

CrossRiver*Rail*



Appendix H Waste

Cross River Rail

APPENDIX H

Waste Inventory

JULY 2011

Appendix H Waste Inventory

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources Activity and/or Location		Waste Generation Phase Construction/Operation	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
Non-Regulated Waste	Organic Products	Green waste	Vegetation removal/land clearing for rail infrastructure and access, landscape maintenance	Construction/Operation	Temporarily stockpiled on or off site prior to mulching/reuse	Mulched and reused in landscaping or as soil treatment measures	None required - reuse onsite as mulch and for rehabilitation works. Surplus material to BBC green waste facility or commercial operator for mulching/composting	If not handled or stored properly, potential to spread weed, potential fire hazard. If disposed to landfill contributes to methane generation	
		Cardboard/paper	Construction work sites (office, kitchen, stores)	Construction	Colour coded recycling bins provided	Separation by individual disposers	Removal by waste contractor for recycling	With in landfills decomposing paper products generate methane which is a greenhouse gas	
	Food scraps/kitchen waste	Stations (public areas, offices and retail areas)	Operation	Colour coded recycling bins provided at station concourse areas for public and in offices	Separation by individual disposers	Removal by waste contractor for recycling	Removal by waste contractor for recycling	Manufacturing of recycled paper uses less water and energy and reduces the need for virgin feedstock.	
		Construction work sites (kitchen)	Construction	Colour coded food scrap bins, worm farm or composting bin	Separation by individual disposers	Removal by waste contractor for composting. Alternatively landfill if insufficient source separation	Removal by waste contractor for composting. Alternatively landfill if insufficient source separation	Potential odour production and vermin attraction if not handled appropriately. If landfilled contributes to greenhouse gas emissions from landfills.	
	Inert materials	Stations (public areas, offices, retail areas and food outlets)	Operation	Colour coded food scrap bins, worm farm or composting bin. Consider providing communal bin for food retailers	Separation by individual disposers	Removal by waste contractor for composting. Alternatively landfill if insufficient source separation	Removal by waste contractor for composting. Alternatively landfill if insufficient source separation	Odour production and vermin attraction if not handled appropriately. If landfilled contributes to the greenhouse gas emissions from landfills	
		At grade construction	Construction	Temporarily stockpiled on or off site for reuse	Soil amelioration may be required prior to reuse ie application of gypsum, minerals etc	None required. Surplus material to commercial operator provided certified as not contaminated	None required. Surplus material to commercial operator provided certified as not contaminated	If not stored or handled appropriately contribute to siltation or drainage, waterways/creeks	
	Construction and Demolition Waste	Ballast	Track realignment and construction	Construction	Stockpiled	Reuse on rail corridor	Ballast storage area	Reusing of ballast aids in the reduction of material quarried for more ballast.	
			Demolition and construction activities	Construction	Segregated into skips/stockpiles specific to concrete waste / concrete wash bays	Crushed/processed/broken up and used as fill in bulk earthworks, drainage material, pipe bedding, erosion control, pavements, roads etc	Reuse on site or removal by waste contractor for recycling	Unnecessary use of landfill capacity if disposed to landfill. Runoff from concrete truck wash bays can increase alkalinity of surfacewater. This water needs to be contained and managed appropriately. Crushing concrete has potential to generate dust and noise emissions.	
	Construction and Demolition Waste	Asphalt from roads, leftover from road extensions	Construction and demolition activities	Construction	Segregated asphalt types into skips or stockpile areas	Mix with new asphalt during production of hot mix paving for road use, pot holes, and low use trafficable roads (may need to be done offsite)	Removal by waste contractor for recycling and reprocessing	Unnecessary use of landfill capacity if disposed to landfill. Reuse aids in reduction of need for more bituminous/asphalt product	
			Construction and demolition activities	Construction	Segregated into skips specific to timber off cuts	Sorting to identify timber suitable for reuse in various construction activities	Removal by waste contractor for recycling	Unnecessary use of landfill capacity if disposed to landfill. Reuse aids in reduction of need for more timber products. Plywood and Particleboard are timber products bonded with adhesives (resins) generally not suitable for composting. Possible refuse derived fuel at appropriately licensed facilities.	
Construction and Demolition Waste	Glass - window glass, sheet glass (pallets, crates)	Material delivery	Construction	Segregated into skips specific to timber off cuts	Reduce the amount of packaging sent to the site in consultation with the suppliers	Return to supplier or recycle with other timber products	Unnecessary use of landfill		
		Construction and demolition activities	Construction	Segregated in skips specific to glass	Segregation	Removed by waste contractor for reuse/recycle	Unnecessary use of landfill		
Construction and Demolition Waste	Glass beverage containers (recyclable)	Construction work sites	Construction	Coloured coded glass recycling bins to be provided	Separation by individual disposers	Removal by waste contractor for recycling	Unnecessary use of landfill		

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources Activity and/or Location		Waste Generation Phase Construction/Operation	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
			Station operation (commuters/rail staff)	Overhead wires, underground services, construction office fit outs and maintenance					
		Glass beverage containers (recyclable)	Station operation (commuters/rail staff)		Operation	Coloured coded glass recycling bins to be provided (public place recycling bins to be provided)	Separation by individual disposers	Removal by waste contractor for recycling	Unnecessary use of landfill
		Electrical cable off cuts	Overhead wires, underground services, construction office fit outs and maintenance		Construction	Segregated with scrap metals	Separation by individual disposers	Removal by scrap metal dealer	Recycling reduces need for virgin metals. Unnecessary use of landfill capacity if disposed to landfill. Recycled metals are a valuable resource.
		Electrical cable off cuts	Maintenance of overhead cables and other electrical maintenance		Operation				
		Pre-war and character houses	Demolition associated with resumed residential properties		Construction	Not applicable	Not applicable	Removal by house salvaging contractor	Recycling reduces need for virgin metals. Unnecessary use of landfill capacity if disposed to landfill. Recycled materials from heritage structures are a valuable resource.
		Other heritage structures	Demolition of heritage structures		Construction	Heritage items and building materials segregated in dedicated storage area	Not applicable	Removal by salvaging contractor or applicable government organisation for reuse	
		Lighting: Fluorescent light tubes, high intensity discharge lamps, compact fluorescent lamps, other mercury containing lamps	Construction and demolition activities		Construction	Segregated and stored for collection	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removal by a licensed waste contractor for resource recovery/recycling	Mercury containing items. Mercury is a potent neurotoxin in humans and a toxic heavy metal when accumulated in the environment
		Fittings/fixtures from dwellings and buildings - bath, toilet, sinks, taps, locks, hinges, metal fencing	Demolition activities		Construction	Segregated and stored for collection	Segregation by workers and storage in designated location	Removal by a licensed waste contractor for recycling	
		Steel off cuts, structural steel (including tracks), pipe-work, operational equipment, building sheeting	Construction/demolition activities		Construction	Ships/receptacles specific to item or direct haulage to salvager/disposal facility	Salvaged or segregated into skips specific to material	Reuse or sold to salvagers/second hand goods dealers or metal recycling contractor. End of life goods to landfill	Reusing or recycled goods reduces energy consumption in comparison with creating a product with raw materials
Metal		Copper pipes and copper electrical cables, aluminium, corrugated roofing iron	Building demolition, overhead wire removal and installation, underground services removal and installation, construction office fit outs		Construction	Ships specific to waste steel to be provided during construction	Segregation by workers and storage in designated location	Removal by waste contractor for recycling. Monetary incentives can be obtained for recycling of waste steel.	Recycling of steel aids in the reduction of mining raw materials. Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
		Aluminium beverage cans	Maintenance of overhead cables/wires		Operation	Ships/receptacles specific to waste metal	Segregation by workers and storage in designated location	Reuse/sell to scrap metal dealers	Recycling of steel aids in the reduction of mining raw materials. Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
		Pipe and conduit offcuts, plastic piping, flooring vinyl	Construction work site (workers) and station operation (commuters/station master)		Construction/Operation	Coloured coded aluminium recycling bins to be provided	Separation by individual disposers	Removal by waste contractor for recycling	Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
Plastics		Material/equipment packaging (shrink wrap/pallet wrap/bubble wrap, Poly-Styrene)	Construction/demolition activities		Construction	Segregated into plastic waste stream	Segregation into skips specific to material	Removal by waste contractor for recycling	Using recycled materials reduces energy consumption in comparison with creating a product with raw materials. Material unable to be recycled or reused will be disposed to landfill
			Materials delivery		Construction		Avoid delivery to site, then segregation	Avoid where possible then reuse/recycle	

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources Activity and/or Location		Waste Generation Phase Construction/Operation	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
			Waste Sources Activity and/or Location	Waste Sources Activity and/or Location					
		Food/beverage containers/wrappers (recyclable)	Construction work sites, stations during operation	Construction/Operation	Coloured coded recycling bins to be provided	Separation by individual disposers	Recycle		
		Food/beverage containers/wrappers (non-recyclable)	Construction work sites, stations during operation	Construction/Operation	general waste bins	None	Landfill		
	General waste	mixed waste, unsegregated, unsorted waste (not regulated waste)	Construction work sites, stations during operation	Construction/Operation	general waste bins and skips	None	Landfill		
	Liquid Wastes	Groundwater inflow	groundwater inflow into tunnel potentially mixed with tunnel washdown water	Construction/Operation	Tunnel drainage system, holding tank may be required	Treated at on-site/off-site WWTP	Discharge to appropriate surface water (if quality acceptable) or if not suitable, then to sewer. Alternatively may be suitable for reuse as washdown water or other CRR water uses to reduce potable water consumption	Minimise groundwater inflow through design measures such as water proofing, may be suitable water to reduce potable water usage of CRR	
	Liquid Wastes	Pavement/surface water /stormwater runoff from construction sites	Construction activities	Construction	Stormwater retention/detention ponds/sediment pond	Sediment/silty water pond or onsite WWTP	If suitable onsite effluent irrigation/offsite discharge to waterway otherwise connection with municipal sewage/septic tanks/discharged into waterway	Potential land and water contamination, siltation of waterways and creeks. Monitor downstream surface water offsite disposal points.	
Regulated Waste	Hazardous waste	Oil spill clean up kit materials, cleaning/ maintenance rags	Construction work sites, plant and machinery workshops	Construction/Operation	Segregated in bins/skips specific for oily rags/materials etc in accordance with AS 1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.	
		Empty plastic or metal drums/containers (recyclable)	Supply of chemicals, paint, oil, cleaning fluids etc	Construction/Operation	Store on banded pallets in accordance with AS 1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Return to supplier for reuse or licensed specialist hazardous waste contractor for offsite treatment/disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.	
	Liquid Wastes	Oils, lubricants, grease, hydrocarbons, diesel, petrol	Machinery / vehicle / rolloff/stock/track repair machines oil changes and lubrication during construction and operation	Construction/Operation	In accordance with AS 1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.	
		Paints and solvents	Painting stations/noise barriers/rail infrastructure, cleaning	Construction/Operation	Banded compound or self banded pallets	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for reuse/offsite treatment/disposal	If not handled appropriately, potential land and water contamination	
		Washdown water	Wash down of transport vehicles, construction site wheelwash	Construction	Dedicated washbay for vehicles holding tank may be required	Treated at on-site/off-site WWTP	Connection with municipal sewerage	Potential land and water contamination. Water meter on wash down water supply system - monitor water usage and subsequent washdown water treatment and disposal	
		Washdown water	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	Construction	Tunnel drainage system, holding tank may be required	Treated at on-site/off-site WWTP	Connection with municipal sewerage	Treated tunnel washdown water may be suitable for reuse onsite to reduce potable water usage of CRR	
		Pavement/surface runoff/stormwater	Construction activities	Construction	Stormwater retention/detention ponds/sediment pond	If unsuitable for offsite discharge to waterway then treated at on-site or off-site WWTP	Connection with municipal sewerage	Potential land and water contamination.	

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources Activity and/or Location		Waste Generation Phase Construction/Operation	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
			Construction/Operation	Operation					
		Sewage	Construction work sites, rollings/stock maintenance yards (Clapham Yard (south) and Mayne Yard (north)) during operation and stations during operation	Construction/Operation	Holding tanks and pumping stations	Treated at on-site (if required) or off-site WWTP	Connection with municipal sewage or septic tanks	Health impacts and surface water contamination if sewage not managed appropriately. Water meter on potable water supply - monitoring water usage.	
	Asbestos	Asbestos containing products (insulation, piping, asbestos sheeting)	Demolition activities	Construction	To be dealt with by certified contractor in accordance with the Asbestos Removal Code	Removed, hauled and disposed of by a suitably licensed waste contractor	Removal by a certified contractor in accordance with the Asbestos Removal Code	Inhalation of asbestos fibres is linked to respiratory diseases in humans. Audit asbestos identification procedures and records. Audit handling procedures of asbestos contractors.	
	Tyres	End of life tyres (Shredded/bald tyres)	Machinery and plant servicing	Construction/Operation	Segregated into stockpiles for removal off site	Segregation	Tyre recycling facility	Inappropriate handling and storage potential health and environmental concerns: fires in stockpiles can release toxic gases, pollute waterways, tyre stockpiles provide breeding habitats for mosquitoes. Audit handling and quantity of tyres used for project and confirm recovery/reuse/recycling	
	Batteries	Lead-acid; lithium hydride; Ni-Cd	Spent batteries from vehicles, construction machinery, portable equipment	Construction/Operation	Bundled compound	Segregation	Removed by a licensed contractor to a battery recycling facility or waste disposal facility licensed to receive regulated wastes	Contain lead, lead compounds and/or sulphuric acid. Lead compounds are toxic to humans and the environment. Acid is corrosive. Audit handling and quantity of batteries used for project and confirm recovery, reuse, recycling, disposal	
	Chemical	Contaminated earth/spoil	Construction within land listed on the EMR/CLR (ie rail corridor)	Construction	Stockpiled for treatment/disposal	Sampling to determine contamination levels and required treatment	Removed once disposal permit is obtained from DERM and remediation where appropriate	Leaching of the contaminants into the previously uncontaminated environment. Audit handling and quantity; validate contaminated soil removed and treated/disposed appropriately.	
	Chemical	SF6 - sulphur hexa fluoride	QR switch gear maintenance activities and Energex switch yard maintenance activities	Operation	Segregated and stored for dispatch to reprocessor	Segregation	Removed by a licensed contractor for dispatch to reprocessor	Adverse impact on ozone layer, audit appropriate handling, haulage and destination	
	Chemical	Empty drums/containers (non-recyclable)	Supply of chemicals, paint, oil, cleaning fluids etc	Construction/Operation	Storage in accordance with AS 1940 (bundled area)	Rinse in designated area on site (if appropriate), crush and puncture prior to dispatch to recycler or disposal	Removed by a licensed specialist hazardous waste contractor for offsite reuse/treatment/disposal	Land and water contamination including both surface and groundwater. Also a potential fire hazard. Audit appropriate onsite handling procedures, haulage and destination	
	Contaminated soil	Excavated contaminated material	Tunnel/underground station construction	Construction	Stockpiled or direct haulage to disposal facility in accordance with site management plan	None	Removed by a licensed specialist waste contractor in accordance with site management plan for offsite treatment or disposal to landfill	Leaching of the contaminants into the previously uncontaminated environment. Audit handling and quantity, validate contaminated soil removed and treated/disposed appropriately.	
	Contaminated soil	Sediment in sediment retaining structures - contaminated with hydrocarbon or heavy metal (or other) pollutants	Maintenance of drainage structures or sediment ponds	Construction/Operation	Bundled stockpile for treatment/disposal or direct haul to waste disposal facility	Sampling and laboratory analysis to determine contamination levels	Removed once disposal permit is obtained from DERM and remediation where appropriate	Leaching of the contaminants into the previously uncontaminated environment. Audit handling and quantity, validate contaminated soil removed and treated/disposed appropriately.	
	Contaminated soil	Acid Sulphate Soil spoil	Construction within land in ASS area (ie rail corridor)	Construction	Bundled stockpile for treatment/disposal or direct haul to spoil storage area or waste disposal facility	Lime treatment as per procedure	Treated material reuse on site or removal by waste contractor to spoil storage area	Leaching of acid into the previously uncontaminated environment. Audit handling and quantity; validate treatment effective and reused or disposed appropriately.	