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ABN: 82 078 849 233

Chapter 23

Waste Management

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Genex Kidston Connection Project - Ministerial Infrastructure Designation Assessment Report

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23.0 Waste Management

23.1 Relevant Legislation and Policy

23.1.1 Commonwealth

National Waste Policy 2009

The National Waste Policy, agreed by all Australian environment ministers was first published in November 2009, and revised in 2018. The National Waste Policy was endorsed by the Council of Australian Governments, and sets Australia's waste management and resource recovery direction to 2030 (DAWE, 2018). The policy identifies five overarching principles underpinning waste management in a circular economy. These include:

- avoid waste
- improve resource recovery
- increase use of recycled material and build demand and markets for recycled products
- better manage material flows to benefit human health, the environment and the economy
- improve information to support innovation, guide investment and enable informed consumer decisions.

National Pollutant Inventory

The National Pollutant Inventory (NPI) tracks pollution across Australia through the reporting of emissions and transfers of 93 substances that have the potential to impact on human health and the environment. The NPI framework establishes a 'trigger' threshold usage for these substances and, if threshold is exceeded during a reporting year for an NPI substance, all emissions of that substance must be reported in accordance with the most current relevant Emission Estimation Technique Manuals.

The desired environmental outcomes of the NPI program are to:

- maintain and improve air and water quality
- minimise environmental impacts associated with hazardous waste
- improve the sustainable use of resources.

23.1.2 Queensland

Waste Reduction and Recycling Act 2011

The *Waste Reduction and Recycling Act 2011* contains measures to reduce waste generation and landfill disposal and encourage recycling. The legislation establishes a framework to modernise waste management and resource recovery practices in Queensland, in order to promote waste avoidance and reduction and encourage resource recovery and efficiency. The Act defines the meaning of the waste and resource management hierarchy (avoid, reduce, re-use, recycle, recover, treat, dispose).

The objectives of the Act are to:

- promote waste avoidance and reduction, and resource recovery and efficiency actions
- reduce the consumption of natural resources and minimise disposal of waste by encouraging waste avoidance and the recovery, reuse and recycling of waste
- minimise overall impact of waste generation and disposal
- ensure a shared responsibility between government, business and industry and the community in waste management and resource recovery
- support and implement national frameworks, objectives and priorities for waste management and resource recovery.

The Waste Reduction and Recycling Regulation 2011 is subordinate to the Act and provides details on how the act should be applied.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) includes provisions regarding general environmental duty, and the requirement to take all reasonable and practicable measures to prevent environmental harm. This includes requirements for waste management, such as waste prevention and minimisation.

The Environmental Protection Regulation 2008 (EP Regulation) is subordinate to the Act and establishes requirements for the transportation of regulated waste, defines trackable waste, describes obligations for generators/transporters/waste receivers, receiving/disposing of waste at approved facilities and defines regulated waste.

Queensland Waste Strategy

Queensland's Waste Management and Resource Recovery Strategy (Queensland Government, 2021), underpinned by a waste disposal levy, provides the strategic framework for Queensland to become a zero-waste society, where waste is avoided, reused and recycled to the greatest possible extent. The strategy focuses on transitioning to the principles of a circular economy to help retain the value of material in the economy for as long as possible.

It provides the framework to help deliver coordinated, long-term and sustained growth for the recycling and resource recovery sector while reducing the amount of waste produced and ultimately disposed of, by promoting more sustainable waste management practices for business, industry and households.

23.2 Waste Management

23.2.1 General waste management strategy

The principal objective of the waste management strategy for the Project is to minimise the impacts on land resources, water quality, and air quality, and to manage waste in a manner that minimises direct or indirect impacts on the environment and human health.

The main strategies that will be adopted for the Project include waste minimisation and avoidance, appropriate waste treatment including recycling and reuse where applicable, and appropriate handling, storage, collection and disposal of waste.

23.2.2 Waste minimisation and avoidance

The waste and resource management hierarchy is a nationally and internationally accepted guide for prioritising waste and resource management practices which is referred to in the Queensland regulatory framework (Section 23.1.2).

Waste minimisation and avoidance have been considered through the initial planning stage of the Project and will continue during construction and operation.

23.2.3 Waste handling, storage, collection and disposal

In accordance with the waste management hierarchy, waste materials will be segregated during handling and storage on–site. Materials such as metals, solvents, oils, and wood products will be segregated and where possible reused. Opportunities for recycling of other wastes will be utilised where practicable.

Storage of waste will differ according to the specific waste type and is discussed further in the following sections. Flammable and combustible liquid wastes will be stored in accordance with AS1940–2017 'The Storage and Handling of Flammable and Combustible Liquids' to prevent contamination of land, surface water and groundwater.

If waste materials cannot be reused onsite, then they will be collected by licensed contractors for offsite reuse, reprocessing, recycling or final disposal. Final disposal of wastes will be to a licensed waste facility that is suitable for the type and quantity of waste.

Local facilities which may be considered for the final disposal of wastes are discussed below. Where local facilities are unable to accept Project waste, it will be transported to larger facilities such as in Townsville or Ingham.

Hinchinbrook Shire Council

Hinchinbrook Shire Council owns two waste management facilities, being Warrens Hill Waste Management Facility and Halifax Resource Recovery Centre.

The Warrens Hill Waste Management Facility comprises a landfill, transfer station and recycling facility. Both commercial and domestic waste types are accepted at this facility. Certain regulated waste types are also accepted at this facility including limited quantities of contaminated soil and asbestos. The Halifax Resource Recovery Centre accepts household waste and green waste.

Charters Towers Regional Council

Council operates four licensed landfills in the region. The landfills include the Stubley Street Landfill and Resource Recovery Area located in Charters Towers, and the Greenvale, Pentland and Ravenswood Landfills located adjacent to each of their respective townships. Each of these landfills accepts domestic waste, commercial waste, industrial waste, construction and demolition waste, and limited regulated waste. Skip bins are available at the Stubley Street Landfill to accept recyclable items, including paper, cardboard, plastic bottles, aluminium tins, and glass.

Etheridge Shire Council

Etheridge Shire Council operates one suitable licenced landfill at Georgetown. There is no public information available on the waste types accepted at the Georgetown landfill.

23.3 Waste Streams and Management

Anticipated waste streams were identified for the construction, operation and maintenance phases of the Project. The characteristics of individual waste streams have been determined based on similar projects. The following section details waste generating activities, wastes anticipated to be associated with Project and the proposed management method for each waste type.

23.3.1 Construction

Construction activities are expected to produce green waste, general waste, regulated waste, and wastewater. These waste streams are discussed in detail below. Construction waste management measures, including the preparation of a Waste Management Plan, are provided in Section 23.3.1.4.

23.3.1.1 General waste

A number of different general waste streams will be generated during the construction stage of the Project, including cleared vegetation, excess spoil, waste concrete, excess fasteners, clean packing, scrap conductors and excess steel (Table 23-1). Table 23-1 provides the recycling or disposal options available for each waste stream. Quantities of waste are unavailable at this time and estimates will be generated during the detailed design phase of the Project.

In accordance with the *Waste Reduction and Recycling Act 2011*, single use plastic bags will not be used on the Project.

Table 23-1 General waste generation and management during construction

Waste type	Recycling Options	Management Method
Green waste	Vegetation stacked and left to decompose or mulched and retained on site for use in site management works (e.g. erosion control) and rehabilitation.	Felling and stacking in windrows at the edge of easement, chipping, mulching or burning. Actual disposal method on each property will be determined closer to construction in consultation with landholders.
Uncontaminated excess spoil	Reuse as fill around site or to construct ancillary infrastructure (e.g. access tracks, where material is suitable) or reinstatement of eroded areas.	Spoil may be stockpiled temporarily and mounded under transmission line structures or spread around switching station site.

Waste type	Recycling Options	Management Method
Minor localised spills and associated material	Nil	Contaminated soil and materials from minor spills must be transported by a company licensed to transport regulated waste and dispose of to an appropriately licensed facility.
Waste concrete	Return to concrete plant for reuse of sand and gravel.	Collected and disposed of by construction contractor or concrete supplier.
Waste from cleandown facility	Nil	Soil and/or geofabric material contaminated with Biosecurity Matters from cleaning vehicles, plant, equipment and machinery to be disposed at a licensed facility.
Excess nuts, bolts, etc.	Recycled via scrap metal recyclers.	Collected during and after construction.
Timber e.g. formwork, pallets etc.	Generally not accepted back by suppliers.	Store separately and dispose at waste facility for mulching where available. Alternatively, dispose at landfill if not accepted back by suppliers.
Plastic packaging (excluding single use plastics)	Nil	Collected with co-mingled recycling at laydown yards. Dispose of at licensed recycling facility.
Cardboard packing and boxes	Collected and recycled.	Not required
Conductor drums	Returned to supplier for reuse.	Not required
Scrap conductors	Recycled via scrap metal merchants.	Not required
Excess steel	Recycled via scrap metal merchants.	Not required
Sewage	Nil	Wastes to be transported by a licensed regulated waste transport contractor and must only be disposed of at licensed disposal facilities.
Workers camp waste (mixed general waste)	Comingled recyclables arising from food packaging, paper and cardboard may be collected separately for recycling.	Recyclables can be taken to Council waste facilities providing for drop off of comingled recyclables. All other general waste should be disposed at a licensed waste facility.

23.3.1.2 Regulated waste

Portable ablution facilities will be provided at or near each work site for use during the construction phase and controlled by the nominated Construction Contractor.

Waste produced at these ablutions facilities is considered to be a regulated waste in accordance with Schedule 7 of the Environmental Protection Regulation 2008. Therefore, these facilities will require regular servicing and all waste transport must be undertaken by a licensed regulated waste transport contractor, and waste tracking certificates must be completed. Regulated waste must only be disposed of at an appropriately licensed facility to accept the waste type (e.g. sewage treatment plant).

In the event of minor localised spills to ground e.g. hydrocarbons, including the materials associated with clean-up such as rags, gloves and soil, this waste must be transported as regulated waste by a licensed transportation company. The waste must be disposed of at a facility licensed to accept the waste type.

23.3.1.3 Wastewater

Minimal wastewater is produced during the construction phase with the self-contained ablution facilities holding the majority of water consumed (Section 23.3.1.2).

23.3.1.4 Construction waste management

Construction waste will be avoided, minimised and managed in accordance with Powerlink's Standard Environmental Controls (Appendix B Environmental Management Plan). In addition to these controls, the following measures are implemented.

- Where practical, Project components should be supplied to the sites with minimal excess packaging. This practice reduces on–site waste generation.
- Uncontaminated excess spoil will be reused as fill around site or to construct ancillary infrastructure (e.g. access tracks, where material is suitable) or reinstatement of eroded areas. Excess spoil material is to be disposed of by a licensed waste contractor, if unable to be reused.
- Green waste will be managed through felling and stacking in windrows at the edge of easement, chipping, mulching or burning. Actual disposal method on each property will be determined in consultation with landholders.
- Soil and/or geofabric material contaminated with Biosecurity Matters from cleaning vehicles, plant, equipment and machinery to be disposed at a licensed facility.
- No lots within the alignment are listed on the Contaminated Land Register (CLR), however eight lots are listed on the Environmental Management Register (EMR) (Chapter 4 Land), indicating the potential for contaminated soils to be excavated. On-site remediation of contaminated soil is considered best practice, with removal of contaminated soil for treatment or disposal off-site only to be carried out when that option is not practicable. A disposal permit is required to remove contaminated soil for treatment or disposal from land listed on EMR or CLR.
- Waste kept on-site will be stored in a manner that does not pose health and safety risks. Recycling and general waste bins will be provided at the switching station site and the segregation of waste will allow for efficient reuse, recycling or disposal. Putrescibles waste will be sorted in closed waste containers to prevent the attraction and breeding of pest and disease vectors such as flies and rodents.
- Comingled recycling will be collected at laydown yards and camp locations and transported to a licensed recycling facility.
- Waste that cannot be reused onsite will be removed to an appropriate licensed facility, with preference for suitable local facilities.
- At the completion of construction the work sites will be demobilised. This includes removal of any temporary buildings and structures, with the treatment of all wastes to follow the processes outlined in Table 23-1.

A detailed waste management plan is to be developed prior to construction, including all actions needed to effectively implement the waste management hierarchy. The requirements of the waste management plan are detailed in Appendix B Environmental Management Plan.

23.3.2 Operation and maintenance

The types of waste generated by switching station and transmission line operation and maintenance are similar to those generated as construction wastes, although in much smaller quantities (Table 23-2).

The operating switching station is to be inspected and maintained as part of a routine maintenance program. Additional inspections may be required as a result of equipment failure, modifications and upgrade or damage. The operation of the transmission lines does not generate waste, except during infrequent refurbishment programs.

The amount and types of waste likely to be generated during the maintenance of transmission lines and the easements is dictated by the surrounding land use.

Easement maintenance schedules depend on the type and growth rates of the easement vegetation, the maintenance requirements of landholders, as well as any transmission line equipment failures. Maintenance inspections are expected to occur approximately annually with vegetation regrowth being maintained less frequently, and on an as–needs basis. Extra maintenance may be required due to transmission line failure or natural disasters that may compromise the operating safety of the line or the state of the easements. Typical vegetation regrowth maintenance works include mechanical trimming or removal, hand clearing trimming and removal or selective use of herbicides, predominantly used for stump spraying.

Table 23-2 Waste generation and management during operation and maintenance

Waste Type	Recycling Options	Management Method
Food scraps	Quantity likely to be insufficient to warrant on-site composting.	Collected and disposed of in comingled general residual waste bin. Bin to be serviced by a licensed waste contractor. End point of disposal should be a licensed waste disposal facility.
Food packaging	Collected separately, stockpiled, and recycled when volumes are sufficient to warrant transportation.	Mixed recyclables should be rinsed and stored separately for subsequent transportation to a Council operated waste facility which accepts comingled recyclables.
Office wastes (e.g. paper, printer cartridges, computers)	Collected separately, stockpiled, and recycled when volumes are sufficient to warrant transportation.	Paper/cardboard should be stockpiled along with mixed recyclables for subsequent transportation to a Council operated waste facility which accepts comingled recyclables. Printer cartridges can be mailed to Planet Ark for subsequent recycling. Used electronic waste should be stockpiled and either returned to the supplier where such a contract agreement exists, or transported to a Council waste facility accepting e-Waste for recycling.
End of life office furniture	Offer furniture to charitable organisations where condition is suitable.	Offer to charitable organisation or dispose at a licenced waste facility.
Green waste	Sprayed vegetation is usually left to die back and decompose naturally. Suitable cleared regrowth may be mulched or chipped, with the product being sold	Felling and stacking in windrows at the edge of easement, chipping, mulching or burning. Actual disposal method on each property will be determined closer to construction in consultation with landholders.

Waste Type	Recycling Options	Management Method
	or distributed by the contractor.	
Refurbished infrastructure wastes	Manage as per construction phase for individual components.	Manage as per construction phase for individual components.
Transmission line insulators	Insulators may contain recyclable components, (e.g. fibre reinforced plastic). Options should be reviewed at the time of refurbishment.	Collected and recycled where possible, alternatively disposed at a licenced waste facility.

23.3.2.1 Regulated waste

Easement maintenance contractors may generate herbicide containers as waste. The herbicide containers (metal and plastic) in most cases can be recycled through the herbicide manufacturers. If the containers are not accepted back by the manufacturers, they are disposed of at a landfill licensed to accept this type of waste.

Each switching station may include an amenities building, which will be fitted out with a kitchenette and ablution facilities. Waste produced at these ablutions facilities will be captured in a septic tank or septic system and is considered to be a regulated waste in accordance with Schedule 7 of the EP Regulation. Therefore, these facilities will require regular servicing and all waste transport must be undertaken by a licensed regulated waste transport contractor, with waste tracking certificates to be completed. Regulated wastes must only be disposed of at an appropriately licensed facility (e.g. sewage treatment plant).

23.3.2.2 Wastewater

Minimal wastewater is produced during the operation and maintenance phase with the switching station ablution facilities holding the majority of water consumed (Section 23.3.2.1).

23.3.2.3 Operation and maintenance waste management plan

A detailed Waste Management Plan is to be developed prior to operation and maintenance, including all actions needed to effectively implement the waste management hierarchy and a waste monitoring program. The requirements of the waste management plan are detailed in Appendix B Environmental Management Plan.