



Asset Management | Civil Engineering | Environmental Services | GIS & Spatial Intelligence | Waste Management

Environmental Assessment and Management Plan

Waste Transfer and Resource Recovery Facility, 25
Jackson Street, Bassendean

aurigen

Prepared for Aurigen

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1 Introduction

Aurigen Group Ltd (Aurigen) is a private waste service provider that specialises in a variety of services to domestic, industrial and local government clients including resource recovery, waste logistics, waste disposal and commodity aggregation and trading. Aurigen recently acquired a lease on 25 Jackson Street, Bassendean (the Site) and have since been operating with some commodity aggregation at the Site. Talis Consultants Pty Ltd (Talis) has been engaged by Aurigen to assist with seeking all relevant approvals in order to expand operations at the Site including:

- Development Approval from Town of Bassendean;
- Referral to the Environmental Protection Authority (EPA); and
- Works Approval and Licence from Department of Environment Regulation (DER).

The operations at the Site are proposed to include the following activities and equipment:

- Materials Recovery Facility for the acceptance and processing of commingled recyclables;
- Acceptance, short term stockpiling and baling of source separated recycled commodities including paper, cardboard, metals and aluminium cans;
- Glass crusher for management of waste glass processed in the MRF;
- Metal shredder for the processing of metal commodities to increase compaction of metal bales;
- Waste Transfer Station for the acceptance and short term storage of putrescible waste materials;
- Transportation off site of:
 - compacted putrescible waste materials that cannot be recycled to appropriate disposal facilities; and
 - baled commodities for export.

Materials Recovery Facilities (MRFs) consist of processing equipment and systems that are designed to separate recyclable materials into individual material streams to prepare them for sale into commodity markets. There are three main phases associated with MRFs namely, receipt, sorting of materials into individual material streams and finally, baling and storing of the sorted materials in preparation for shipment to the market.

Waste Transfer Stations are facilities where waste is accepted and temporarily stored before being transported to another destination for further treatment and/or disposal. The purpose of transfer stations is to provide waste generators, waste collectors and waste handlers, options to dispose of their materials within relatively close proximity to where these materials are generated. A waste transfer station can, thereby, reduce the travelling requirements of waste generators and collections vehicles to deposit their materials and also reduce the number of vehicles travelling to landfills and similar facilities, which in Perth are predominantly located outside of the metropolitan area.

The Waste Transfer and Resource Recovery Facility will be an integrated facility providing a range of recycling and waste management services which is reflective of modern advanced facilities. Key benefits of the proposed Waste Transfer and Resource Recovery Facility, include increased resource recovery and the resultant waste diversion from landfill supporting the State, Local Government and wider Perth community to move towards a more sustainable society, reduced carbon emissions and waste management costs to Local Governments due the Site's strategic location close to the source of waste generation and providing local employment opportunities.



1.1 Purpose of the Report

This Environmental Assessment and Management Plan (EAMP) has been prepared to support all the relevant environmental and planning approvals required for the establishment of a Waste Transfer and Resource Recovery Facility at the Site. The objectives of this EAMP are to:

- Describe the current conditions on and surrounding the Site;
- Describe in detail the proposed development including design and operations;
- Identify any potential environmental aspects associated with the Proposal; and
- Develop environmental engineering and management measures to ensure that all potential impacts are managed to appropriate standards.

To achieve the objectives of the report, this EAMP consists of:

- Section 2: Site Information;
- Section 3: Existing Environmental and Social Attributes;
- Section 4: Conceptual Description of Proposed Site Activities;
- Section 5: Benefits
- Section 6: Environmental Aspects;
- Section 7: Environmental Management Measures; and
- Section 8: Conclusion.

Talis is of the belief that the information provided, including specialist studies, within this report will satisfy the environmental data requirements of the DER, EPA, Town of Bassendean planners and the Development Assessment Panel (DAP).

1.2 Approval Process

1.2.1 Environmental Approvals

As outlined previously, Aurigen recognises that a range of environmental and planning approvals are required for the Proposal. To maximise the efficiency of the approvals process, the environmental and town planning approvals will be run concurrently. The EAMP will, therefore, be provided to both the DER and the Town of Bassendean.

The Site's activities will mean the Site will be classified as a Prescribed Premises pursuant to Part V of the *Environmental Protection Act 1986* (EP Act). The various Prescribed Premises categories and the expected throughputs are shown in **Table 1-1**.

Table 1-1: Categories of Prescribed Premises

Category No.	Name	Description	Threshold (tonnes per annum)	Expected Throughput (tonnes per annum)
47	Scrap metal recovery	Premises on which metal scrap is fragmented or melted, including premises on which lead acid batteries are reprocessed.	100 tonnes or more	60,000
61A	Solid waste facility	Premises (other than premises within category 67A) one which solid waste produced on other premises is stored, reprocessed, treated or discharged onto land.	1,000 tonnes or more	100,000



Category No.	Name	Description	Threshold (tonnes per annum)	Expected Throughput (tonnes per annum)
62	Solid waste depot	Premises on which waste is stored, or sorted, pending final disposal or re-use.	500 tonnes or more	100,000

The Facility will require a Works Approval from the Department of Environment Regulation (DER) for its construction. In addition, Aurigen will require a licence for the operation of the Facility. As a result of the DER's reform, works approvals and licences can now be sought concurrently.

Pursuant to Part IV of the EP Act, Aurigen will refer the proposal to the Environmental Protection Authority (EPA) to determine the level of assessment.

1.2.2 Planning Approvals

A development approval application has been submitted to the Town of Bassendean. Aurigen and Talis Consultants met with Timothy Roberts, Planning Officer from the Town of Bassendean on 17th May 2016 to initially discuss the proposal.

In accordance with the *Planning and Development (Development Assessment Panels) Regulations 2011* and its subsequent amendments, Aurigen's proposal would be considered to be a mandatory Development Assessment Panel application as the estimated cost of the development is greater than \$10 million.

The location of the site would mean the Proposal falls under the remit of the Metro Central Joint DAP.



2 Site Information

2.1 Site Location

The Site is located at 25 Jackson Street, Bassendean in the Bassendean Industrial Area within the administrative boundary of the Town of Bassendean, approximately 10km from the centre of Perth. The industrial area is conveniently located in close proximity to Collier Road (approximately 100m to the north) and bordered by Railway Parade/Guildford Road (approximately 750m to the south) and Tonkin Highway (approximately 415m to the east), which is accessible via Collier or Guildford Roads. The location of the site is shown in **Figure 1**.

The closest residential area is approximately 570m away to the north of the Site in the neighbouring suburb of Bayswater. These residential premises are situated directly adjacent to the northern extent of the industrial area, which extends onto the north side of Collier Road.

2.2 Site Identification

Table 2-1 below provides information on the identification of the Site.

Table 2-1: Site Identification

Address	Ownership	Tenure	Centre point Coordinates (MGA 50)	
			Easting (X)	Northing (Y)
25 Jackson Street, Bassendean WA 6054	Harlap Beneficiaries Pty Ltd	Lease	398,756	6,469,258

The Certificate of Title for the Site detailing the occupier status can be found in **Appendix A**.

2.3 Site Description

The Site covers an area of approximately 23,200m². The Site's existing buildings include two standalone sheds along with an office building and parking facilities. All of these buildings are located towards the front half (Jackson Street end) of the Site. The Site is made up of large areas of hard standing, which has been historically cleared and appears to have little to no native vegetation remaining. The entire Site is fenced with gated access points on Jackson Street and Alice Street. There are small areas of low-lying vegetation along the street frontage and along the perimeter of the Site with a small number of trees present on the north-western and south-eastern fence lines and in the area fronting on to Jackson Street to assist with screening.

Both Jackson Street and Alice Street are on the oversize Restricted Access Vehicle (RAV) network, as defined by Main Roads Western Australia. These streets are RAV Network 2-7 (Main Roads WA) road which means that vehicles equal or up to 36.5m in length and up to a mass of 107.5 tonne can utilise them.

A site visit was conducted by Talis on 26th October 2015 to help identify any potential environmental constraints that may be present at the Site. An aerial photograph of the Site is shown in **Figure 2**.

2.4 Site Access

There are three gated vehicle access points to the Site. Two from the front of the Site on Jackson Street, which are separated from each other by a small, vegetation and tree lined embankment. There is a third Site access point from a private access road on the adjacent Alice Street. Most of the traffic



dropping off or collecting commodities, recyclables or waste will access the site via the northern Jackson Street or Alice Street entrances. Both of these entry points will be equipped with weighbridges. The Alice Street entry will also have a gatehouse.

Given Waste Transfer and Resource Recovery are logistic operations, it is important that the Site is easily accessible by road. The Site is in an excellent strategic location, in close proximity to major roads including Collier Road (to the north), Guildford Road (to the south) and Tonkin Highway (accessed via Collier and Guildford Roads) which provides easy access to port facilities.

2.5 Surrounding Land Uses

As is evident from **Figure 1**, the Site is located in the middle of an industrial zone that is comprised of the Bassendean Industrial Area and the adjoining Bayswater Industrial Area to the west. In fitting with the zoning, the area is characterised by numerous industrial businesses. The following businesses have been identified in the direct surroundings to the Site:

- Tasman Oil Tools (27 Jackson St) provide drilling tools to the mining and resources sector.
- Donhad (18-22 Jackson St) are manufacturers of forged steel grinding balls, engineering forgings and a range of specialised fasteners for use in the mining and mineral processing industry.
- Paull & Warner Body Builders (opposite the Site, 24 Jackson St) who are medical equipment, ambulance and emergency vehicle manufacturers.
- Floveyor (6 Alice St) are an aero-mechanical conveyor systems and solutions company.
- Pressform Engineering (23 Jackson St) are metal fabrication and manufacturers for the industrial, mining, oil & gas, commercial and residential sectors.
- TL Engineering (immediate neighbour to north-east of the Site, 300 Collier Road) are manufacturers and fitters for motor vehicle bodies and accessories.
- 12 Alice Street – an industrial/commercial complex comprised of six warehouse units, several of which, at the time of writing, appeared to be vacant. (Companies include: Stone On Top Pty Ltd and Hydraulic Hoist and Winch Sales).

There are also a number of waste management facilities at which similar operations are undertaken in the vicinity of the Site. Talis believes that this demonstrates that the Site is located within an appropriate area for the proposed operations.

2.6 Separation Distances

The recommended separation distances between sensitive land uses and the Prescribed Premises categories relevant to the Site are shown in **Table 2-2** as set out in various existing and draft guidance documentation including:

- Environmental Protection Authority's (EPA) Guidance on Separation Distances between Industrial and Sensitive Land Uses (Guidance Statement No. 3);
- DER's draft Guidance Statement on Separation Distances; and
- EPA's draft Guideline for Separation Distances Between Industrial and Sensitive Land Uses.



Table 2-2: Recommended Separation Distances between Industrial and Sensitive Land Uses

Category	Recommended Separation Distance (m)		
	EPA Guidance Statement No. 3	DER Draft Guidance	EPA Draft Guideline
47 - Scrap metal recovery - Premises (other than premises within category 45) on which metal scrap is fragmented or melted, including premises on which lead acid batteries are reprocessed.	300-500	500	300-500
61A – Solid waste facility - Premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	No distance cited, case by case	500	500
62 - Solid waste depot - Premises on which waste is stored, or sorted, pending final disposal or re-use.	200	200	200

As previously mentioned, the closest residential area to the Site is approximately 570m away, at its closest point, to the north of the Site in the neighbouring suburb of Bayswater. This is well beyond any of the existing or draft recommended separation distances for the activities proposed for the Site.

2.7 Zoning

The Site and surrounding area is currently zoned as 'General Industry'. Based on our interpretation of the Town of Bassendean's Local Planning Scheme No. 10 (LPS10), Talis is of the view that the proposed Site activities are classified as Industry – General, which is defined in the LPS10 as *"an industry other than a cottage, extractive, light, mining, rural or service industry"*.

The Zoning Table within LPS10 indicates the permissibility of the various land use classes within each zone. According to the Zoning Table, an Industry – General land use within the General Industrial Zone is classified as "P" which is defined as *"that the use is permitted by the Scheme providing the use complies with the relevant development standards and the requirements of the Scheme."*

The Metropolitan Region Scheme (MRS) is a large town planning scheme for land use in the Perth metropolitan area. According to the MRS, the Site is located within a zone allocated as "Industrial".

As outlined previously, Aurigen has submitted a Development Approval Application to the Town of Bassendean and will be considered a mandatory Development Assessment Panel application as the estimated cost of the development is greater than \$10 million.



3 Existing Environmental and Social Attributes

The following sections outline the environmental and social values on and surrounding the Site.

3.1 Topography

Landgate is the Statutory Authority that maintains the States' official register of land ownership and survey information. A topographic survey was undertaken in November 2015 utilising topographical contour geospatial data sourced from Landgate. It was observed that the Site slopes downward from north to south (**Figure 3**). The highest point of the Site is the north-western perimeter, which reaches approximately 25m Australian Height Datum (AHD). The northern corner of the Site boundary sits at approximately 24m AHD, gradually sloping downward towards the south-eastern perimeter of the Site, where there is a steep slope 2-3m down to approximately 20 m AHD, which forms a drainage channel.

3.2 Geology

The Department of Mines and Petroleum's (DMP) Geological Survey of Western Australia (GSWA) 1:50,000 map series for the Perth area classifies two surface geology profiles occurring across the Site. As shown in **Figure 4**, the majority of the Site is covered by a mapped geological profile described as 'Sand - Very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin'. A small portion on the eastern side of the Site is described as 'Peaty Clay - Dark grey and black with variable sand content of lacustrine origin'.

3.3 Acid Sulphate Soils

Acid Sulphate Soils (ASS) are naturally occurring soils that contain iron sulphide (iron pyrite) minerals that, if disturbed and exposed to air (i.e. by excavation, dewatering or drainage), can be oxidised resulting in release of acidity and potentially causing adverse environmental impacts.

ASS risk mapping geospatial data generated by the Department of Environment and Conservation (DEC) (now known as the Department of Environment Regulation (DER) and the Department of Parks and Wildlife (DPaW)) show the majority of the Site occurs within a 'moderate to low risk' ASS mapped area, while a small area to the east of the site occurs within a 'high to moderate' ASS mapped area (**Figure 5**). The risk area mapping takes into account existing geomorphological, geological and hydrogeological information to develop broad scale mapping for regions of the State for planning purposes. As a result it cannot be solely relied upon to confirm the presence of ASS at the Site.

3.4 Flora and Fauna

The Site is located within a large industrial area. The Site is scarcely vegetated apart from a number of trees along the perimeter and towards the street frontage of Jackson Street. Given its industrial past, it is anticipated to be considered to be of little ecological value.

3.4.1 Threatened Species

A threatened flora and fauna search was conducted using the DER's NatureMap tool. The results of a one kilometre search surrounding the approximate 'centre point' of the Site returned a total of 26 flora and fauna species potentially found in the search area. Of these, there were fourteen species of plants, six species of arachnid, five species of reptile and one species of fungus. However, none of the species identified were classified as a conservation risk or priority species as shown within the NatureMap Species Report attached as **Appendix B**.



It is anticipated that due to the industries already established in the surrounding area, the construction and operation of the Facility will not impact significantly on any identified species.

3.4.2 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared in *Environmental Protection Act 1986* under Section 51B as areas that cover any and/or all of the following areas of conservation significance:

- declared World Heritage properties;
- included on the Register of the National Estate;
- defined wetlands and the area within 50 m of these wetlands;
- areas covered by vegetation within 50m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located;
- threatened ecological communities;
- Bush Forever sites; and
- Areas identified within Environmental Protection Policy areas.

The closest ESAs are Ashfield Flats, which is a Bush Forever site and the Swan River wetlands, which are both approximately 1.5 km away to the south-east and is shown in **Figure 6**.

A search of the Federal *Environmental Protection and Biodiversity Conservation Act* (EPBC Act) Protected Matters Search Tool (PMST) generated a list of protected matters within 1km of the Site. The output of this search is attached as **Appendix C**. The results of the search concluded that 15 listed threatened species and six listed migratory species potentially frequent the Site. The 15 listed threatened species that potentially frequent the Site are:

- Birds
 - Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksia naso*);
 - Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*);
 - Malleefowl (*Leipoa ocellata*);
 - Fairy Prion (*Pachyptila turtur subantarctica*);
 - Australian Painted Snipe (*Rostratula australis*);
- Mammals
 - Chuditch (*Dasyurus geoffroii*);
- Plants
 - Slender andersonia (*Andersonia gracilis*);
 - Dwarf green kangaroo paw (*Anigozanthos viridis* subsp. *Terraspectans*);
 - King spider-orchid (*Caladenia huegelii*);
 - Muchea bell (*Darwinia foetida*);
 - Purdie's donkey orchid (*Diuris purdiei*);
 - Glossy-leafed hammer-orchid (*Drakaea elastica*);
 - Beaked lepidosperma (*Lepidosperma rostratum*);
 - Cinnamon sun orchid (*Thelymitra dedmaniarum*); and
 - Star sun-orchid (*Thelymitra stellata*).

The six listed migratory species that potentially frequent the Site are:

- Fork-tailed swift (*Apus pacificus*);
- Rainbow bee-eater (*Merops ornatus*);
- Grey wagtail (*Motacilla cinerea*);
- Great egret (*Ardea alba*);
- Cattle egret (*Ardea ibis*); and



- Osprey (*Pandion haliaetus*).

However, none of the following matters of national environmental significance were identified:

- World Heritage Properties;
- National Heritage Places;
- Wetlands of International Importance;
- Commonwealth Marine Areas; and
- Listed Threatened Ecological Communities.

As previously stated, it is anticipated that the Site itself has little ecological value due to its location within an established industrial area (see historical aerials in **Figure 7**) which has been cleared historically for a variety of industrial uses.

The government data searches are indicative and represent the potential for a species to exist in the area. This does not necessarily mean that the species is actually located within the search area or the Site.

3.5 Water

3.5.1 Groundwater

Desktop investigations on groundwater levels were carried out using Department of Water (DoW) historical groundwater contours and Water Information (WIN, 2002) site geospatial datasets. The WIN site database is a State-wide record of surface and groundwater measurements, both quantitative and qualitative taken at monitoring points across the State. Groundwater contour data provides a measurement of superficial aquifer groundwater levels.

Groundwater contour data indicates the Site groundwater levels are at approximately 9m AHD across the Site. Based on a comparison against topographical contours, the depth to groundwater can be estimated to range from 10m to 15m (**Figure 8**). WIN site records were not considered extensive enough to give an accurate indication of depth to groundwater. The nearest WIN site (ID: 20028409) with recorded groundwater levels is located approximately 85m to the south of the Site. The static groundwater level at this site was recorded as 6.1m below ground level (bgl).

3.5.2 Groundwater Proclaimed Area

Under the *Rights in Water and Irrigation Act 1914*, proclaimed groundwater areas in WA are areas in which licences are required to construct or alter a well and to take groundwater. The Site is located within the proclaimed Perth Groundwater Area (**Figure 8**). As a result a licence would be required from the Department of Water in order to access groundwater on the Site. A review of the DoW's Water Register Licence and Water Availability Information showed that there is no licence currently listed for the Site. In addition, Aurigen don't plan to apply for a licence to utilise groundwater at the Site.

3.5.3 Public Drinking Water Sourced Areas

Under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947* the DoW has the powers necessary to legally define the boundaries of Public Drinking Water Source Areas (PDWSAs). These are legally defined boundaries with varying Priority Levels (P1, P2 and P3) assigned to ensure that PDWSAs are managed and protected to ensure the availability of reliable, safe, good quality drinking water from either groundwater or surface water sources.



Based on a review of available mapping, the Site is located outside of any PDWSAs, with the nearest assigned PDWSA being the Priority 3 'Gnangara Underground Water Pollution Control Area' situated approximately 5.8km to the north-west.

3.5.4 Surface Water Hydrology

Following a review of geospatial datasets, aerial photography and a site visit, no surface water bodies were identified on the Site. The nearest natural surface water body is a mapped geomorphic wetland located approximately 390m to the south-south-west of the Site as shown in **Figure 9**.

In the event that surface water is generated, it is anticipated that it would flow in a southerly direction towards the southern corner of the Site as the topography facilitates the flow in this direction. This will be captured and managed through the existing surface water drainage system on the Site.

3.5.5 Wetlands

Wetlands are vitally important ecosystems that support an array of unique species of plant, animal, algae, fungi and bacteria. The DPaw manages the Swan Coastal Plain Geomorphic Wetlands geospatial dataset. That dataset has evaluated wetlands on the Swan Coastal Plain in order to assign one of the following management categories:

- Conservation Category – Wetlands which support a high level of attributes and functions. The objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms.
- Resource Enhancement – Wetlands which may have been partially modified but still support substantial ecological attributes and functions. The ultimate objective is to manage, restore and protect towards improving their conservation value.
- Multiple Use – Wetlands with few remaining important attributes and functions. The use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning.

As shown in **Figure 9**, there are no mapped geomorphic wetlands located on the Site. The nearest wetland is a Multiple Use Wetland (UFI 8433) located approximately 250m to the north of the Site. The next closest wetland is a Multiple Use Wetland (UFI 15700) located approximately 390m to the south-south-west of the Site. The Western Australian Planning Commission's (WAPC) Guideline for the Determination of Wetland Buffer Requirements state that Multiple Use "...category wetlands generally are quite degraded and may be weed infested due to their existing use and/or lack of management. The likelihood of having any attributes that require protection through imposition of a buffer is therefore low".

3.5.6 Floodplains

The DoW prepares floodplain mapping to indicate the extent of flooding associated with Average Recurrence Interval (ARI) 100 year flood events. The ARI 100 year flood event is a statistical estimate of the average period in years between the occurrences of a flood of a given size and is roughly equal to a 1% probability of occurring in any given year.

A review of geospatial floodplain datasets indicated that the nearest floodplain, a mapped floodplain with 100 year ARI, is approximately 1.5km to the south-east of the Site, associated with the Swan River (**Figure 10**). The distance of the 100 year ARI floodplain along with the elevation range of the Site from 20m AHD to 25m AHD would indicate that the Site is at a low risk of flooding.



3.5.7 Surface Water Proclaimed Area

Under the *Rights in Water and Irrigation Act 1914*, proclaimed surface water areas in Western Australia are areas in which licences are required to take water from a surface watercourse. Based on a review of available mapping, the Site is located outside of any proclaimed surface water areas, with the nearest being approximately 2.2km to the north-east of the Site, associated with the 'Swan River System' proclaimed area.

3.6 Cultural Heritage

3.6.1 Aboriginal Heritage and Native Title

A search for relevant Aboriginal Heritage was conducted by using the Department of Aboriginal Affairs' (DAA) online Aboriginal Heritage Inquiry System, which incorporates both the Heritage Site Register and the Heritage Survey Database and lists the following heritage areas:

- Registered Aboriginal Sites;
- Other Heritage Places; and
- Heritage Survey Areas.

Other Heritage Places are described by the DAA as being either:

- Stored Data / Not a Site: The place has been assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972*; and
- Lodged: Information has been received in relation to the place, but an assessment has not been completed to determine if it meets Section 5 of the *Aboriginal Heritage Act 1972*.

Results of the searches indicated that the Site and its surrounds have been subject to multiple heritage surveys (21088, 21817, 21818, 21909, 102670, 103564, 104379 and 104405) and that the Site boundary intercepts a Lodged Other Heritage Place (ID: 3614)

As shown in **Figure 11**, the actual location of the Lodged Other Heritage Place appears to occur to the south of the Site and only a very small portion of the outer part of the buffer intercepts the Site at its southern boundary. However, Aurigen acknowledges its potential obligations under Section 15 of the *Aboriginal Heritage Act 1972* in relation to reporting any relevant findings to the Department of Aboriginal Affairs.

3.6.2 European Heritage

An online search of the Heritage Council of WA's (HCWA) database using the inHerit portal found that no registered sites of European heritage from National, State or Local Government heritage databases occur on, or immediately adjacent to, the Site. The nearest registered heritage site is the former Bassendean Masonic Lodge located approximately 1.8km to the east of the Site.

3.6.3 Local Government Heritage

A search of the State Heritage Register identified no places of Local Government heritage significance within or immediately surrounding the Site. The closest Local Government heritage site is the former Cresco Fertiliser Works located approximately 350m south-west of the Site.



3.7 Contaminated Site Information

3.7.1 Contaminated Sites Database Search

The DER's Contaminated Sites Database contains a register of sites classified as:

- Contaminated – remediation required;
- Contaminated – restricted use; and
- Remediated for restricted use.

A search of the Contaminated Sites Database undertaken on 4th November 2015 confirmed that the Site is not listed as a contaminated site. The nearest contaminated site is located approximately 140m to the east (**Figure 12**). This contaminated site is part of a grouping of 38 contaminated sites which are classified as 'Remediated for restricted use' within the locality.

A desktop review of history of the Site has shown it was previously occupied by an excavation and earthmoving company (Goldfields Contractors WA) and a construction and maintenance services company (GCS Hire).

3.8 Summary of Environmental and Social Attributes

A summary of the existing environmental and social attributes of the Site are shown in **Table 3-1**.

Table 3-1: Summary of Environmental and Social Attributes of the Site

Attribute	Comment
Topography	The elevation of the Site is approximately 25m AHD at its highest point in the north-western perimeter. From here, the elevation gradually slopes downward towards the south-eastern perimeter of the Site, which sits at approximately 20m AHD.
Geology	Two geological profiles identified on the Site. The majority is considered to be 'Sand - Very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin'. A small portion of the eastern side of the Site is 'Peaty Clay - Dark grey and black with variable sand content of lacustrine origin'.
Acid Sulphate Soils	The majority of the Site's soils are considered to be 'moderate to low' risk. A small area to the east of the Site occurs within a 'high to moderate' risk area.
Flora and Fauna	26 species of flora or fauna are potentially located within 1km of the Site. No flora or fauna species of conservation significance are considered to potentially use the Site. The Site is not located within an ESA. The closest ESA, Ashfield Flats which is a Bush Forever site, is located approximately 1.5km to the south-east of the Site.
Water	Depth to groundwater is estimated to range from 10m to 15m across the Site. The Site is located within the proclaimed Perth Groundwater Area. The Site is not located within a Public Drinking Water Source Area (PDWSA). The closest PDWSA is approximately 5.8km away. No surface water bodies are located within the Site. The Site is not located in close proximity to wetlands or floodplains. The closest wetland is approximately 250m to the north of the Site. The Site is located outside of any proclaimed surface water areas.



Attribute	Comment
Cultural Heritage	<p>The Site boundary intercepts a Lodged Other Heritage Place at its southernmost tip.</p> <p>No registered European heritage sites within the Site.</p> <p>No Local Government heritage sites of significance within or immediately surrounding the Site.</p>
Contaminated Site Information	<p>No known former contaminating activities were identified for the Site, nor was it classified as a contaminated site on the DER's Contaminated Sites Database.</p>



4 Conceptual Description of Proposed Site Activities

The following section provides a conceptual description of Aurigen's proposed development of the Site under the following headings:

- Site layout;
- Material volumes;
- Materials Recovery Facility;
- Commodity Aggregation;
- Putrescible Waste Transfer Station;
- Site Equipment and Machinery;
- Vehicle Movements;
- Staffing;
- Operational Hours; and
- Supporting infrastructure

4.1 Current Site layout

The Site is rectangular in shape, with the street front of the Site orientated in a south-westerly direction. Access to the Site can be gained via two gated entrances on Jackson Street or from a private access road on Alice Street, which approaches the Site from the south-east. As mentioned previously, a security fence is already in place around the Site and all access points are gated.

The office is located at the front of the Site, in its most westerly corner, with associated staff parking facilities present both behind and directly adjacent to the office building.

There are two existing sheds located towards the front of the Site. Both of these sheds are used for Commodity Aggregation operations. The smaller shed to the south is currently being used by Aurigen for metal baling and storage (Metal Recycling Facility). The larger shed to the north is used as a paper and cardboard baling and storage facility (Baling Shed).

4.2 Proposed Site layout

The proposed Site layout is shown in detail in **Drawing 1**. Three weighbridges will be constructed on the Site with two at the main access point from Alice Street and one located from the Jackson Street entrance. All heavy vehicles accessing the Site would use either the Jackson Street or Alice Street entrance. All vehicles that arrive at the Site will be inspected prior to entry by the attendant at the gatehouse to ensure that they are carrying conforming materials. In the event that non-conforming materials are discovered within a vehicle, these will be denied access. Vehicles will be required to use the weighbridge prior to entering the Site. This will also allow the relevant data to be recorded for both internal and external invoicing and reporting requirements. It is proposed that the Alice Street entrance will also be equipped with a noise wall along the east side of the ramp and a section of the north-east boundary to reduce the truck noise experienced by nearby industrial premises.

As part of the proposed development, a new L-shaped building will be constructed at the rear of the Site to house the Materials Recycling Facility and the Waste Transfer Station. The Materials Recycling Facility would be located in the northern section of the building whilst the Waste Transfer Station would be located in the south-eastern corner. The building will be approximately 10m high, and reach 15m high at its apex to allow passive ventilation.

There will be a series of unloading bays along the southern wing of the new building. There will be five access doors that are operational along the south-west side of the Waste Transfer Station. Two of the



doors are for MRF operations. Three designated doors for the Waste Transfer Station operations, although only two of the three doors will be operational at any one time to allow sufficient space for the front end loader to operate whilst acceptance of waste is ongoing. A sixth door will only be used for contingency so will remain closed at other times.

An extension to the existing Metal Recycling Facility shed will be constructed to house a metal baler or shredder. The extension will be comprised of a three sided building with one end open to allow for loading with the use of an excavator. Aurigen proposes to incorporate appropriate noise controls to reduce the impact from the shredder noise. The scrap metals will be processed in the metal baler or shredder and prepared for sale into commodity markets.

The Baling Shed will continue to be used for paper and cardboard baling and storage. Once the MRF is operational, paper and cardboard that has been processed will be transported to this shed to prepare them for sale into commodity markets.

4.3 Material volumes

Table 4-1 sets out the estimated material volumes for each Site's proposed activities.

Table 4-1: Estimated material volumes by Site activity

Site activities	Estimated Throughput (tonnes per annum)
Materials Recovery Facility	100,000
Commodity Aggregation	120,000
Waste Transfer Station	100,000

The Materials Recovery Facility will have an estimated design capacity of 100,000 tonnes per annum. The materials accepted will generally be comprised of commingled recyclables from local governments and commercial and industrial generators.

The waste transfer station will have a design capacity of 100,000 tonnes per annum and will generally be comprised of municipal solid waste collections from local governments and commercial and industrial waste from private waste service providers.

4.4 Waste Acceptance

As with Aurigen's existing operations, the Site will adopt a strict policy in relation to waste acceptance. As previously mentioned, there will be a weighbridge constructed at the Alice Street entrance which will include a manned gatehouse. This is proposed to be used for external contractors to enter and exit the Site and all loads will be inspected prior to accessing the Site. Dual weighbridges located off the Jackson Street entrance will be used primarily for Aurigen vehicles to access the Site. This weighbridge will not be manned permanently but a viewing platform and office located within the building to the north of the weighbridge will enable visual inspection of loads, if required.

4.5 Materials Recovery Facility

The Materials Recovery Facility (MRF) will be located adjacent to the Waste Transfer Station in the same, enclosed building. It will have two dedicated unloading bays, alongside the putrescible Waste Transfer Station bays, which will accept commingled recyclables from local government contracts as well as private contractors.

MRFs consist of processing equipment and systems that are designed to separate recyclable materials into individual material streams to prepare them for sale into commodity markets. There are three



main phases associated with MRFs namely, receival, sorting of the recyclables and baling of recyclates.

4.5.1 Equipment and Machinery

A front end loader will be used to load recyclable materials from the receival area into a dedicated push pit. The push pit will be connected to a conveyor belt that transports the materials into the plant for processing.

The Materials Recovery Facility plant will be comprised of a dual stream materials sorting system that processes commingled recyclables using a range of technologies to sort materials by their physical and chemical properties such as their shape, size, weight and magnetism. This may include a trommel, eddy current separators, disc screen separators, magnetic separators and a variety of screens. There will also be a picking line as an additional means of sorting to further increase the recyclable material outputs and ensure quality requirements are met. Once processed in the plant, the materials will be stockpiled in source separated storage bays for onward processing such as baling of paper and cardboard. In addition, a glass crusher is proposed to be installed within the MRF to process glass that has been sorted in the MRF. The crushed glass will be similar to sand or aggregate material which can be used as a recycled building product. This material will be stockpiled in a 30m³ skip bin and taken off site for reuse or disposal once it reaches capacity.

4.5.2 Materials Handling

All vehicles that arrive at the Site for the Materials Recovery Facility will be inspected prior to entry by the attendant at the gatehouse to ensure that they are carrying commingled recyclables. In the event that non-conforming materials are discovered within a vehicle, these will be denied access. Vehicles will be required to use the weighbridge prior to entering the Site. This will also allow the relevant data to be recorded for both internal and external invoicing and reporting requirements.

Vehicles that have passed over the weighbridge will then be directed towards one of the designated MRF unloading bays. Vehicles will reverse into the shed through one of the two designated bays and be directed to deposit their load within the MRF receival or "tipping" area. Staff will be present to ensure that all drivers depositing the commingled recyclables comply with unloading requirements.

Once unloaded and approved from processing, these materials will be moved by front end loader to a push pit, which will feed the MRF recycling system for processing and separation. Once the materials have been through the recycling system, they are sorted into individual material streams ready for baling. These materials will then be transferred from the MRF building to the allocated baling area for baling and ultimately transported off site.

4.5.3 Materials Transport

The materials that have been processed and sorted into individual material streams in the MRF will be baled on site and loaded into sea containers. Once at capacity, the sea containers will be transported off site for export to overseas markets.

4.6 Commodity Aggregation

The third main Site activity will be focussed on commodity aggregation. Aurigen's subsidiary company, Auricom, specialises in commodities trading in local and global markets. The Site will accept source separated commodities including paper, cardboard, scrap metals and aluminium cans from other MRFs and Recycling facilities within Perth, for baling and commodity trading. These bales are stored within one of two dedicated storage sheds on Site, a Baling Shed for paper and cardboard and a



Metal Recycling Facility Shed for metals. The bales are ultimately loaded into sea containers for transportation to port for export.

4.6.1 Equipment and Machinery

A paper and cardboard baler has been installed within the Baling Shed on Site. The baler is currently used for source separated commodities that have been transported to the Site. However, once the MRF is operational, it would also bale paper and cardboard materials processed on site.

The Site will initially have a metal baler to consolidate metallic materials. However, Aurigen proposes to operate a scrap metal shredder on Site in the event that it wishes to replace the baler with a shredder at a later stage. The baler or shredder would be housed in a three sided shed, the Metals Recycling Shed, which will assist with mitigating noise emissions. The shed would be constructed as an extension of the smaller existing shed.

4.6.2 Materials Handling

All vehicles that arrive at the Site will be inspected prior to entry by the attendant at the gatehouse to ensure that they are carrying appropriate commodity materials. In the event that non-conforming materials are discovered within a vehicle, these will be denied access. Vehicles will be required to use the weighbridge prior to entering the Site. This will also allow the relevant data to be recorded for both internal and external invoicing and reporting requirements. Vehicles that have passed over the weighbridge will then be directed towards the designated acceptance area, depending on the commodity type.

Paper and cardboard will be accepted at the Baling Shed for processing. As the materials are unloaded, staff will inspect the quality of the materials and ensure that it complies with the acceptance criteria. Once baled, these materials will be temporarily stored within the enclosed Baling Shed until they can be loaded into a sea container for onwards transportation to port for export.

Metallic commodities would be unloaded in the acceptance area with suitable supervision and then loaded into the baler/shredder using an excavator. Once processed in the metal baler/shredder, the materials would be transported by a short conveyor into a storage bin that will be emptied intermittently via an access door on the north-west side of the building and moved into the Baling Shed until it can be loaded into a sea container.

4.6.3 Materials Transport

Once at capacity, filled sea containers will be transported off site to port for export to overseas markets. The trucks used for transport of the sea containers will be container side loaders. Loading and movements of these trucks could be undertaken outside of normal operational hours in order to avoid traffic en-route to the port.

4.7 Putrescible Waste Transfer Station

The following sub-sections provide a detailed description of the Waste Transfer Station itself along with how materials will be handled and transported.

4.7.1 Putrescible Waste Bunkers

The Putrescible Waste Bunkers consist of a concrete floor with push walls to a height of 5m. The Putrescible Waste Bunkers will be located within the new building where waste materials will be unloaded via three dedicated unloading bays. It is anticipated that only two bays would be



operational at any one time to allow for operation of the front end loader within the Waste Transfer Station. The waste will be consolidated and stored for a short time until the front loader transfers the waste into a hopper which will feed a compaction system. After compaction, the waste can be transported by enclosed compaction haulage trailers and vehicle. The Putrescible Waste Bunker has a capacity to store waste materials for one day to cover any unforeseen events or disruptions to services. However, normal practice will involve daily removal of waste from the Putrescible Waste Bunker. An additional contingency door and bay have been included in the conceptual design. In the unlikely event of a breakdown of the compaction system, the contingency door allows for haulage vehicles to be reversed into the Waste Transfer Station to allow for loading and, therefore, ongoing Waste Transfer Station operations.

The push walls will be constructed with vertical standing reinforced concrete. The pushwalls will stand approximately 5m tall in order to retain waste materials that have been deposited within the Putrescible Waste Bunker. The height of the push walls will directly affect the capacity of the waste that can be stored. The push walls will be protected by a sheet of metal attached to the bottom half of the wall. This will prevent the front end loader bucket from damaging the concrete during operations and extends the life of the push walls.

In addition, the floor of the Putrescible Waste Bunker will be constructed of reinforced concrete. The thickness of the concrete and sub-base will be determined during the detailed design stage of the Waste Transfer Station development. The floor of the Waste Transfer Station will cover an area of approximately 936m². It is proposed that the floor of the Putrescible Waste Bunker will be graded to encourage the drainage of this area to a sump to be located within the north eastern corner of the Site.

Aurigen will incorporate a leachate collection system to ensure that any leachate generated as part of these activities is captured and managed appropriately. Specifically, all putrescible waste handling operations will be confined within the designated putrescible waste transfer station within the building. The surface of the waste bunker, and the total surface of the shed, will be concrete hardstanding. Any liquids from periodic wash downs of the bunker will drain into a leachate sump. The sump will discharge to sewer. This will eliminate any potential ground contamination issues for the subject site arising from the generation of leachate.

4.7.2 Equipment and Machinery

The equipment that will be utilised within the Waste Transfer Station will be a front end loader and compactor system. The front end loader will be utilised to undertake all materials handling operations for putrescible waste accepted on site. It is anticipated that the front end loader will be used to move the unloaded putrescible materials within the designated putrescible waste acceptance area from the bunker to a hopper, which will feed the compaction system. Once the waste has been compacted, it will be loaded into a fully enclosed haulage trailer ready for transporting off site once it is at capacity. These materials will be transported to an appropriately licensed Class II/III landfill facility for disposal. The use of the compaction system will allow greater volumes of uncompacted waste to be accepted and consolidated prior to final disposal.

4.7.3 Materials Handling

All vehicles that arrive at the Site will be inspected prior to entry by the attendant at the gatehouse to ensure that they are carrying conforming waste materials. In the event that non-conforming waste materials are discovered within a vehicle, these will be denied access. Vehicles will be required to use the weighbridge prior to entering the Site. This will also allow the relevant data to be recorded for both internal and external invoicing and reporting requirements.



Vehicles that have passed over the weighbridge will then be directed towards one of the designated putrescible waste unloading bays. Vehicles will reverse into the shed through one of the bays and be directed to deposit their load within the receival area of the putrescible waste bunker. Once vehicles have entered the Putrescible Waste Bunker in a reverse motion, unloading can begin in the designated bay. Staff will be present to ensure that all drivers depositing the waste materials comply with unloading requirements.

The front end loader will feed the compactor via an opening that will be situated inside the building that houses the Waste Transfer Station at approximately 2m above ground level. The compactors chamber will be situated outside the building and fully enclosed. Once the waste is compacted, it will be ready for transfer via a compaction haulage vehicle.

4.7.4 Materials Transport

The putrescible waste on site will be transported off site at regular intervals during the day using 50 tonne compaction haulage vehicles. Based on the estimated throughput for the putrescible waste transfer station of 100,000 tonnes per annum, Aurigen would take, on average, six loads off site per day. With an estimated 274 tonnes of waste accepted per day, this would give Aurigen excessive removal capacity in comparison to the amount of putrescible waste that they would be likely to receive on a daily basis.

4.8 Vehicle movements

Talis has modelled the vehicle movements based on the quantity of waste and materials accepted per annum at the Site along with the types of vehicles expected to carry loads. For completeness, the incoming vehicles to the Waste Transfer Station and Materials Recovery Facility are predicted to be primarily kerbside waste collection vehicles with a capacity of approximately 9 tonnes. The incoming commodity drop-off vehicles may vary in capacity from 15 to 26 tonnes. **Table 4-2** sets out the anticipated annual waste volumes and the associated daily vehicle movements.

It is important to note that the calculations have assumed a seven day working week for waste acceptance. In reality, fewer vehicles are expected on weekends than weekdays.



Table 4-2: Inbound traffic movements onto the Site per day

Site operations	Throughput per annum (tonnes)	Volumes per day (average/tonnes)	Vehicle Type	Avg Vehicle Capacity (tonnes)	No of vehicles	Percentage of total Movements
Materials Recovery Facility	100,000	274	Kerbside/front lift collection vehicle	6	51	32%
Commodity Drop-offs	120,000	329	Various	20	50	32%
Putrescible Waste Transfer Station	100,000	274	Kerbside/front lift collection vehicle	9	30	18%
Staff vehicles	-	-	Cars	-	30	18%
Total					161	100%

As shown in **Table 4-2**, the traffic model indicates that there would be an estimated 131 trucks dropping off waste and materials to the Site during normal operating hours (06:00-18:30) along with 30 staff vehicles. Commingled recyclable collection vehicles and commodity drop-offs would each account for 32% of traffic, followed by putrescible waste vehicles and staff vehicles with 18% each.

Table 4-3: Outbound traffic movements from Site per day

Site operations	Throughput per annum (tonnes)	Volumes per day (average/tonnes)	Vehicle Type	Avg Vehicle Capacity (tonnes)	No of trucks	Percentage of total Movements (%)
Commodity Removals (includes MRF materials)	190,000	329	Various	20	28	44%
Putrescible Waste Transfer Station	100,000	274	Compaction haulage vehicles	50	6	9%
Staff vehicles	-	-	Cars	-	30	47%
Total					64	100%

Table 4-3 sets out the outbound traffic movements associated with the removal of waste and materials from the Site. As can be seen, compaction haulage vehicles that will be utilised to transfer putrescible waste off site are anticipated to have a capacity of 50 tonnes with an estimated six trucks per day (9% of traffic removing compacted waste. This illustrates that, in relation to putrescible waste, Aurigen will have excessive removal capacity in comparison to the amount of putrescible that they will be receiving on a daily basis.

The materials that are processed in the MRF are included within the traffic movements associated with commodities as outputs from the MRF will be processed on Site, where possible as part of the commodity aggregation operations.

It is important to note that this modelling is based on the maximum capacity sought for the various activities. This is well beyond the volume of material that Aurigen currently collect or manage. In



addition, the number inbound and outbound staff vehicles from the Site assumes one vehicle per staff member. Aurigen will encourage the employment of local people at the Facility and the use of public transport and car sharing. Therefore, it is anticipated that the traffic volumes will be significantly less than those modelled above. However, the modelling illustrates that the Site can cater for such volumes and associated traffic movements.

4.9 Staffing

It is anticipated that 30 staff will be required on Site in order to operate and supervise the day to day operations at the Waste Transfer and Resource Recovery Facility.

All staff will be qualified and/or trained appropriately to undertake their relevant roles. The onsite training that they will undertake will include health and safety and environment management.

4.10 Operational Hours

The proposed operation of the Site activities are set out in **Table 4-4**.

Table 4-4: Hours of operation and materials movement by Site activity

Site operations	Operational hours	Hours for acceptance and removal of materials
Materials Recovery Facility	24 hours / seven days a week	06:00-18:30
Commodity Aggregation - scrap metal operations	06:00 – 18:30, Monday-Saturday 09:00 – 19:00 Sundays and public holidays	06:00-18:30
Commodity Aggregation – other than scrap metal operations	24 hours / seven days a week	06:00-18:30
Waste Transfer Station	06:00-18:30, seven days a week	06:00-18:30

The operation of the Materials Recovery Facility and some commodity aggregation activities are proposed to be 24 hours a day. These operations would have minimal environmental impacts. These hours of operation are considered to be standard for resource recovery facility of this size. Due to the

4.11 Supporting Infrastructure

Apart from the components of the Site already outlined in the above sections, the following pieces of supporting infrastructure are required to be constructed or installed:

- Gatehouse – located at the entrance to the Alice Street private access road;
- Three Weighbridges, one single weighbridge at Jackson Street's entrance and dual weighbridges at the Alice Street entrance;
- Fences and gates – A perimeter fence will surround the Site and gates will be locked outside of main operating hours; and
- Signage.



5 Benefits

There are a number of benefits associated with Aurigen's proposal to develop the Site.

5.1 Waste diversion from landfill

Current consumption patterns, particularly within the developed world, are generating high volumes of materials, which have traditionally been regarded as waste and disposed of to landfill. Landfilling waste results in a loss of materials and energy from the supply chain and putrescible landfills can generate methane, a harmful greenhouse gas. In essence – traditional waste management practices are *wasteful*.

The Western Australian Waste Strategy (Waste Authority, 2012) provides targets for diversion of materials from landfill across the three key waste streams being municipal solid waste (MSW), commercial and industrial (C&I) and construction and demolition (C&D). The targets for municipal solid waste in the Perth Metropolitan Region are 50% by 2015 and 65% by 2020. Statewide targets for the commercial and industrial sector are 55% by 2015 (up from 46% in 2009/10) and 70% by 2020. Construction and demolition waste Statewide targets are 60% by 2015 (up from 29%) and 75% by 2020.

As outlined previously, Aurigen's proposed Waste Transfer and Resource Recovery Facility will be an integrated facility providing a range of recycling and waste management activities, which can divert significant quantities of material from landfill. Therefore, Aurigen's proposed facility will be a key piece of infrastructure to support State and Local Government and the wider Perth community to achieve greater diversion of waste from landfill which aligns with the State Government's desire for a more sustainable society.

5.2 Reduced Carbon Emissions and Costs

In recent years, waste management operations in the Perth metropolitan area have changed significantly. With only a handful of landfills now located on the Swan Coastal Plain, waste managers are increasingly required to transport waste further afield to dispose of it. Waste transfer stations are utilised to aggregate waste materials within close proximity to their sources of generation to allow for greater efficiencies in the transportation of these materials to treatment and disposal facilities, which are mainly located on the outer fringes of metropolitan areas. The Site is centrally located within the Town of Bassendean, just 10km from the centre of Perth and easily accessible from major roads such as Tonkin Highway and Collier Road.

Aurigen's proposal will allow for waste from numerous small vehicles to be aggregated and transferred into a limited number of large compaction haulage vehicles, resulting in improved efficiencies in these operations and a reduction in the number of vehicles travelling significant distances to disposal facilities within the fringes of the metropolitan area. This reduction in vehicle movement correlates to an overall reduction in carbon emissions to the atmosphere arising from the transportation of waste materials. In addition, this more efficient vehicle movement reduces the overall cost of waste disposal activities which will affect domestic and commercial communities within Perth.

A reduction in the number of vehicles transporting waste materials along with reduced travel time and distances results in a net reduction in carbon emissions. As specified previously, waste transfer stations are utilised to aggregate waste materials within close proximity to their sources of generation to allow for greater efficiencies in the transportation of these materials to treatment and disposal facilities. Waste transfer stations mean that waste can be transferred from small vehicles, such as kerbside collection vehicles which are designed to collect refuse and not to transport waste significant distances, to large haulage vehicles which are designed for the purpose of transporting large volumes



of materials great distances. Therefore, by utilising transfer stations, waste materials can be taken from numerous small vehicles and transferred to limited, specialist high volume haulage vehicles. This therefore reduces the number of vehicles carrying waste materials great distances out to the treatment and disposal facilities on the fringes of the metropolitan areas.

5.3 Local employment

Due to the construction works required on Site, including the new sheds, weighbridges and gatehouse, there are anticipated to be a number of local employment opportunities on the Site. Furthermore, the Site is expected to employ 30 full time staff once the facility is operational. Where possible, Aurigen will endeavour to employ local staff to fill roles required at the Site. This will support the Town of Bassendean's Economic Development Plan strategy 'Encourage 'Employ Local' policies for local businesses'.

5.4 Local Government Services

Aurigen's proposed facility will provide recycling services to the Perth metropolitan area, equipped with facilities to accept yellow top bin (commingled recyclable) materials, which are found through the metropolitan area. Aurigen's connection to overseas commodity markets, with its own facility in Asia, enables them to have greater resilience during commodity price fluctuations providing greater certainty to local government customers.

If Local Governments utilise Aurigen's proposed facility as a transfer station for their domestic refuse to be aggregated and then transported for disposal there are potentially significant cost savings for these Local Governments. These potential savings arise from a significant decrease in the non-productive time spent by domestic refuse collection trucks travelling to and from landfill sites, which are generally on the outskirts of the metropolitan area. Use of Aurigen's proposed facility would greatly reduce transportation distances to disposal points and, therefore, non-productive time of collection vehicles. This would result in increased efficiency of operations and result in cost savings for Local Governments, which could then be passed on to ratepayers.

5.5 Community engagement and education

Aurigen is committed to engaging with the local communities it works with. The Site will include a raised viewing platform within one the Baling Shed. The platform will enable community groups and schools to visit the Site safely to gain an understanding about the recycling process.



6 Environmental Aspects

This section details all the potential environmental impacts associated with the proposed Waste Transfer and Resource Recovery Facility. Waste management operations, and in particular treatment and disposal of putrescible waste, are generally considered as environmentally contentious. However, the strengthening of legislation and advancement in technology are continuously improving the day-to-day practices and environmental performances of waste management facilities. Based on our similar experiences with waste facilities, Talis anticipates that key environmental aspects will include:

- Odour;
- Noise;
- Dust;
- Stormwater;
- Leachate;
- Litter;
- Traffic; and
- Vermin.

The source and potential impacts associated with these aspects are described in the following sections.

6.1 Odour

Aurigen recognises that odour emissions and their potential impact is potentially the most sensitive environmental aspect associated with the Site's proposed activities. These odour emissions will be generated from the putrescible waste that Aurigen proposes to commence accepting and holding within the new Waste Transfer Station on Site. The Materials Recovery Facility and Commodity Aggregation activities on the Site are not anticipated to result in odour impacts. The natural degradation of putrescible waste can cause odours to be generated. Given Aurigen's awareness of the potential odour impacts, Aurigen commissioned The Odour Unit WA Pty Ltd (The Odour Unit) to undertake an Odour Impact Assessment. This Odour Impact Assessment includes odour modelling of the potential impacts associated with Aurigen's proposed commencement of accepting putrescible waste on Site and being held in the Waste Transfer Station up to one day prior to be transported off site to an appropriate disposal facility. A copy of The Odour Unit's report is attached in **Appendix D**.

The Odour Unit assessed the potential odours arising from Aurigen's proposed putrescible waste transfer station based on putrescible waste volumes of 100,000 tonnes per annum. The potential odour emission ratings were calculated using two scenarios:

- Scenario 1 - Contiguous WTS and MRF: No partition between the Waste Transfer Station and Materials Recovery Facility
- Scenario 2 - Partitioned WTS and MRF: The Waste Transfer Station is partitioned with a curtain from the Materials Recovery Facility

The Odour Unit then measured the current air flows through the shed and also identified and quantified the potential openings in the shed to understand the potential for fugitive emissions being released into the environment. The Odour Unit used the DER recommended meteorological dataset from Perth Airport to undertake dispersion modelling for the potential ground level odour contours arising from the Site.



It should be noted that during all stages of the odour modelling works, The Odour Unit incorporated conservative parameters within the model to gain an understanding of the potential worst case scenarios associated with the operations including:

- Maximum tonnages of the activities are assumed however, it is unlikely that these will be reached for a considerable amount of time;
- Larger than anticipated volumes of waste left at the facility overnight;
- No odour control measures (other than the partition in one scenario) are considered in the model; and
- Hours of operation are assumed to be 06:00-18:30 seven days per week for the Waste Transfer Station. However, it is likely that there would be reduced acceptance of refuse on weekends compared with weekdays.

The odour emission rates that were modelled for the Odour Impact Assessment are summarised in **Table 5-1**.

Table 6-1: Odour Emission Rates Modelled for the Odour Impact Assessment

Scenario	Odour source	Fugitive Emissions	Emission Rate (m ³ /sec)	Emission Hours	Odour Emission rate (ou/second)	
1 - Contiguous WTS and MRF	Entire building	Main access door to the shed to be constantly open throughout operational hours.	100	06:00 – 18:30	55,000	
				After hours	2,750	
2 - Partitioned WTS and MRF	WTS	The main access door will be closed and only opened periodically to allow access to and from the shed.		06:00 – 18:30	49,500	
				After hours	2,475	
	MRF			06:00 – 18:30	5,500	
				After hours	nil	

The Odour Unit looked at a number of similar, historical site-specific odour assessments for putrescible Waste Transfer Stations in Australia to assign a proxy odour concentration value of 550ou representing the continuous odour strength within the Waste Transfer Station along with the fugitive air emission rate of 100m³/second. This resulted in an odour emission rate of 55,000ou/second emitted continuously during daily operational hours with 5% (2,750ou/second) emitted after hours under the non-partitioned scenario and 4.5% (2,475ou/second) under the partitioned scenario.

The ground level odour impact dispersion contours for Aurigen's proposed operations are shown in **Figure 13** (non-partitioned) and **Figure 14** (partitioned). The Odour Unit reported that both scenarios demonstrated a "PASS" with respect to the nearest sensitive receptor locations. Furthermore, *"the partitioned scenario does not reflect the betterment of odour control, rather it depicts the containment of the odour centred over the Waste Transfer Station rather than mixed throughout the entire building. Under this scenario there is a greater opportunity to maintain the bulk odour emission within a discrete area rather than allowing it to permeate throughout the entire WTS building."*

In light of these conservative odour modelling results it is recognised by The Odour Unit that:

"The results of all modelling show compliance to the relevant DER odour concentration criteria with respect to the nearest urban receptors. Therefore, it is concluded that no adverse odour impacts are expected as a result of the proposed operations.."



The management measures that will be implemented to ensure that potential odour impacts are appropriately managed on Site are outlined in Section 7.2.

6.2 Noise

Aurigen recognises that noise emissions associated with the proposed Site activities has the potential to result in noise impacts. These noise emissions would be generated from the operation of equipment on Site and from road and engine noise generated from vehicles entering and exiting the Site. Given Aurigen's awareness of the potential noise impacts and their potential to affect amenity at the Site and surrounding areas, Aurigen commissioned Lloyd George Acoustics Pty Ltd (Lloyd George) to undertake an Environmental Noise Assessment.

In summary, noise is anticipated to be generated on Site as a result of:

- The operation of equipment such as the excavator loading scrap metal, metal shredder or baler, front end loader, Materials Recovery Facility plant and glass crusher; and
- Road and engine noise generated in the transportation of materials to and from the Site.

The *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) contain the allowable assigned noise levels at premises receiving such emissions, as shown in

Table 6-2. Under the Noise Regulations, noise sensitive premises includes residences, education facilities and hospitals. As outlined previously, the properties immediately adjacent to, and surrounding the Site are classified as industrial premises with the nearest sensitive receptor approximately 570m to the north-west of the Site.

6.2.1 Day Operations (06:00 – 18:30)

The day operations at the Site include the noise emissions from the WTS and MRF building, Baling and Metal Recycling Sheds, truck movements and the metal shredder.

6.2.1.1 Sensitive receptors

The noise model indicated that, without noise mitigation measures, there would be some noise exceedance for the first three hours of daytime operations on site on Sundays and public holidays. This is due to the Noise Regulations specifying that night-time on Sundays and public holidays technically finishes at 09:00. However, the noise model found that:

"At the nearest noise sensitive premises, annoying characteristics are not considered to be present given the separation distance of 600 metres and the number of transport corridors nearby."



Table 6-2: Baseline assigned noise levels

Premises receiving noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area ¹	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Commercial	All hours	60	75	80
Industrial	All hours	65	80	90

¹ highly sensitive area means that area (if any) of noise sensitive premises comprising —

- (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) any other part of the premises within 15 metres of that building or that part of the building.



6.2.1.2 Industrial premises

The noise model found that an overall noise reduction of 20 dB would be required to achieve compliance. The range in estimated noise reduction was due to the model assuming that noise emissions from the shredder are impulsive (defined as a noise source that has a short-term banging, clunking or explosive sound) when assessed at the boundary, which adds a 10 dB penalty to the overall noise reduction required.

The most significant noise source was considered to be the operation of the metal shredder. The sound power levels used in the noise assessment were derived from sound pressure measurements conducted by others. Lloyd George recommended that final confirmation of the noise levels from the manufacturer or supplier be arranged in order to identify targeted noise controls to mitigate the shredder noise at source. However, on the information available, Lloyd George suggested noise control measures to address the noise emissions from the shredder, such as incorporation of a localised noise barrier, was considered to be sufficient to remove the impulsiveness characteristics and result in compliance with the Regulations.

The assessment found that truck noise would also need to be mitigated at the receiver on the east side of the entrance from Alice Street.

6.2.2 Night Operations (18:30 – 06:00)

The night operations would not involve equipment operating outdoors and any noise emissions from the commodities and MRF building would be contained within each shed.

Overall, Lloyd George reported that:

"..the assessment [of] the noise emissions from night operations can comply with the [Noise] Regulations at all times and at all receivers and therefore no noise mitigation would be required."

Whilst Aurigen are required to comply with the *Environmental Protection (Noise) Regulations 1987*, the management measures that will be implemented to further manage noise emissions at the Site are described in Section 7.3.

6.3 Dust

The Waste Transfer and Resource Recovery Facility has the potential to generate dust during construction and operation activities, including:

- Temporary impacts associated with construction of the building associated with the WTS and MRF on the Site;
- Vehicle movements once the Site is operational; and
- Material handling (loading and unloading etc) associated with the commodity aggregation activities.

The Site is comprised of hard standing surfaces and has sealed access roads, which should limit the amount of dust generated. However, the management measures that will be implemented to ensure that potential dust impacts are adequately managed on Site are outlined in Section 7.4.

6.4 Stormwater

Surface water, or stormwater, will be generated as a result of precipitation falling onto the Site. There is the potential for this stormwater to come into contact with the putrescible waste on Site. If this was



to happen this water would be classified as leachate and may contain elevated nutrients and contaminants. If it is released into the environment, it may have a detrimental impact to receptors.

The measures to manage stormwater that will be generated on Site are outlined in Section 7.5.

6.5 Leachate

As mentioned previously, if stormwater comes into contact with putrescible waste it would be classified as leachate. In addition, Aurigen proposes to wash down the designated putrescible waste area within the shed periodically to eliminate odour emissions. As this water will come into contact with areas where putrescible waste was held, it will also be classified as leachate.

Leachate has the potential to contaminate soils, ground and surface water bodies if released into the environment. Therefore, all water that comes into contact with the putrescible waste or its designated area on site will be managed and disposed of appropriately to ensure that there are no contamination issues associated with the subject site.

The management measures that will be adopted on site to ensure that leachate is managed appropriately is set out in Section 7.6.

6.6 Litter

Litter may be generated at the Site as a result of the handling of waste, particularly during windy conditions. As well as reducing visual amenity, litter can attract vermin to the Site and may affect surrounding land uses if allowed to migrate off-site.

The management measures that will be utilised to control the generation of litter at the Site are described in Section 7.7.

6.7 Traffic

The proposed operations at the Site will result in an increase in overall traffic movements to and from the Site and for the surrounding road network. On-site traffic movements have the potential to generate noise, dust and create an occupational health and safety risk to workers at the Site.

The following traffic movements are anticipated to occur on-site:

- 9 tonne kerbside collection vehicles dropping off putrescible waste;
- 15 to 26 tonne vehicles associated with commodities for both drop-off (pre-baling) and removal (post-baling);
- 50 tonne compaction haulage vehicles transporting compacted putrescible waste for disposal off-site; and
- A small number of traffic movements will be associated with staff, which will be confined to the front car parks to ensure car and truck interactions are minimised.

As is shown in **Table 4-2** and **Table 4-3**, it is anticipated that there will be 131 trucks, or 262 truck movements per day associated with acceptance of waste and materials as well as estimated 30 staff vehicle movements. In addition, there are anticipated to be a further 34 trucks, or 68 truck movements, associated with removal of waste and commodities from the Site each day. The traffic movements have been modelled to be spread across the main operational hours of 06:00-18:30 and are considered to be conservative estimates. As previously mentioned, it is important to note that the traffic modelling is based on the maximum capacity sought for the various activities and is well beyond the volume of material that Aurigen currently collect or manage. In addition, the number inbound and



outbound staff vehicles from the Site assumes one vehicle per staff member. Aurigen will encourage the employment of local people at the Facility and the use of public transport and car sharing. Therefore, it is anticipated that the traffic volumes will be significantly less than those cited. However, the modelling illustrates that the Site can cater for such volumes and associated traffic movements.

The management measures that will be adopted to ensure that any impacts results from traffic movements at the Site are appropriately managed are described in Section 7.8.

6.8 Vermin

Vermin such as rats, mice, birds and insects may be attracted to waste management facilities particularly those with poor housekeeping practices. If uncontrolled, vermin can present a health risk to site workers and surrounding land users.

The management measures that will be implemented to control vermin are outlined in Section 7.9.



7 Environmental Management Measures

To ensure the potential environmental impacts identified in this EAMP will be appropriately managed and minimised Aurigen will implement a variety of engineering and management measures, which are described in the following sections.

7.1 Legislative Context

The environmental management measures that are summarised within this section have been prepared in accordance with all relevant legislative and guidance documents, including:

Legislative:

- *Environmental Protection Regulations 1987;*
- *Environmental Protection (Controlled Waste) Regulations 2004;*
- *Environmental Protection (Noise) Regulations 1997;* and
- *Waste Avoidance and Resource Recovery Act 2007.*

Guidance Documents:

- Sustainability Victoria (2009) *Guide to Best Practice at Resource Recovery Centres*; Melbourne, Victoria.
- Environmental Protection Authority Victoria's Best Practice Environmental Management – Siting, Design, Operation and Rehabilitation of Landfills.
- Waste Management Association Australia (2009) *Guidelines for Management Workplace Health and Safety within the Waste Management and Recycling Industries in Western Australia.*

7.2 Odour Management

As outlined within Section 6.1, Aurigen recognises that there is potential for odour emissions to be generated at the Site as part of the proposed Site activities. Therefore, Aurigen commissioned The Odour Unit to undertake an Odour Impact Assessment of the proposed development and their associated report is contained within **Appendix D**. Based on the findings of the Odour Impact Assessment, The Odour Unit reported that the odour impact contours under both scenarios (partitioned Waste Transfer Station and contiguous Waste Transfer Station and Materials Recovery Facility) are compliant with the relevant DER odour concentration criteria with respect to the nearest urban receptors and no adverse odour impacts are expected as a result of the proposed operations. As outlined previously, there was a significant amount of conservatism incorporated into the modelling exercise including no consideration of the proposed odour management practices listed below.

To ensure that the generation of odour at the Site is appropriately minimised and managed, the following odour management measurements will be implemented:

- All vehicles carrying putrescible waste on Site will be required to be enclosed or covered;
- All putrescible waste handling operations will be confined to the putrescible waste bunker located within an enclosed building with a reinforced concrete floor;
- Once unloaded into the putrescible waste bunker, there will be minimal movement of the waste body prior to loading into the compactor system by the front end loader;
- Inspection of all loads dropped within the putrescible waste bunker will be undertaken to identify any potential highly odorous materials. These materials will be removed from the Site at the earliest possible occasion;



- The putrescible waste bunker will be swept and washed down regularly with the aim of eradicating any potential odour emitting sources;
- The Site's operating hours will be limited to those specified within this EAMP and the Waste Transfer Station doors will be closed outside of operating hours to contain any odour remnants;
- The majority of refuse will be moved off Site on a daily basis;
- A complaints register will be maintained by Aurigen to ensure that the community has the opportunity to express their comments or concerns regarding the operations of the Site; and
- Odour levels at the Site will be continuously monitored by staff and action taken, if required.

It is anticipated that these odour management measures will enable Aurigen to appropriately manage potential odour impacts at the Site. In turn, it is anticipated that these will further reduce the potential odour impacts dispersion contours projected by The Odour Unit.

7.3 Noise Emission Management

As indicated within Section 6.2, noise emissions will be produced from the operations of the WTS, the MRF and commodity aggregation activities. As mentioned previously, there are several sources of noise associated with the proposed Site activities including operation of the metal shredder (if installed), equipment and vehicle movements.

To ensure that noise emissions are minimised, the following noise emission management measures will be implemented on-site:

- Construction of a new three-sided shed to house the metal shredder to reduce noise emissions;
- Incorporation of localised noise barriers within the building and around the shredder to provide an overall noise reduction to metal shredder and excavator noise;
- Construction of a noise wall on the eastern side of the entrance to the Site off Alice Street;
- All trucks and mobile equipment to be fitted with broadband noise reversing alarms to minimise the impact of vehicle reversing noise;
- Waste acceptance and the operation of equipment and machinery on Site will be restricted to operational hours only;
- Vehicles will be restricted to a maximum speed of 5km/hour at the Site;
- Noise reducing workplace procedures will be adopted such as slow unloading of materials from the lowest height possible;
- All materials handling will be confined to the designated areas;
- The putrescible waste bunker will be within an enclosed building, will be surrounded by concrete pushwalls, which further limit the noise emissions;
- The Materials Recovery Facility will be within an enclosed building, which will further limit the noise emissions;
- All equipment and machinery will be maintained in good working condition; and
- Workers employed at the Site will be provided with personal protective clothing (PPE) including ear muffs to mitigate any noise impacts associated with the Site activities.

As outlined in the Environmental Noise Assessment report (see **Appendix E**), the above noise mitigation measures are anticipated to be sufficient to appropriately manage noise emissions at the Site and ensure compliance with the *Environmental Protection (Noise) Regulation 1997*.



7.4 Dust Management

As indicated within Section 6.3 the proposal to construct a new building to house the WTS and Materials Recovery Facility (MRF), along with the operation of the Site activities may generate dust. To manage the generation of dust on-site, Aurigen will implement the following management measures:

- Appropriate dust management measures will be implemented during the construction works of the new buildings;
- Vehicles will be restricted to a maximum speed of 5km/hour on the Site, which will be signposted at appropriate locations including the entrance to the Site;
- All areas of the Site will be sealed and maintained; and
- The WTS and MRF floor will be cleaned of dust, dirt and sand at least once a week.

It is anticipated that the implementation of the engineering and management measures listed above will be sufficient to manage dust at the Site.

7.5 Stormwater Management

As set out in Section 6.4, Aurigen will ensure that stormwater will be managed through a variety of means to ensure appropriate treatment and discharge. From initial inspections, the existing drainage system on the Site is sufficient to deal with stormwater. However, to ensure that surface water on Site is appropriately managed, the following management measures will be adopted:

- Leachate from the waste storage shed will be collected and stored in sealed sumps and disposed of to sewer;
- Uncontaminated stormwater will be diverted away from waste storage areas; and
- All stormwater engineering features at the Site will be inspected regularly and maintenance works scheduled appropriately.

7.6 Leachate Management

As outlined in Section 6.5, to contain leachate all putrescible waste handling operations will be confined within the designated putrescible waste area within the shed. The surface of the designed putrescible waste area, and the total surface of the shed, is a concrete hardstand, eliminating any potential ground contamination issues for the subject site arising from the generation of leachate.

As previously mentioned, under normal operational conditions, Aurigen will ensure putrescible waste is removed from the waste transfer station within 24 hours of acceptance. By minimising the time that putrescible waste is held on site, the generation of leachate will be also be minimised. Furthermore, the absorptive capacity of the waste will soak up any potential leachate within the waste mass. Therefore, the vast majority of the leachate that will be generated will arise from Aurigen washing down the putrescible waste bunker within the Waste Transfer Station.

To ensure there are no future impacts to groundwater bodies on or surrounding the facility, Aurigen will incorporate a leachate collection system on site to ensure that any leachate that is generated is captured and managed appropriately. This leachate collection system will include drainage channels and a connection to sewer which is a standard practice for Waste Transfer Stations. To ensure good housekeeping practices are maintained on the Site to appropriately manage potential amenity issues (such as odour, dust and vermin). This wash down water will be relatively clean and therefore suitable for discharge to sewer.



The following management measures will be adopted to ensure that there are no environmental impacts regarding leachate associated with the proposed Site activities:

- All putrescible waste handling operations to be confined to the designated hardstanding area of the waste transfer station;
- Aurigen will implement good practice waste holding operations on site and limit holding time for putrescible waste on site to 24 hours; and
- Aurigen will develop a leachate collection system that will capture all leachate generated on site and discharge to sewer. The system will be designed by a suitably qualified and experienced engineer.

Through the adoption of the above management measures, it is anticipated that any potential impacts associated with the generation of leachate will be managed appropriately.

7.7 Litter Management

As outlined within Section 6.6, the operations of the Waste Transfer and Resource Recovery Facility may create litter. To ensure that the generation of litter is minimised and appropriately managed at the Site, the following management measures will be implemented:

- All unloaded waste and recyclable materials will be confined to the designated tipping areas prior to loading into the compaction system or Materials Recovery Facility;
- All source separated commodities will be stored in a designated area;
- All vehicles entering the Site will be covered to prevent uncontrolled release of litter on to the Site;
- The putrescible waste bunker will be surrounded by concrete pushwalls, which will further limit the movement of litter;
- The boundary fence will prevent any litter escaping from the Site;
- The boundary fence will be inspected regularly and any maintenance works scheduled accordingly;
- Any litter generated around the Site and along the fence lines will be collected on a daily basis as part of routine procedures; and
- Any litter blown or dropped off-site will be collected immediately and taken back on-site.

These litter management measures will enable Aurigen to appropriately manage litter at the Site.

7.8 Traffic Management

To minimise any potential impacts of traffic movements at the Site, such as those identified in Section 6.7, the following management measures will be implemented:

- Signage providing Site directions, traffic control measures and safety instructions will be established and maintained at appropriate locations around the Site;
- Vehicles will be restricted to a maximum speed limit of 5km/hour at the Site, which will be signposted at appropriate locations, including the entrance to the Site;
- There will be adequate staff supervision to ensure staff safety around moving vehicles;
- Employees and contractors shall wear high visibility and reflective clothing when working in areas where vehicle movement occurs;
- All vehicles will be maintained in good working condition and drivers instructed to use conservative driving techniques; and
- All employees and contractors are inducted to the site Occupational Health and Safety (OHS) and traffic management procedures.



Through the adoption of these management measures all potential impacts associated with traffic movements on and surrounding the Site will be controlled to appropriate standards.

7.9 Vermin Control

As outlined within Section 6.8, accepting putrescible wastes at the Site may attract vermin which has the potential to impact local health of workers and nearby land users. To control the potential vermin issues at the Site, Aurigen proposes the following proactive management measures to be implemented:

- All putrescible waste handling operations will be confined to the putrescible waste bunker;
- To minimise any feeding opportunities for vermin, Aurigen will sweep and wash down the designated putrescible waste area;
- The generation of odour and litter will be minimised through the implementation of appropriate management measures (see Section 7.2 and 7.7);
- Aurigen will undertake regular litter collections on-site;
- All vehicles carrying putrescible waste are to be covered;
- A perimeter fence is present on the Site and will be monitored and maintained on a regular basis;
- Aurigen will have any suspected and/or known shelters or breeding grounds for vermin on the Site eliminated; and
- Should any vermin issues be experienced, Aurigen will utilise professional services to eradicate vermin at the Site.

Through the adoption of the vermin management measures set out above, any potential impacted associated with the proposed Site operations are anticipated to be adequately managed.

7.10 Security and fire safety

As mentioned previously, the Site is surrounded by a steel mesh fence approximately 1.8m high. All access gates to the Site (on Jackson Street and Alice Street) will be closed and locked outside of main operational hours. This will prevent unauthorised vehicles and persons from accessing the Site, which may be a security and/or fire risk. To ensure the security of the Site is not compromised, the following practices will be adhered to:

- The existing perimeter fence will be maintained surrounding the Site;
- The perimeter fence will be monitored and maintained on a regular basis; and
- All Site access gates will be locked securely outside of operational hours.

In order to manage the risk of fires on the Site, the following measures will be adopted:

- Fire extinguishers and hose reels are located throughout the premises; and
- The Site's building design will comply with Department of Fire and Emergency Services guidance for Site Planning and Fire Appliance Specifications (DFES, 2015).

By utilising the above management measures the risk of security issues and fires associated with the Site will be minimised.

7.11 Complaints Management

In the event that a complaint is received, Aurigen will investigate the source of the complaint and determine whether it is due to routine activities or is an unusual event. If investigations indicate that the



disturbance is part of routine activities and is likely to continue, additional management control measures will be implemented, where practicable.

The procedure to follow in the event that complaints are made to working persons on site is as follows:

- An appropriate senior staff member of Aurigen is advised as soon as possible that a complaint has been made;
- The staff member will assess the nature, severity and potential consequences associated with the complaint;
- The staff member will discuss and assess the abovementioned issues associated with the complaint;
- The staff member will take immediate action if, and when, required;
- The details of the complaint will be recorded in a suitable format (e.g. a complaint form);
- The complaint form will be retained on-site by Aurigen; and
- Following actions to address the complaint, Aurigen will, where appropriate, provide a suitable response to the complainant.

The complaint form will include at a minimum:

- Record details of the complaint (date and time);
- Name of Aurigen staff member who took the complaint;
- Name and address of complainant;
- Method by which the complaint was lodged;
- Identify the possible causes of the complaint and possible mitigation measures; and
- Name of Aurigen staff member who completed the form.

If similar complaints are made more than three (3) times, a toolbox meeting will be held to reassess control measures and determine whether additional measures could be employed.

If the management controls are revised, all site staff will be advised and these changes will be documented accordingly.

7.12 Summary of Proposed Management Measures

A summary of the proposed management measures to be implemented at the Site is shown in **Table 7-1**.

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Table 7-1: Summary of Proposed Management Measures

Aspect	Management Measures
Odour	<ul style="list-style-type: none"> All vehicles carrying putrescible waste on Site will be required to be enclosed or covered.
	<ul style="list-style-type: none"> All putrescible waste handling operations will be confined to the putrescible waste bunker located within an enclosed building with a reinforced concrete floor.
	<ul style="list-style-type: none"> Once unloaded into the putrescible waste bunker, there will be minimal movement of the waste body prior to loading into the compactor system by the front end loader.
	<ul style="list-style-type: none"> Inspection of all loads dropped within the putrescible waste bunker will be undertaken to identify any potential highly odorous materials. These materials will be removed from the Site at the earliest possible occasion.
	<ul style="list-style-type: none"> The putrescible waste bunker will be swept and washed down regularly with the aim of eradicating any potential odour emitting sources.
	<ul style="list-style-type: none"> The Site's operating hours will be limited to those specified within this EAMP and the Waste Transfer Station doors will be closed outside of operating hours to contain any odour remnants.
	<ul style="list-style-type: none"> The majority of refuse will be moved off Site on a daily basis.
	<ul style="list-style-type: none"> A complaints register will be maintained by Aurigen to ensure that the community has the opportunity to express their comments or concerns regarding the operations of the Site.
	<ul style="list-style-type: none"> Odour levels at the Site will be continuously monitored by staff and action taken, if required.
Noise	<ul style="list-style-type: none"> Construction of a new three-sided shed to house the metal shredder to reduce noise emissions.
	<ul style="list-style-type: none"> Incorporation of localised noise barriers within the building and around the shredder to provide an overall noise reduction to metal shredder and excavator noise.
	<ul style="list-style-type: none"> Construction of a noise wall on the eastern side of the entrance to the Site off Alice Street.
	<ul style="list-style-type: none"> All trucks and mobile equipment to be fitted with broadband noise reversing alarms to minimise the impact of vehicle reversing noise.
	<ul style="list-style-type: none"> Waste acceptance and the operation of equipment and machinery on Site will be restricted to operational hours only.
	<ul style="list-style-type: none"> Vehicles will be restricted to a maximum speed of 5km/hour at the Site.
	<ul style="list-style-type: none"> Noise reducing workplace procedures will be adopted such as slow unloading of materials from the lowest height possible.
	<ul style="list-style-type: none"> All materials handling will be confined to the designated areas.

Aspect	Management Measures
	<ul style="list-style-type: none"> The putrescible waste bunker will be within an enclosed building, will be surrounded by concrete pushwalls, which further limit the noise emissions.
	<ul style="list-style-type: none"> The Materials Recovery Facility will be within an enclosed building, which will further limit the noise emissions.
	<ul style="list-style-type: none"> All equipment and machinery will be maintained in good working condition.
	<ul style="list-style-type: none"> Workers employed at the Site will be provided with personal protective clothing (PPE) including ear muffs to mitigate any noise impacts associated with the Site activities.
Dust	<ul style="list-style-type: none"> Appropriate dust management measures will be implemented during the construction works of the new buildings;
	<ul style="list-style-type: none"> Vehicles will be restricted to a maximum speed of 5km/hour on the Site, which will be signposted at appropriate locations including the entrance to the Site;
	<ul style="list-style-type: none"> All areas of the Site will be sealed and maintained.
	<ul style="list-style-type: none"> The WTS and MRF floor will be cleaned of dust, dirt and sand at least once a week.
Stormwater Management	<ul style="list-style-type: none"> Leachate from the waste storage shed will be collected and stored in sealed sumps and disposed of to sewer.
	<ul style="list-style-type: none"> Uncontaminated stormwater will be diverted away from waste storage areas.
	<ul style="list-style-type: none"> All stormwater engineering features at the Site will be inspected regularly and maintenance works scheduled appropriately.
Leachate Management	<ul style="list-style-type: none"> All putrescible waste handling operations to be confined to the designated hardstanding area of the waste transfer station.
	<ul style="list-style-type: none"> Aurigen will implement good practice waste holding operations on site and limit holding time for putrescible waste on site to 24 hours.
	<ul style="list-style-type: none"> Aurigen will develop a leachate collection system that will capture all leachate generated on site. The system will be designed by a suitably qualified and experienced engineer.
Litter	<ul style="list-style-type: none"> All unloaded waste and recyclable materials will be confined to the designated tipping areas prior to loading into the compaction system or Materials Recovery Facility.
	<ul style="list-style-type: none"> All source separated commodities will be stored in a designated area.
	<ul style="list-style-type: none"> All vehicles entering the Site will be covered to prevent uncontrolled release of litter on to the Site.
	<ul style="list-style-type: none"> The putrescible waste bunker will be surrounded by concrete pushwalls, which will further limit the movement of litter.

Aspect	Management Measures
	<ul style="list-style-type: none"> The boundary fence will prevent any litter escaping from the Site. The boundary fence will be inspected regularly and any maintenance works scheduled accordingly. Any litter generated around the Site and along the fence lines will be collected on a daily basis as part of routine procedures. Any litter blown or dropped off-site will be collected immediately and taken back on-site.
Traffic	<ul style="list-style-type: none"> Signage providing Site directions, traffic control measures and safety instructions will be established and maintained at appropriate locations around the Site. Vehicles will be restricted to a maximum speed limit of 5km/hour at the Site, which will be signposted at appropriate locations, including the entrance to the Site. There will be adequate staff supervision to ensure staff safety around moving vehicles. Employees and contractors shall wear high visibility and reflective clothing when working in areas where vehicle movement occurs. All vehicles will be maintained in good working condition and drivers instructed to use conservative driving techniques. All employees and contractors are inducted to the site Occupational Health and Safety (OHS) and traffic management procedures.
Noise	<ul style="list-style-type: none"> Waste acceptance and the operation of equipment and machinery on Site will be restricted to operational hours only. Vehicles will be restricted to a maximum speed of 5 km/h at the Site. Noise reducing workplace procedures will be adopted such as slow unloading of materials from the lowest height possible. All material handling will be confined to the designated areas. The putrescible waste bunker within an enclosed building, will be surrounded by concrete pushwalls, which further limit the noise emissions. All equipment and machinery will be maintained in good working condition. Workers employed at the Site will be provided with personal protective clothing (PPE) including ear muffs to mitigate any noise impacts associated with the Site activities.

Aspect	Management Measures
Vermin	<ul style="list-style-type: none"> • All putrescible waste handling operations will be confined to the putrescible waste bunker. • To minimise any feeding opportunities for vermin, Aurigen will sweep and wash down the designated putrescible waste area. • The generation of odour and litter will be minimised through the implementation of appropriate management measures. • Aurigen will undertake regular litter collections on-site. • All vehicles carrying putrescible waste are to be covered. • A perimeter fence is present on the Site and will be monitored and maintained on a regular basis. • Aurigen will have any suspected and/or known shelters or breeding grounds for vermin on the Site eliminated. • Should any vermin issues be experienced, Aurigen will utilise professional services to eradicate vermin at the Site.
Security and fire safety	<ul style="list-style-type: none"> • The existing perimeter fence will be maintained surrounding the Site. • The perimeter fence will be monitored and maintained on a regular basis. • All Site access gates will be locked securely outside of operational hours. • Fire extinguishers and hose reels are located throughout the premises; • The Site's building design will comply with Department of Fire and Emergency Services guidance for Site Planning and Fire Appliance Specifications (DFES, 2015).
Complaints management	<ul style="list-style-type: none"> • An appropriate senior staff member of Aurigen is advised as soon as possible that a complaint has been made. • The staff member will assess the nature, severity and potential consequences associated with the complaint. • The staff member will discuss and assess the abovementioned issues associated with the complaint. • The staff member will take immediate action if, and when, required.



Aspect	Management Measures
	<ul style="list-style-type: none">• The details of the complaint will be recorded in a suitable format (e.g. a complaint form).• The complaint form will be retained on-site by Aurigen.• Following actions to address the complaint, Aurigen will, where appropriate, provide a suitable response to the complainant.



8 Conclusion

The Site has been operating in a limited capacity involving source separated commodities aggregation since late 2015. Aurigen is now seeking to expand its operations and include additional activities on the Site including a Materials Recovery Facility and Waste Transfer Station as part of a Waste Transfer and Resource Recovery Facility which will be an integrated facility providing a range of recycling and waste management services which is reflect of modern advanced facilities. To ensure that the proposed Facility complies with all legislative requirements, Aurigen is seeking to obtain the following environmental and planning approvals:

- Development Approval from Town of Bassendean;
- Referral to the Environmental Protection Authority (EPA); and
- Works Approval and Licence from Department of Environment Regulation (DER).

The Site will be classified as a Prescribed Premises pursuant to the *Environmental Protection Act 1987* with Aurigen seeking a licence for all proposed and potential future operations:

- Category 47 – Scrap metal recovery: Premises on which metal scrap is fragmented or melted, including premises on which lead acid batteries are reprocessed.
- Category 61A – Solid waste facility: Premises (other than premises within category 67A) one which solid waste produced on other premises is stored, reprocessed, treated or discharged onto land.
- Category 62 - Solid waste depot: Premises on which waste is stored, or sorted, pending final disposal or re-use.

The existing environmental conditions associated with the Site were investigated as part of this proposal including topography, soils, flora and fauna, Environmentally Sensitive Areas, hydrology and surrounding land uses.

The Site will be comprised of three main activities, which include Commodities Aggregation, Materials Recovery Facility and Waste Transfer Station. The Commodities Aggregation activities will be undertaken at the front of the Site in the existing Baling Shed and Metal Recycling Facility. The Materials Recovery Facility will be located towards the rear of the Site within an enclosed building, shared with the Waste Transfer Station.

It is proposed that the Materials Recovery Facility and the Waste Transfer Station will be designed to accept volumes up to 100,000 tonnes per annum each. The Commodities Aggregation activities could accept up to 120,000 tonnes per annum of materials.

There are a number of benefits associated with Aurigen's proposal to construct a Waste Transfer and Resource Recovery Facility including waste diversion from landfill, a reduction in carbon emissions due to fewer vehicles and reduced travel time, local employment opportunities and community engagement and education.

The key potential environmental impacts associated with the development and operations of the proposed Waste Transfer Station and Resource Recovery Facility at the Site include:

- Odour;
- Noise;
- Dust;
- Stormwater;



- Leachate;
- Litter;
- Traffic; and
- Vermin.

Aurigen recognises that the most significant environmental aspects associated with the proposed Waste Transfer and Resource Recovery Facility are odour and noise. As such, Aurigen commissioned The Odour Unit and Lloyd George Acoustics to undertake assessments of the potential impacts of the proposed Site activities.

The Odour Impact Assessment found that the Facility would comply with relevant DER odour concentration criteria with respect to the nearest sensitive receptors. In addition, The Odour Unit concluded that no adverse odour impacts were expected as a result of the proposed operations.

The Environmental Noise Assessment reported that in order to comply with the Noise Regulations, a noise reduction of 10-20 dB would be needed for daytime operations. The variation in noise reduction required relates to the 10 dB penalty for impulsiveness, which, if mitigated, with noise control measures would result in a 10 dB noise reduction requirement. This will be addressed by the adoption of noise control measures including a noise wall at the Alice Street entrance and noise mitigation around the metal shredder. Night operations were considered to comply with the Noise Regulations at all times and no mitigation was considered to be required.

Other environmental aspects that were identified included traffic, dust, stormwater, leachate, litter and vermin.

Following an evaluation of the potential environmental impacts, a suite of engineering and management measures will be adopted as part of the construction and operations of the proposed Waste Transfer Station and Resource Recovery Facility.

Given the above, Talis is of the view that Aurigen's proposed Waste Transfer and Resource Recovery Facility at the Site can be achieved in a manner that ensures that any potential associated environmental impacts can be managed appropriately.



Figures

Figure 1 – Locality Plan

Figure 2 – Aerial Plan

Figure 3 – Topography

Figure 4 - Geology

Figure 5 – Acid Sulphate Soils

Figure 6 – Conservation

Figure 7 – Historical Aerial Plans

Figure 8 - Groundwater

Figure 9 – Surface Water Hydrology

Figure 10 – Floodplains

Figure 11 – Aboriginal Heritage

Figure 12 - Contaminated Sites

Figure 13 – Odour Contour Map (Non-partitioned building)

Figure 14 - Odour Contour Map (Partitioned building)

Drawings

Drawing 1: Conceptual Site Plan



References

Department of Environment Regulation. (2015), Draft Guidance Statement on Separation Distances and the EPA's draft Guideline for Separation Distances Between Industrial and Sensitive Land Uses.

Department of Fire and Emergency Services (2015), DFES BEB Guideline No. GL-11, DFES Site Planning and Fire Appliance Specifications. Available at:
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Environmental Protection Authority. (2005), Guidance for the Assessment of Environmental Factors - Separation Distances between Industrial and Sensitive Land Uses, No.3.

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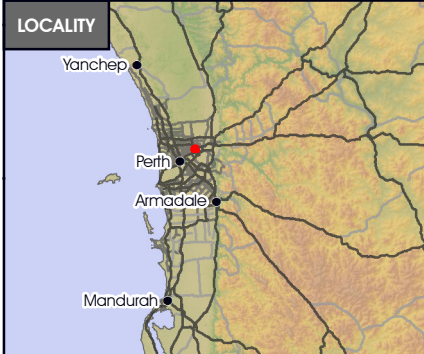
Western Australian Planning Commission's (WAPC). (2005), Guideline for the Determination of Wetland Buffer Requirements.



LEGEND

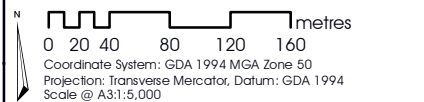
- Site Boundary
- Roads
- Local Government Boundary

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LOCALITY MAP

Aurigen - Environmental Assessment and Management Plan



Prepared: RPC	Date: 23/06/2016
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Figure 01