plan 19716 (Crown Reserve 121), Spenders Brook Road – supervised by Avon Waste – licensed since 1997; and
- Water Corporation York Waste Water Treatment Plant – Lot 460 on Diagram 91128, Great Southern Highway – licensed since 2008.

5. fire management plan

{9.9}

A Fire Management Plan has been prepared in consultation with Officers of the Department of Fire and Emergency Services (DFES). The Shire of York was also approached for input to the Plan but referred the Proponent to DFES [Appendix 1].

The Fire Management Plan optimises the prevention of fire in the first instance and addresses fire response for public safety and minimisation of related damage to the facility. The Fire Management Plan identifies measures to be put in place to prevent a fire in the Landfill, site firefighting infrastructure, fire response procedures, firefighting equipment, storage of flammable materials and maintenance of fire breaks.

The primary firefighting equipment comprises:

- *Water Tanks / Reticulation:* One 150KL water tank and one 100KL water tank is proposed. The 150KL water tank will be dedicated for firefighting purposes only and the other for site water reticulation. The use of water soluable fire retardants for the fighting of Landfill (waste) fires is also proposed and the retardant will be stored in 20 L drums onsite for mixing prior to application. Water in the 30,000KL stormwater dam can also be used for refilling the water truck or firefighting tank after consultation with the Landfill Manager and determining if this additional water source is suitable.
- *Water Truck:* An all-terrain water truck will be available at all times for dust suppression and firefighting. The water truck will have a capacity to carry 14KL and can be coupled to the 150KL water tank through fittings compatible with the DFES and the local Fire Brigade fleet for easy filling from the tank. The DFES compatible fitting will also ensure that the dedicated firefighting tank is not used for any other purpose. The water truck will be fitted with a pump for pressurised release of water for fire retardation.
- *Fire Extinguishers:* Portable fire extinguishers will be provided in the office, workshop and also on the plant and equipment, including personnel vehicles.

Firefighting equipment retained on-site will be available to the assist with local fire management when not required on-site.

All Landfill operations staff will be required to undertake an appropriate nationally recognised fire and emergency response training course, appropriate for their role in an emergency. Refresher training will be undertaken biennially or as required. Fire response drills will be undertaken annually, and include response to fires in all zones of the property.

Any risk of fire or hazard identified within the site will be reported as soon as possible through 000.

Post fire, SITA will assist with de-briefs to relevant authorities. SITA will annually report on all events of fire to the DER and DFES as described in the site approvals or licencing conditions.

6. community benefits

6.1 economic

{10.3}

SITA remains strongly committed to ensuring as far as reasonably practical, that labour, plant and materials are sourced from the broader York region.

In this respect, SITA has since entered into a Heads of Agreement with Avon Waste, a locally based waste management contractor for the provision of Landfill management services including:

- Placement and compaction of waste in accordance with all relevant approvals;
- Provision, operation and maintenance of all plant and equipment, including supply of fuel;
- Employment and training of all personnel; and
- General site operations and maintenance.

The contract, when finalised, will be for an initial term of five years.

The opportunity also exists for one or more local contractors in the York region, including Avon Waste, to provide waste haulage functions to SITA.

The establishment of an Agreement with Avon Waste will result in significant local employment opportunities, provide a significant impetus to the local and regional economy and will encourage the development and diversification of businesses that will strengthen and broaden the economic base of the York region.

6.2 firefighting equipment

Firefighting equipment retained on-site will be available to the assist with local fire management when not required on-site.

6.3 shire of york municipal waste

Shire of York waste is currently disposed of at an unlined Landfill within the Shire of Northam. The Northam Landfill is situated in close proximity to the Avon River.

SITA has offered to accept Shire of York collected municipal, Class II waste at the Landfill for no disposal fee for the life of the Landfill providing estimated cost savings in excess of $100,000 per annum to the Shire in addition to providing a more environmentally acceptable disposal option.

To date the Shire has not indicated interest in relocating its waste disposal to Allawuna Farm if approved.

7. SITA commitments

{Section 12}

SITA remains committed to ensuring that the proposed Allawuna Farm Landfill will have minimal off-site impacts both during the construction and operation phases.

SITA is also committed to maximising the benefits of the Landfill to the broader York and regional community as far as reasonably practical.

In this respect, SITA Australia Pty Ltd makes the following commitments:

- Only Class I and Class II waste as described in the Landfill Waste Classification and Waste Definitions 1996 (as amended December 2009; DEC 2009) (or equivalent, as may be amended or replaced from time to time) being placed in the Landfill. Waste of any other Class received at the Landfill shall be held in a specific waste isolation area for removal to an appropriate site.
- No public access being permitted to the Landfill.
- SITA shall provide a copy of the Fire Management Plan and any management plans required by the DER to the Shire (if requested by the Shire) and post a copy on SITA's website.
- The balance of Allawuna Farm shall be used for agricultural purposes.
- Prior to commencing construction of the Landfill, SITA shall prepare a Landfill Construction Management Plan to ensure that the off-site impacts of construction of the Landfill and subsequent stages are minimised as far as reasonably practicable. The Plan shall address the primary aspects of the construction of the Landfill including:
  - staging of construction of the Landfill and support infrastructure;
  - internal and external road works;
  - cell staging; and
  - measures to be implemented to reduce dust, noise and other construction impacts, including compliance with all relevant regulatory requirements.
- SITA shall provide a copy of the Landfill Construction Management Plan to the Shire (if requested by the Shire) and post a copy on SITA's website.
- Prior to commencing operation of the Landfill, SITA shall prepare a Landfill Operational Management Plan to ensure that the off-site impacts of operation of the Landfill and subsequent stages are minimised as far as reasonably practicable. The Plan shall address the primary aspects of the operation of the Landfill including:
  - Landfill operating hours;
  - Receipt, vetting and recording of incoming waste;
  - Waste placement and cover procedures;
  - Leachate management;
  - Gas extraction and management;

- Odour, noise, litter and vermin management;
- Groundwater and surface monitoring and reporting;
- Fire Management;
- Complaints register procedures; and
- Cell capping and rehabilitation.

- SITA shall provide a copy of the Landfill Operational Management Plan to the Shire (if requested by the Shire) and post a copy on SITA's website.
- Prior to commencing operation of the Landfill, SITA shall prepare a Waste Haulage Vehicle Management Plan in consultation with Main Roads WA to ensure that the effects of increased heavy haulage vehicles on Great Southern Highway are minimised as far as reasonably practicable. The Plan will address the primary aspects of the haulage operation as they impact the Great Southern Highway and motorists on the Highway including:
  - Vehicle and trailer type, size and general specifications including colour schemes;
  - Haulage vehicle operating schedules and turnaround times;
  - Driver rest and fatigue management procedures; and
  - Vehicle litter clean down procedures and overall cleaning schedules.
- SITA shall provide a copy of the Waste Haulage Vehicle Management Plan to the Shire (if requested by the Shire) and post a copy on SITA's website.
- SITA shall upgrade the intersection of Great Southern Highway and the Allawuna Farm entry road at its own cost to provide a through lane for eastbound vehicles and a westbound acceleration lane for road trains exiting the site to Perth. The intersection shall be designed and constructed to MRWA requirements and approved by the MRWA prior to construction of the intersection commencing.
- Road train trailers used for the cartage of waste to the site shall be sealed and covered and show no markings indicating the source or nature of the materials contained therein (other than to comply with any legal requirements, for example over length).
- Prime movers used for the movement of the trailers may show markings of the haulage contractor provided that such markings do not indicate the source or nature of the materials being hauled (other than to comply with any legal requirements, for example over length).
- Prior to commencing construction of the Landfill, SITA shall prepare a Consultation and Reporting Strategy to ensure a high level of on-going consultation and interaction with the community. The Strategy shall provide for:
  - Establishment of a Community Reference Group (CRG) comprising representatives of SITA, the Council/Shire (if the Council/Shire requests) and the community. The CRG will be the principle point of contact and reporting to the community in relation to the construction of the Landfill and subsequent stages, the operation of the Landfill and tendering of periodic monitoring reports. The CRG shall meet as determined appropriate by the CRG; and
  - Provision of periodic DER reports to the CRG.

- SITA shall provide a copy of the Consultation and Reporting Strategy to the Shire (if requested by the Shire) and post a copy on SITA's website.
- SITA shall post copies of all reporting to the CRG on SITA's website and to the Shire for inclusion on its website (if requested by the Shire).
- Bitumen sealing and drainage of all primary Landfill access roads. Roadways providing access within the operational Landfill area and to the stormwater dam will not be sealed. Bituminised access roads will not be kerbed and shall be maintained in good condition for the life of the Landfill.
- Security lighting shall be limited to the main Landfill infrastructure area comprising parking and holding areas and administrative buildings and shall be environmental down lighting to minimise any light dispersal beyond the lit area.

appendix 1 :

fire management plan