Bowman & Associates Pty Ltd

Environmental Engineering Consultants
Waste Management Specialists

Tel: (08) 9414 9670

www.bowmanassociates.com.au

Suite 8/640 Beeliar Drive, SUCCESS WA 6164
PO Box 2059, ROSSMOYNE WA 6148

THE LEADER IN RESOURCE RECOVERY

ALLAWUNA LANDFILL – DUST MANAGEMENT PLAN

This report describes the Dust Management Plan proposed for the Landfill Facility at Allawuna Farm in the Shire of York.

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ACRONYMS

EPA	Environmental Protection Authority
EP Act	Environment Protection Act
NEPM	National Environmental Protection Measure
NHMRC	National Health and Medical Research Council
PPE	Personal Protection Equipment
PM	Particulate Matter
TSP	Total Suspended Particulate
WA	Western Australia
DAFWA	Department of Agriculture and Food Western Australia

UNITS OF MEASURE

ha	Hectares
km	Kilometre
m	Metre
mm	Millimetre
m^2	Square Metre
m^3	Cubic Metre
µm	Micro Metre
$\mu g/m^3$	Microgram per Cubic Metre

1 INTRODUCTION

SITA Australia (Proponent) wishes to develop a landfill facility in the Shire of York. The proposed facility will be located on Allawuna Farm, Saint Ronans, the location of which is shown below. The local site location is shown in the attached **Drawing – Figure 1**. It is proposed that this facility would receive putrescible waste, clean fill, Type I & II Inert Waste, contaminated solid waste[1] and Type I & II Special Waste. The facility will accept up to 250,000 tonnes of waste annually.

1.1 PURPOSE OF THE DOCUMENT

The purpose of this document is to provide a standard set of instructions and procedures that should be adopted for dust suppression during the operation of the landfill facility owned by the Proponent. All staff at the facility are expected to understand and follow the procedures outlined.

[1] Meeting waste acceptance criteria specified for Class II landfills.

2 NEAREST RECEPTORS AND BUFFER DISTANCES

The Environment and Protection Authority's (EPA) Guidance Statement No 3, *Separation Distance between Industrial and Sensitive Land Uses,* recommends a buffer distance of 150 metres between a Class II or III landfill and a single residence. The distance between the proposal and the nearest single residence is 1,900 metres. The Guidance Statement also recommends a buffer distance of 35 metres between a Class II or III landfill and the boundary of the property on which it is located. The proposed facility is located 600 metres from the Allawuna Farm's property boundary. **Table 1** provides a summary of the relevant buffer distances.

Table 1: Buffer Distances

DESCRIPTION	BUFFER DISTANCE (m)
Minimum DER requirement for sensitive receptor land use from putrescible landfill	500
Minimum DER requirement for single residence from putrescible landfill	150
Proposed landfill to Lot Boundary	600
Proposed landfill to nearest neighbouring dwelling (single residence)	1,900
Proposed landfill to Mount Observation picnic area	4,600
Proposed landfill to Wandoo National Park	1,000
Proposed leachate dams to Thirteen Mile Brook	270
Proposed landfill to Thirteen Mile Brook	350

2.1 CLOSEST RESIDENCE

The closest residence to the property is approximately 1.9 km to the north-east of the landfill. The next closest residence is situated 2.4 km from the proposed facility. These distances were measured using Google Earth and are an approximate only. No residences have a direct line of sight to the proposed site; all are screened by vegetation and sloping hills due to the topography of the landscape.

2.2 SURROUNDING LAND USES

Two properties in the vicinity of Allawuna Farm have been identified in the DAFWA sensitive sites database. One is listed as a bio-dynamic site and the other as an organic site. The property boundary of the bio-dynamic site is approximately 700 m from the Allawuna Farm property boundary and 2.5 km from the proposed landfill footprint. The organic site is approximately 1.3 km from the Allawuna Farm property boundary and 2 km from the proposed landfill footprint.

Given the relatively large buffer distances between these properties and the proposed landfill and the planned management strategies for potential emissions originating from the landfill, the proposed development is expected to have no impact on either of the sensitive surrounding land uses identified.

3 DUST MANAGEMENT PLAN

3.1 OBJECTIVE

To ensure that best practicable measures are taken to prevent dust emissions from adversely affecting the environment values or the health, welfare or amenity of people and nearby land users by meeting accepted guidelines, standards and criteria.

3.2 AIR QUALITY STANDARDS

Dust falls under the broad category of particulate matter (PM), tiny particles of solid or liquid suspended in a gas (including dust, smoke, soot and droplets of liquid). For monitoring purposes PM generally falls within three main categories:

- PM_{10} particles with a diameter of 10 µm,
- $PM_{2.5}$ particles with a diameter of 2.5 µm, and
- Total Suspended Particulate (TSP) particles with a diameter less than 50 µm.

The EPA requires that air pollutants meet ambient air National Environmental Protection Measure (NEPM) standards and goals. In Western Australia the NEPM standards are implemented under the *National Environment Protection Council (Western Australia) Act, 1996.* The standards contained in the NEPM for ambient air quality in relation to particulates are shown in **Table 2**.

Table 2: Standards and Goals for Particulates

POLLUTANT	PARTICULATE LEVEL	TIME PERIOD	GUIDANCE
Total Suspended Particulate Matter	90 µg/m^3	Annual	NHMRC, 2002
Particulate matter <10 µg/m^3 (PM_{10})	50 µg/m^3	24 hour	NEPM, 2003
Particulate matter ,<2.5 µg/m^3 ($PM_{2.5}$)	25 µg/m^3	24 hour	NEPM, 2003

3.3 POTENTIAL IMPACTS

Excessive dust can have the potential for local impact. Dust emissions may arise via traffic on internal unsealed roads, loading and unloading of materials, operation of heavy equipment and from exposed surfaces such as material stockpiles or the active landfill face. The magnitude of impact will depend on the size of the operation, local topography, adjacent land use, prevailing wind speed/direction, and distance to the nearest sensitive receptor. The objective of the dust management plan is to prevent the generation of airborne particulates (including dust) to ensure that no dust is discharged beyond the boundary of the site.

The Proponent shall undertake dust control measures as described in **Section 3.4**.

3.4 HEALTH

Excessive dust can potentially cause adverse health effects for workers within the site. All workers undergo regular health checks and will have access to appropriate dust masks for use if required and

be instructed in the use of dust minimisation equipment as outlined in the *Occupational Safety and Health Act 1984*.

3.5 DUST MANAGEMENT MEASURES

Day to day monitoring of dust will be conducted by visual means and sighted quickly before reaching the premises boundary. The appropriate action will commence prior to dust impact occurring. The following natural barriers and process barriers will limit the generation of dust from the premises:

- Extensive vegetation exists within the Lot between the footprint of the proposed facility and the nearest residence. This will help reduce the wind speed in this direction and act as a filter for airborne particulate matter, and
- The vegetation along the access road will reduce disturbance to exposed layer of the gravel road and also assist in containing the dust generated by traffic to a certain extent.

As dust generating activities will occur in both the construction and operation of the landfill facility, the following mitigating measures may be employed during both construction and operation:

- Watering down of all unsealed trafficable areas at the commencement of each working day,
- Watering down of dust generating areas during construction and operation and maintaining a water supply on site for this purpose,
- Where possible, activities that have a high potential for dust generation (excavation, unloading of material etc.) shall be halted during adverse weather conditions where strong winds are blowing towards the nearby receptor to the north-east,
- Instruction will be given to all employees and site personnel on how to use the equipment to minimise dust,
- In the event that dust management objectives are not being achieved due to weather conditions or other factors, only those activities that do not generate dust will be undertaken,
- The access roads within the site will be watered down regularly throughout the day to minimise dust,
- Deliveries containing dry and/or dusty materials will be wetted down during the waste placement process,
- All complaints will be recorded and investigated (an example complaint form is attached in **Appendix B**),
- Restricting traffic to most direct route on the site and prohibiting traffic on non-active areas,
- Limiting the speed on the facility access road to 60 km/h and internal haul roads to below 20 km/h,
- Reducing dump heights to a maximum of 3 m wherever possible,
- Visual observations on site will allow for dust emissions to be monitored on a regular basis in the active construction stage and during the operation of the facility,
- If observations indicate that dust is being generated from within the site, additional dust management techniques will be adopted using water trucks or sprays for immediate action and mulching, hydro seeding or chemical crusting agents as a possible longer term solution,
- All trucks entering and leaving the will be covered to prevent windblown emissions,
- All trucks leaving the site will drive over a wheel cleaner prior to exiting the landfill infrastructure area,
- No burning of waste materials will be permitted on site and smoking will not be permitted unless in designated areas,
- Good housekeeping practices will be adopted on site to minimise dust generation. All materials stored in locations which have the capacity to generate dust will be either adequately covered or wetted down during times conducive to dust generation,

- The Site Supervisor will be responsible for maintaining a complaints register, which will be established to record and resolve, among other complaints, any dust related complaints, and
- The Site Supervisor will contact any complainants that have concerns related to dust and determine the nature of the nuisance and implement any changes necessary to mitigate dust generation and dust moving beyond the site boundary.

3.6 DUST MONITORING PLAN

The site is surrounded by agricultural land under cultivation and cropping which provides potential for high levels of background dust generation. Dust generated within the site will be created during the construction of the facility, via transport across the unsealed roads and later during the placement of waste. The large buffer distance between the facility footprint and the property boundary serves to minimise the risk of dust leaving the property.

3.6.1 Dust Monitors

Physical monitoring of dust levels at four locations on the property will be undertaken. These locations will be at the property boundary in the direct line between the three closest receptors and the site and adjacent to the site infrastructure area, as shown in **Appendix A**.

3.6.2 Climate Monitoring Equipment

The site will have equipment to monitor wind direction and temperature. A windsock will be installed on site to indicate the wind direction and approximate wind strength. High wind speeds will be determined by the windsock's angle relative to the mounting pole and via the use of hand held anemometers.

3.6.3 Background Dust Generation

Records such as date, time, wind patterns and atmospheric temperature will be kept regarding dust generation due to cultivation, harvesting, fire and other noticeable contributors to dust generation around the site.

3.6.4 Dust Monitoring Frequency

The performance of the proposed dust suppression measures will be assessed by monitoring physical and visible dust arising from within the site. The list of monitoring measures proposed for the assessing performance is shown below.

Table 3: Proposed Frequency and Staff Responsible for Dust Monitoring

PROGRAMME	FREQUENCY	RESPONSIBLE PERSON
Visual inspection of dust leaving the boundary of the premises.	Continuously during every operating day.	Site Manager.
Visual inspection of dust generation at the site access from the Great Eastern Highway.	Twice daily.	Delivery Contractors.
Visual inspection of dust generation on internal haul road.	Continuously during every operating day.	Site Manager.
Dust monitoring at three	Monthly	Site Manager.

PROGRAMME	FREQUENCY	RESPONSIBLE PERSON
locations at the property boundary and one location at the site infrastructure.		
Collection of litter in and around the premises including clearance of litter from fixed and mobile litter screens.	Daily.	Site Manager.
Maintenance of water truck.	As required or in accordance with manufacturer recommendations.	Workshop mechanic and site Manager.
Clean up of spilt waste.	Immediately.	Site Manager.
Maintenance of Plant.	As required or in accordance with manufacturer recommendations.	Workshop mechanic and site Manager.

3.6.5 Dust Suppression Frequency

The proposed frequency for conducting dust suppression measures is shown below. The proposed frequency will be reviewed based on performance of the dust suppression measures.

Table 4: Proposed Frequency for Dust Suppression

SUPPRESSION MEASURE	PROPOSED FREQUENCY
Watering of site roads exposed to traffic movement.	As necessary but at least twice every operating day.
Covering of loads.	Every truck entering and leaving the premises.
Wetting down of exposed landfill surfaces.	As necessary but at least twice every operating day.

3.6.6 Trigger Level

Two trigger conditions are proposed for the commencement of dust management and stoppage of dust generation activities.

The first trigger level to action dust management measures will be generation of visual dust.

The second trigger level for the facility to cease its activities is when strong winds are forecast by the Bureau of Meteorology (in the range of 26 to 33 knots). Work will be reduced in the presence of strong winds and low humidity until a time when conditions become more favourable. If any dust is observed leaving the property boundary then work will cease immediately, the cause of thereof will be investigated and actions will be taken to resolve the problem before regular site activity recommences.

3.6.7 Reporting

Reporting will occur by submitting a complete copy of any records of complaints registered with the Annual Audit Compliance Report and will include:

- Date and time of complaint,
- Locations from which the problem arose,
- Wind direction, speed and atmospheric temperature at the time of the complaint, and
- For any incidents of large amounts of dust, an investigation as to why it occurred and measures taken to resolve the issue.

3.6.8 Procedures to Follow During a Complaint

The following procedures will be followed to record and act upon receiving a complaint due to dust generation:

- Site Supervisor to fill out the complaint register and record the prevailing weather conditions,
- Complaint register to me maintained and made available upon request by the DER or the Shire of York,
- Evaluate the complaint by conducting a visual inspection at the earliest opportunity,
- Upon assessing the nature of compliant to be valid, undertake necessary action to identify the source of dust generation affecting the complainant,
- Take measures as stated in the Dust Management Plan to address the issue,
- Record the action undertaken to address the issue and state the reason for occurrence of dust generation,
- Contact the complainant and inform the findings and agree on the outcome, and
- Report to the DER on the dust complaint/s within the Annual Audit Compliance Report for the facility.

3.6.9 Summary of Dust Management Plan

The summary of the Dust Management Plan is given in **Table 5**.

Table 5: Summary of Dust Management Plan

ACTIVITY	POTENTIAL RISK	DUST MINIMISATION PROCEDURE
Construction		
Earthworks	Low – Two months	Removal of top soils and grading of land will be undertaken with application of water to reduce dust generation.
Stockpiling	Low	The stockpiled top soil will be wetted down during high wind conditions.
Traffic	Low – Minimum traffic	Number of vehicles accessing the site will be minimal during construction. Visual dust monitoring will be undertaken and areas generating dust will be watered down.

ACTIVITY	POTENTIAL RISK	DUST MINIMISATION PROCEDURE
Operation		
Material Haulage	Medium	Visual monitoring will be undertaken regularly by site staff, truck drivers and other road users. Wetting down of road will be done at least twice every operating day.
Spillage	Low	The trucks carting waste to the facility will be covered. Any spillage will be cleaned immediately.
Litter	Low	Any litter within the premises will be collected daily.
Exposed Stockpiles	Low	Dry stockpiles arriving at the site will be wetted down and will have higher priority to be incorporated into the landfill.
Strong Wind Conditions	Medium	Cease all activities having potential to generate dust when strong winds are experienced.
Depositing waste in landfill.	Medium	Active face to be wetted down during the deposition of waste, as required.
Internal Traffic Movement	Low	The roads within the premises will be wetted down to limit the dust generated due to vehicle and plant traffic.

3.7 PREDICTED OUTCOME

It is considered that the measures identified above will reduce and control the instances of dust generation. Given the adequate buffer distance to a sensitive premise and surrounding vegetation, along with the implementation of the measures identified to reduce or control dust, it is believed that dust emissions can be managed to meet the EPA's objective.

4 REFERENCES

Environmental Protection Authority, 2010. Environmental Protection (Noise) Regulations 1997 (As Amended).

Environmental Protection Authority, 2005. Guidance Statement No 3, Separation Distance between Industrial and Sensitive Land Uses.

West Australian State Government, 1984. Occupational Safety and Health Act.

Western Australian State Government, 1996. National Environment Protection Council (Western Australia) Act.

5 APPENDICES

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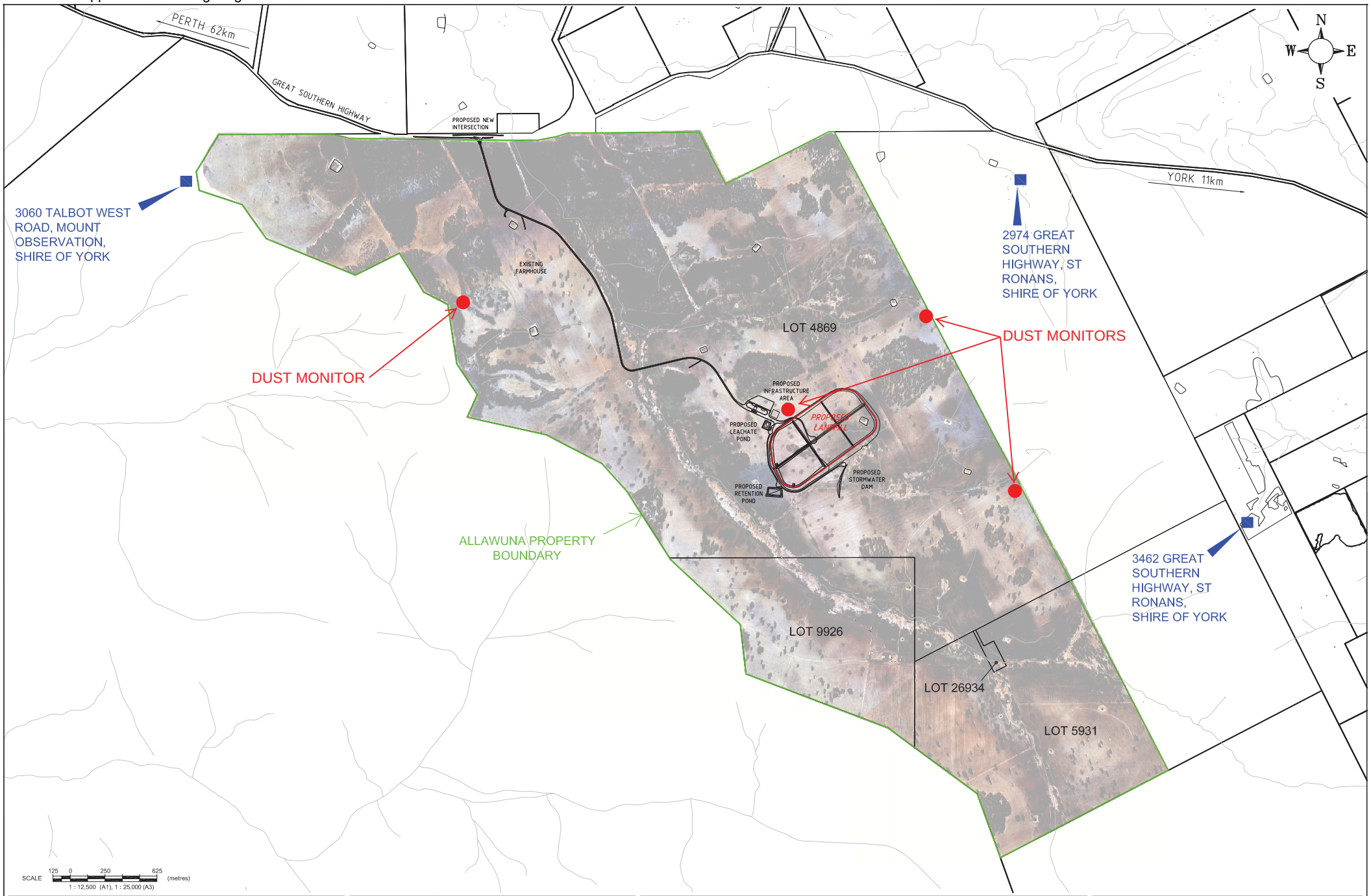

Bowman and Associates Pty Ltd ABN: 22 112 399 514 Mail: PO Box 2059, Rossmoyne WA 6148 Office: 8/640 Beeliar Drive, Success WA 6164 Phone: (08) 9414 9670 Web: www.bowmanassociates.com.au	Client: SITA Australia	Location: Lots 4869, 5931, 9926 & 26934 Great Southern Hwy, Saint Ronans	Drawing Title: Site Plan and Location		
	Date: 04/03/15	Scale: 1:12,500	Design By: B.W.B.	Drawn By: S.B.Y.	Project: Allawuna Farm Landfill
	Drawing Number: Figure 1	Revision: A	Drawing Size: A1		

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Appendix B Complaint Register

Date	Time	Person	Contact Details	Incident Description	Incident Location	Weather Conditions	Action Taken	Follow-up Action Required