17.0 Waste Management

17.1 Introduction
This chapter describes the potential wastes generated from the construction, operation, decommissioning and rehabilitation of the Project. The focus of this chapter is on the construction phase of the Project as the waste stream generated from a wind farm during operation is minimal.

Where wastes are expected to be generated during construction, operation, decommissioning or rehabilitation, mitigation and/or management measures are provided to avoid or minimise any potential impacts to human and environmental values.

17.2 Scope of assessment
The scope of the assessment is to:
- Describe significant waste streams expected to be generated from the Project’s activities during the various phases of the Project.
- Define and describe the objectives and practical measures for protecting or enhancing environmental values from impacts by wastes, taking into account waste management strategies, the Queensland Waste Reduction and Recycling Act 2011 and the Environmental Protection (Waste) Regulation 2000.
- Assess the proposed management measures against the preferred waste management hierarchy, namely: avoid or reduce waste generation; reuse; recycle; recover energy; treatment; disposal.
- Describe how nominated quantitative standards and indicators may be achieved for waste management, and how the achievement of the objectives will be monitored, audited and managed.
- Provide details on natural resource-use efficiency (such as energy and water), integrated processing design, and any co-generation of power and by-product reuse as shown in a material/energy flow analysis.

Air emissions and wastewater are covered in Chapter 2 Project Description and Chapter 14 Surface Water respectively. An assessment methodology is presented in Section 17.4.

17.3 Legislation and Policy

17.3.1 Commonwealth
National environment protection measures (NEPMs) set out agreed national objectives for protecting or managing particular aspects of the environment such as air and water quality, land contamination, hazardous wastes, and the reuse and recycling of materials. The National Pollutant Inventory (NPI) NEPM provides the framework for the development and establishment of the NPI, which is an internet database designed to provide publicly available information on the types, and amounts of certain substances, being emitted to the air, land, and water.

National Waste Policy: Less Waste, More Resources
The National Waste Policy (EPHC, 2009) supports annual reporting of waste emissions to land, air and water through the NPI. Facilities that emit or consume greater than threshold amounts of 93 nominated substances are required to report their emissions to the NPI database to provide stakeholders and government agencies with information on the type and quantity of substances emitted to land, water and air. It is unlikely that the Project would trigger thresholds for NPI reporting.

Australian code for the transport of dangerous goods by road and rail
The Australian code for the transport of dangerous goods by road and rail (National Transport Commission, 2011) sets out the technical requirements and guidelines for transportation of dangerous goods by road and rail, including transporting fuels, chemicals, etc. For quantities of dangerous goods anticipated to be used by the Project, refer to Chapter 9 Hazards, Health and Safety.
17.3.2 State

Environmental Protection Act 1994

The Environmental Protection Act 1994 (EP Act) is the principal legislation for the protection and management of environmental values within Queensland. The EP Act aims to protect the natural environment and associated ecological systems and processes, while allowing for sustainable development. Section 13 of the EP Act defines waste as ‘anything that is left over, or an unwanted by-product, from an industrial, commercial, domestic or other activity; or surplus to the industrial, commercial, domestic or other activity generating wastes’. Under the EP Act, waste generated by the Project must be managed in compliance with the Waste Reduction and Recycling Act 2011.

Environmental Protection Regulation 2008

The Environmental Protection Regulation 2008 (EP Regulation) prescribes the regulatory framework for managing the impacts of industrial, agricultural and resource development projects on the environment. This includes the definition and approvals processes for environmental impact statements and environmentally relevant activities. The EP Regulation defines regulated waste as waste that is commercial or industrial waste, whether or not it has been immobilised or treated, and is of a type, or contains a constituent of a type, mentioned in Schedule 7 of the EP Regulation.

Certain regulated wastes are considered trackable waste, and the EP Regulation provides a process to allow such wastes to be tracked from point of generation to processing, recycling or disposal facilities.

Certain waste management activities, including disposal and transport of waste, are defined as environmentally relevant activities (ERAs) and require approval under the EP Regulation; only licensed operators may accept waste for transport or disposal.

Waste Reduction and Recycling Act 2011


The Waste Reduction and Recycling Act 2011 provides a strategic framework for managing wastes through a waste and resource management hierarchy, as listed below in the preferred order to be considered:
- Avoid unnecessary resource consumption
- Reduce waste generation and disposal
- Re-use waste resources without further manufacturing
- Recycle waste resources to make the same or different products
- Recover waste resources, including the recovery of energy
- Treat waste before disposal, including reducing the hazardous nature of waste
- Dispose of waste only if there is no viable alternative.

Under Queensland’s Waste Reduction and Recycling Act 2011, priority wastes are those with high disposal impacts (such as toxicity or greenhouse gas emissions), social impacts (such as community concern or amenity), or whose recovery would present resource savings or business opportunities. The Waste Reduction and Recycling Act 2011 enables the Queensland government to work with industry and the community in identifying priority wastes in the state, and determine - through a process of consultation - the most appropriate management options for each priority.

Waste Reduction and Recycling Regulation 2011

The Waste Reduction and Recycling Regulation 2011 sets out the mechanisms to achieve the objectives of the Waste Reduction and Recycling Act 2011, mainly in relation to waste levies. As of June 2012, the waste levy was set to an amount of zero. However, while the State government has removed the landfill levy, the legislation
underpinning the levy, the Waste Reduction and Recycling Bill 2011, has not been repealed. A change to the value of the waste levy is expected to directly influence waste disposal costs.

Environmental Protection (Waste Management) Regulation 2000

This Environmental Protection (Waste Management) Regulation 2000 (Waste Regulation) establishes an integrated framework for minimising and managing waste to achieve the principles of ecologically sustainable development. The Waste Regulation contains requirements for storage and handling of certain regulated wastes that are considered ‘trackable wastes’. This regulation outlines a process that allows such wastes to be tracked from the point of generation to the point of final processing, recycling or disposal. The Project has the potential to generate a number of trackable wastes during its construction and operation that will need to be managed in accordance with this regulation.


To improve waste avoidance and recovery performance, the Queensland Waste Avoidance and Resource Productivity Strategy sets targets for improving resource recovery and recycling rates and reducing landfill disposal over the next ten years. The strategy identifies priority wastes, including plastic waste (packaging) and high volume wastes with an existing resource value (concrete, treated timber, used oil), to target development of more appropriate management options in the State over the ten year life of the strategy.

17.3.3 Local

Western Downs Regional Council Waste Management Policy (2012)

This policy outlines the acceptance criteria for wastes that are presented for disposal at a Western Downs Regional Council facility (either landfill or transfer station).

This policy aims to:
- protect against the disposal of any wastes that is not lawfully able to be disposed at a facility
- protect against the disposal of any wastes may result in environmental nuisance, environmental harm or damage to infrastructure
- assist in the conservation of the capacity (airspace) of council facilities for residents and the usual business established within the area
- ensure the recovery of fees and charges that may be applicable for waste disposal.

Details of the Western Downs Regional Council waste management facilities in proximity to the Project Site that have potential to accept waste from commercial operations are listed in Section 17.5.2.

South Burnett Regional Council’s Waste Management Plan 2015-2022

This plan provide six ‘Strategy Goals’, with various action items, which provides the framework for realising the Council’s vision for Waste Management into the future within the South Burnett. The six Strategy Goals are:
- Provide community waste education
- Provide cost effective, safe, environmentally responsible & efficient waste collection operations
- Provide an appropriate network of waste transfer and disposal facilities
- Provide responsible management of waste facilities
- Provide landfills to meet the regions long term waste disposal needs
- Provide opportunities to reduce waste to landfill.

17.4 Methodology

17.4.1 Identifying environmental values

For the purposes of describing environmental values in the vicinity of the Project, data was sourced from regional plans, waste facilities, legislation, policies and guidelines. The search focussed on environmental and social values pertaining to waste.
17.4.2 Identifying Project waste streams

The waste streams of the Project have been derived from a number of sources, including review of typical construction methods and waste streams from AGL’s existing operational wind farm sites.

17.4.3 Identifying Potential impacts

Impacts likely to arise from the identified waste streams are described in Section 17.6. The location and acceptance criteria of the existing Council landfills were investigated (Section 17.5) to assess the appropriateness of landfills in the vicinity of the Project.

17.4.4 Identifying mitigation and management measures

To mitigate potential impacts, management measures have been identified in Section 17.7. The method used was to promote waste avoidance and reduction and to encourage resource recovery and efficiency. The assessment uses a hierarchical approach to waste management and prioritises waste management strategies from the most preferable to the least preferable. Where waste cannot be avoided, waste materials will be segregated by type for collection and removal (for processing or disposal) by licensed contractors. This is illustrated in Figure 17.1.

Figure 17.1 Waste management hierarchy (Source: EHP: 2014)

17.5 Description of environmental values

17.5.1 Environmental values potentially affected by waste

The Project is located approximately 180 km north-west of Brisbane near Cooranga North, between Dalby and Kingaroy. The Project Site will be located on properties where the current predominant waste streams are from farming activities.

Environmental values with the potential to be impacted by waste generated from the construction, operation, decommissioning and rehabilitation of the Project include:

- Natural environment, including land, water resources, air quality, fauna and flora
- Productive capability of land i.e. its potential for use for agricultural, forestry or other uses
- Health and safety i.e. the life, health and wellbeing of people, including project workers
- Sustainability of natural resources (e.g. construction materials, fuel, electricity, water)
- Available landfill capacity for waste disposal
- Visual amenity.

17.5.2 Licensed waste contractors and facilities

In the area surrounding the Project, solid and liquid wastes are generated from domestic, commercial and agricultural sources. Regional councils provide waste collection, recycling and disposal facilities and services for residential and commercial properties. Commercially operated waste management facilities provide additional options for collection, treatment and disposal of solid and liquid wastes.

Details of the existing waste management facilities in proximity to the Project Site that have potential to accept waste from commercial operations are listed in Table 17.1. Available and permissible annual capacity will be confirmed in consultation with the relevant operator once the actual location and timing for development of the Project are confirmed.

Table 17.1 Waste management facilities in the region

<table>
<thead>
<tr>
<th>Facility name</th>
<th>Commercial and industrial</th>
<th>Construction/ demolition</th>
<th>Domestic</th>
<th>Resource recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingaroy Waste Facility Luck Road, Kingaroy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scrap metals, Bricks, Concrete, Tiles, Terracotta</td>
</tr>
<tr>
<td>Chinchilla Waste Management Facility Clarkees Road, Chinchilla</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Cardboard, co-mingled recyclables, concrete, bricks, asphalt, etc., cooking oil, drums, green waste, mobile phones, motor oil, printer cartridges, second hand goods, soil, steel and other metals, timber, wet-cell batteries.</td>
</tr>
<tr>
<td>Meandarra Landfill Meacle Road, Meandarra</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Steel.</td>
</tr>
<tr>
<td>Miles Landfill Leichhardt Hwy, Miles</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Cardboard, co-mingled recyclables, concrete, bricks, asphalt, etc., green waste, motor oil, soil, steel and non-ferrous metals, timber, wet-cell batteries.</td>
</tr>
<tr>
<td>Murgon Waste Facility Borchert Hill Road, Murgon</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scrap metals, Bricks, Concrete, Tiles, Terracotta</td>
</tr>
<tr>
<td>Nanango Waste Facility Finlay Road, Nanango</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scrap metals, Bricks, Concrete, Tiles, Terracotta</td>
</tr>
<tr>
<td>Tara Landfill Fry Street, Tara</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Cardboard, co-mingled recyclables, concrete, bricks etc., drums, green waste, motor oil, steel, timber, wet-cell batteries.</td>
</tr>
<tr>
<td>Wandoan Landfill Tip Road, Wandoan</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Minor quantities of construction and demolition, and commercial and industrial waste are accepted, subject to approval. Steel.</td>
</tr>
<tr>
<td>Wondai Waste Facility</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scrap metals, Concrete</td>
</tr>
</tbody>
</table>

Licensed facilities provide equipment, infrastructure and practices aimed at mitigating and controlling the potential environmental impacts of the treatment or disposal of accepted wastes. The waste produced by the Project’s activities would be collected and transferred by licensed contractors and facilities where necessary.
17.6 Potential impacts

Potential impacts to the identified environmental values and receptors may result from excessive waste generation from the inefficient use of resources or from the improper management of wastes generated during the construction, operation, decommissioning and rehabilitation of the Project. The potential impacts include:

- Resource efficiency
  - Excessive use of natural resources.

- Waste generation
  - Wastes to be disposed to landfill (additional to current levels)
  - Release of waste (controlled or uncontrolled) causing contamination of air, land, surface or groundwater
  - Increase in vermin and pests.

17.6.1 Resource efficiency

Life cycle analysis involves estimation of energy and material flows over the whole Project lifecycle; from the extraction of raw materials to the disposal of materials at the end of the Project life. However, due to the nature of the Project, cogeneration of power and by-product reuse as shown in an energy/materials flow analysis is not considered directly relevant to this Project and has therefore not been considered further.

The greatest consumption of energy and resources is expected to occur during production of the wind turbines. Raw materials required include iron ore for the construction of steel components and their casings, as well as crude oil to make epoxy used in blade construction. These resources are limited and non-renewable. Energy consumption during the transport, operation and disposal phases are considered to be relatively minor and not significant when balanced against other forms of electricity-generation.

Wind farms are favourable to other major electricity-generating methods employed in Australia based on:

- Greenhouse emissions (per kilowatt hour of energy produced)
- Potential to reuse and recycle component parts
- Energy payback time in comparison to the life span of the Project.

17.6.1.1 Construction

The construction of the Project, including associated infrastructure, will require the use of various resources including:

- Sand and aggregate for concrete batching
- Concrete and other masonry products (e.g. footings, slabs, hardstand areas, buildings)
- Hydrocarbon materials (e.g. fuel, oil and lubricants) associated with operation of machinery and motor vehicles
- Other construction and packaging materials (e.g. metals, glass, plastics, etc.).

It is expected that sand and aggregate may be able to be sourced from excavation of footings, where possible, or from a locally sourced borrow bit within the Study Area. If suitable quantities of sand and aggregate are not able to be achieved within the Study Area, existing approved sand and gravel pits within the local area will be used. Concrete waste will be crushed and reused as aggregate where possible.

Hydrocarbons and packaging materials are typically non-renewable materials; however none are expected to be restricted in supply or place significant pressure on availability of local and regional resources.

17.6.1.2 Operation

Resources required during operation include fuel, oil and lubricants for maintenance of turbines and vehicles, and replacement parts for turbines that may consist of metal and plastic. Although non-renewable materials, none are expected to be restricted in supply or place significant pressure on availability of local and regional resources.
17.6.2 Waste generation

Generation of waste will occur throughout the construction, operation and decommissioning of the Project. Project activities will generate solid and liquid wastes, which can be broadly classified as:

- Regulated waste: wastes that require specific controls or actions as defined by legislation. Listed, hazardous, regulated, controlled or trackable wastes typically have unique handling and disposal requirements in order to manage specific hazards associated with them.

- General waste: wastes not defined as regulated waste under legislation. General wastes comprise putrescible wastes (easily decomposed, recyclable by composting) and non-putrescible wastes (not easily decomposed, may be recyclable).

- Recyclable waste: waste types that are able to be reconditioned, reprocessed or reused.

17.6.2.1 Construction

Wastes expected to be generated from construction activities include:

- Limited vegetation clearing
- Material from packaging (cardboard, paper, metal, plastics)
- Building materials excess and offcuts (concrete, metals, glass, plastics)
- Hazardous wastes such as hydrocarbons, paints, solvents and fertilisers/herbicides
- Sewage effluent and sludge.

17.6.2.2 Operation

Upon completion of construction, disturbed areas outside of the operational footprint will be rehabilitated. Operational activities have reduced demand for workforce, material and transport, when compared with construction. Consequently, the operational phase of the Project is expected to generate significantly smaller volumes of waste to be managed.

Wastes expected to be generated from the operational phase of the Project include minor quantities of hydrocarbons (fuel, oil, lubricants) and hydrocarbon contaminated materials and replaced parts (at the end of their life).

17.6.2.3 Decommissioning and rehabilitation

Unless the relevant electricity network operator or landowner request that certain wind farm infrastructure be retained on land, it will be removed and the land restored to its previous condition or better. A demolition contractor will be engaged to decommission wind farm infrastructure and remove debris to a licensed disposal facility permitted to operate under the current and applicable regulations at the time decommissioning occurs.

- Wind turbines will be dismantled and either scrapped or transported to another site for reuse. If the turbines are not reused, they will be disassembled into smaller components as scrap metal
- Concrete used for foundations will be sent to a concrete recycling facility, or buried to a suitable level below ground level to allow farming activities to continue
- Ancillary facilities related to the wind farm and located on the landowners’ property would be removed and repurposed or transported off site for recycling or disposal at a licensed facility
- Overhead power poles and conductors connecting the wind farm to the national electricity grid substation will be removed. Control room facilities and equipment not required for the operation of the substation will be removed. As far as practical, materials and components (e.g. steel, conductors, switches, transformers, etc.) will be reused, recycled or removed to licensed waste disposal facilities, and the disturbed area rehabilitated.
- Underground cables will be terminated at the end of the runs (including watercourse crossing conduits), the ends will be capped with appropriate insulation and buried to a depth of approximately one metre below the ground surface, and left in place. Land disturbed by these activities would be rehabilitated.
- Access tracks and roads will be left in place if landowners consider the tracks to be useful to their activities or otherwise decommissioned, and the area rehabilitated.
17.7 Mitigation measures

AGL will use a hierarchical approach to waste management, from the most preferable (reduce, reuse or recycle wastes) to the least preferable (disposal), and prioritise waste management strategies to avoid waste generation. Where waste cannot be avoided, waste materials will be segregated by type for collection and removal (for processing or disposal) by licensed contractors. It is not anticipated that on-site treatment of water will occur and there will be no controlled releases of water or wastewater to the environment by the Project. The mitigation measures listed in Table 17.2 will be implemented to minimise and manage waste generated from the Project.

Table 17.2 Mitigation strategies for Project wastes

<table>
<thead>
<tr>
<th>Waste stream</th>
<th>Type</th>
<th>Avoidance/Mitigation</th>
<th>Reuse/Recycle</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleared vegetation</td>
<td>General; solid</td>
<td>Where practical minimise disturbance and clearing required.</td>
<td>Reuse logs and stumps in rehabilitation areas; mulch for use in rehabilitation areas; or deliver to licensed waste facility for recycling.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>Concrete</td>
<td>Inert; solid</td>
<td>Detailed design for infrastructure to carefully specify material needs to avoid over estimating requirements. Source reliable, good quality materials to minimise defects and inappropriate material.</td>
<td>Crushed concrete may be used as aggregate for fill, footings, construction pads or road base on the Project Site.</td>
<td>Where recycling is not viable, surplus material may be buried in suitable locations on site (or public facility with Council’s approval). Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
<tr>
<td>Excavated soil, rock and topsoil</td>
<td>Inert; solid</td>
<td>Where practical minimise disturbance footprint.</td>
<td>Reuse on-site. Direct placement of topsoil is preferred to stockpiling. Treat weeds prior to grubbing. Excavated material may be used as aggregate for fill, footings, construction pads or road base on the Project Site.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>General waste</td>
<td>General; solid (putrescible)</td>
<td>Buy in bulk to minimise packaging waste.</td>
<td>Reduce, reuse or recycle wastes whenever possible</td>
<td>Collect in covered bins or containers with appropriate signage. Service regularly to avoid pests and vermin. Licensed transporters to remove waste for disposal at a licensed waste facility.</td>
</tr>
<tr>
<td>Waste stream</td>
<td>Type</td>
<td>Avoidance/Mitigation</td>
<td>Reuse/Recycle</td>
<td>Disposal</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hazardous substances (coolants,</td>
<td>Regulated;</td>
<td>Maintain detailed inventories of such products to minimise over-stocking and wastage. Material Safety Data Sheets available on-site to identify correct and safe means of disposal. Ensure correct storage and handling to minimise leaks and spills.</td>
<td>Store in suitable bunded containers with appropriate signage. Removal and transport by a licensed waste transporter for recycling at licensed facility where possible.</td>
<td>Treatment or disposal at licensed facilities where recycling is not viable. Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
<tr>
<td>paints, solvents, chemicals, etc.)</td>
<td>liquid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrocarbon contaminated soils</td>
<td>Regulated;</td>
<td>Avoid spills through implementation of standard operating procedures. If spills occur, investigate and put in place controls to prevent future occurrence.</td>
<td>Where remediation is viable and practicable, collect in appropriately bunded and covered area.</td>
<td>Licensed transporters to remove waste for disposal at a licensed waste facility. Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
<tr>
<td></td>
<td>solid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oily wastes (absorbent materials,</td>
<td>General;</td>
<td>Avoid spills through implementation of standard operating procedures. Ensure adequate training of staff for correct use of equipment. Ensure rags and filters are used appropriately for their lifespan.</td>
<td>Segregate in suitable bunded bins or containers with appropriate signage. Consider alternative uses e.g. reuse of drums or containers for temporary storage of wastes on-site. If on-site treatment is not viable, licensed transporters to remove waste for recycling at a licensed waste facility.</td>
<td>If reprocessing not viable, licensed transporters to remove waste for disposal at a licensed waste facility. Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
<tr>
<td>containers, filters, rags, etc.)</td>
<td>solid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oily water</td>
<td>Regulated;</td>
<td>Avoid excessive washdown in oil contaminated areas. Provide extra care and attention to avoid spillages of oil where possible. Prioritise alternative clean-up methods for spills than water use.</td>
<td>Collect for pre-treatment by an oil water separator; collect waste oil for recycling and reuse treated water in the contractor wash down facility. If on-site treatment is not viable, licensed transporters to remove waste for recycling at a licensed waste facility.</td>
<td>If reprocessing not viable, licensed transporters to remove waste for disposal at a licensed waste facility. Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
<tr>
<td></td>
<td>liquid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recyclable materials (aluminium,</td>
<td>Recyclable;</td>
<td>Buy in bulk to minimise packaging waste.</td>
<td>Provide separate recyclable materials receptacles near site offices for paper, glass, plastics and aluminium. Licensed transporters to remove recyclable materials for recycling at a licensed waste facility.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>cardboard and paper, glass, rigid</td>
<td>solid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plastics)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste stream</td>
<td>Type</td>
<td>Avoidance/Mitigation</td>
<td>Reuse/Recycle</td>
<td>Disposal</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Scrap metal</td>
<td>Recyclable; solid</td>
<td>Detailed design for infrastructure to carefully specify material needs to avoid over estimating requirements. Source reliable, good quality materials to minimise defects and inappropriate material.</td>
<td>Where practicable, salvage reusable metal including stakes, drums and wire. Segregate and store (stockpile) on-site in designated areas for removal by licensed transporter for recycling at licensed facilities.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>Sewage effluent and sludge</td>
<td>Regulated; liquid/solid</td>
<td>Install water-efficient toilets and plumbing.</td>
<td>Provide on-site amenities for workers. If viable, install package sewage treatment units; irrigate effluent and collect sludge for removal to licensed sewage treatment plant or waste disposal facility. Alternatively, collect waste water and sludge for removal to local sewage treatment plants or other suitable facility agreed by Council.</td>
<td>If on-site treatment not viable, collect sewage effluent and sludge for removal to local sewage treatment plants or other suitable facility agreed by Council.</td>
</tr>
<tr>
<td>Timber (pallets, formwork)</td>
<td>General; solid</td>
<td>Detailed design for infrastructure to carefully specify material needs to avoid over estimating requirements. Source reliable, good quality materials to minimise defects and inappropriate material.</td>
<td>Reuse or re-purpose for applications on site. Segregate and store (stockpile) on-site in designated areas for removal by licensed transporter for recycling at licensed facilities.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>Tyres</td>
<td>Regulated; solid</td>
<td>Ensure adequate training of staff members to maximise lifespan of tyres.</td>
<td>Segregate and store (stockpile) on-site in designated areas for removal by licensed transporter for recycling at licensed facilities.</td>
<td>Not suggested.</td>
</tr>
<tr>
<td>Waste oil</td>
<td>Regulated; liquid</td>
<td>Ensure adequate training of staff members to understand when oil becomes waste oil.</td>
<td>Store in suitable bunded containers with appropriate signage. Removal and transport by a licensed waste transporter for recycling at licensed facility.</td>
<td>Treatment or disposal at licensed facilities where recycling is not viable. Waste tracking systems to be maintained for the disposal of regulated wastes.</td>
</tr>
</tbody>
</table>

### 17.8 Residual impacts

Some wastes, which cannot be reused or recycled, will be disposed within appropriately licensed landfills. However, this is not considered to be of significant quantity to appreciably consume available landfill capacity and shorten landfill life. With proper implementation of the mitigation measures outlined in Section 17.7, the Project is not anticipated to cause significant residual impacts on environmental values or nearby landfills.
17.9 Cumulative impacts

Potential waste-related impacts associated with the Project are considered to be minor and temporary. Implementation of the identified mitigation measures is considered adequate to protect environmental values. On a regional scale, the waste impacts associated with the Project are considered to be negligible and are therefore unlikely to contribute to any cumulative impacts from other similar projects in the region.

17.10 Summary and conclusions

This chapter has described the potential impacts and relevant mitigation measures in relation to potential wastes generated during the different phases of the Project. The construction phase is considered to generate the most potential for waste generation. However, based on information available at the time, the identified waste streams during construction can be managed through waste avoidance and mitigation strategies to minimise potential impacts on environmental values.

17.11 References

