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SHUTE HARBOUR
MARINA

Waste Management Plan

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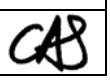
1	15 July 2008	T. Zambelli		C. Sutcliffe	

SHUTE HARBOUR MARINA DEVELOPMENT

WASTE MANAGEMENT PLAN

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TERMINOLOGY

AHD	Australian Height Datum
AQIS	Australian Quarantine and Inspection Service
AS	Australian Standard
BPEM	Best Practice Environmental Management
C&D	Construction & Demolition waste
CEMP	Construction Environmental Management Plan
Consultant	The civil and/or environmental engineering consultant employed by the Proponent.
Contractor	The party or company performing construction works relating to the proposed development and includes all employees of the Contractor and sub-contractors.
Development	Managed tourism and marina development
DA	Development Approval
EP	Equivalent Person
EPA	Environmental Protection Agency
EP Act	*Environmental Protection Act 1994*
EPP Waste	*Environmental Protection (Waste Management) Policy 2000*
ERA	Environmentally Relevant Activity
GED	General Environmental Duty
General waste	The *Environmental Protection Regulation 1998* defines "general waste" as waste other than regulated waste. Schedule 7 of this Regulation lists substances and materials regarded as regulated wastes.
MCU	Material Change of Use
Operator	Operator of the development appointed by Shute Harbour Marina Development Pty Ltd
Proponent	Shute Harbour Marina Development Pty Ltd
SBMP	Site Based Management Plan
Site	Leasehold land described as Lot 2 on Plan SP117389 and adjacent seabed where a permit to occupy has been granted.
Waste	Waste is defined as "any gas, liquid, solid or energy or a combination of wastes that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity, whether or not of value".
WMP	Waste Management Plan
Regulation	*Environmental Protection (Waste Management) Regulation 2000*

EXECUTIVE SUMMARY

Shute Harbour Marina Development Pty Ltd proposes to develop managed tourism facilities, commercial and retail outlets and a marina in Shute Harbour. Due to the inherent natural values of Shute Harbour and its location within and adjacent to the Great Barrier Reef World Heritage Area and Marine Park, it is essential that the development does not adversely impact the receiving environment.

Of particular importance to the development is the management of wastes. As such, measures to manage waste have been proposed in this Waste Management Plan (WMP). The measures detailed in the following report will ensure that waste generated from the development is managed in accordance with the *Environmental Protection Act 1994* & subordinate legislation, particularly the *Environmental Protection (Waste Management) Regulation 2000* (Waste Regulation) & the *Environmental Protection (Waste Management) Policy 2000* (Waste EPP).

The Sections of the Waste Regulation most important to this development include the responsibilities of waste generators, transporters & receivers & the transportation of waste with respect to regulated & trackable wastes.

Similarly, the Sections of the Waste EPP most important to this development include the waste management hierarchy found in Section 10 of the Waste EPP. The waste management hierarchy lists the preferred order of adoption of waste management, as follows:

1. Waste avoidance;
2. Waste reuse;
3. Waste reduction;
4. Waste recycling;
5. Cleaner production and/or energy recovery; &
6. Waste disposal.

The relevant sections of the Waste Regulation & the Waste EPP as highlighted above will be considered in this WMP. More particularly, emphasis will placed on the waste management hierarchy, statutory obligations of those involved in generating, receiving or transporting waste & the prevention of any adverse impacts on the receiving environment during the design, construction and operation of the development. The overall focus is to maintain or enhance the values of the receiving environment & adopt the principles of Best Practice Environmental Management (BPEM) for waste wherever possible.

1. INTRODUCTION

This report outlines the waste management strategies recommended for the proposed Shute Harbour Marina Resort (SHMR) by Shute Harbour Marina Development Pty Ltd (the Proponent). The report identifies opportunities for waste minimisation and addresses waste disposal options, waste storage, collection and transport.

The Proponent proposes to develop a managed tourism and marina development within Shute Harbour. The development comprises of:

- 117 individual residential tourism allotments;
- A five storey 4-star hotel;
- A 669 berth marina;
- Open parkland, boardwalk and retail outlets; &
- A three storey car park.

The Queensland Coordinator General has declared the SHMD a significant project which requires an Environmental Impact Statement (EIS) in accordance with Part 4 of the *State Development and Public Works Organisation Act 1971*. A Terms of Reference has been issued for the EIS. The EIS will form the basis of Local, State and Federal approvals for the project. Section 3.6 and 4.7 of the Terms of Reference specifically mentions the aspects of waste management that need to be addressed.

The purpose of this Waste Management Plan (WMP) is to address the requirements of the Terms of Reference by ensuring that the development does not adversely impact the environment in terms of waste handling, storage and disposal. Due to the site's location within the Great Barrier Reef World Heritage Area and Marine Park it is essential that development is conducted in a sensitive manner causing no adverse impacts to the surrounding environment.

1.1 Site Description

The SHMD site is situated on the Whitsunday Shire coastline, on Queensland's central coast. The site is located 10km south-west of Airlie Beach, 35km north-east of the Bruce Highway and a 30 minute or 2 hour drive from the Proserpine and Mackay airport, respectively.

The site is zoned for public purpose use and is ideally situated for public marina development. This is due to the marina's location being sheltered from southerly winds, currents and cyclonic weather and its close proximity to the outer islands.

The SHMD will be established on land within the coastal zone and the Great Barrier Reef World Heritage Area (GBRWHA) and encompasses 45.2 hectares of leasehold land described as Lot 2 on Plan SP117389, Mount Rooper and adjacent seabed over which a permit to occupy has been granted.

The site is bound by:

- Proserpine-Shute Harbour Road to the north, with land on the opposite side of the road forming the Conway National Park;
- An existing motel, residential dwelling and the Shute Harbour Quay Transit Terminal to the east;
- An existing marina salvage operation to the west; &

- The Great Barrier Reef Marine Park seaward of the landward boundary to the south.

The majority of the site is submerged by tidal water that overflows a narrow wavecut platform, beach and seabed with Mean High Water Springs (MHWS) identified as 1.33m AHD. Beyond this intertidal zone, the land is vacant and vegetated with remnant terrestrial vegetation. This part of the land rises in a gentle slope to Proserpine- Shute Harbour Road. The SHMD site is currently used as a mooring location for recreational boats.

The site is adjacent to areas of state significance (natural resources) as follows.

- The Habitat Protection Zone of the Great Barrier Reef Marine Park. This area occurs seaward of the coastline pursuant to the Queensland *Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004* and below mean low water pursuant to the Commonwealth *GBRMP Act.* This area is protected in order to conserve and maintain significant habitats, cultural heritage and amenity values of the marine park whilst also providing for reasonable public use.
- The Conway National Park which is a protected area under the *Nature Conservation Act 1992* and is located to the north of the site. Areas are nominated as protected areas as they provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally compatible. (World Conservation Union (IUCN) 1994 definition).
- Significant coastal wetlands (i.e. important wetlands), remnant vegetation, mangroves, seagrass and coral reef communities and coastal dunes.

The site is also adjacent to areas of state significance (social and economic) with the Shute Harbour Ferry Terminal located approximately 250m east of the site. Figure 1 illustrates the site locality.

1.2 Project Description

The Proponent intends to develop managed tourism facilities, commercial and retail outlets and a marina at Shute Harbour in North Queensland. The proposed Shute Harbour Marina Development (SHMD) includes:

- Reclaiming tidal land for the purposes of constructing a commercial, tourism and residential precinct (including internal roads and infrastructure) and a supplementary 3 storey car park;
- Construction of a solid breakwater;
- Dredging of the marina basin to - 5.2 metres AHD to accommodate a 669 berth marina;
- Dredging of the access channel into the proposed marina; &
- Operation of the marina complex.

Figure 2 provides an illustration of the development layout.

The commercial and tourism precinct will incorporate a four star tourism resort, retail, marina amenities, car park, and landscaped open space on reclaimed land in the north and north-eastern portion of the site for the development of 117 lots on reclaimed land and an isthmus projecting into the harbour.

The marina will consist of floating pontoons supported by driven piles and will include a fuel dock and sewage pump-out facility.

Civil engineering works will occur over 2 years and will include the following steps, which will be managed under a Construction Environmental Management Plan (CEMP).

- Clearing of mangrove vegetation;
- Construction of a stormwater diversion channel;
- Reclaiming land using sheet pile revetment walls and geotextile filled “sausage” wall on the western boundary of the isthmus;
- Piling works;
- Dredging of Marina Basin to a depth of RL - 5.2m using a cutter suction dredge;
- Marina fit out;
- Infrastructure works including road works and services; &
- Building works.

Ongoing maintenance dredging of the marina and access channel will be required approximately every 5 to 7 years. Spoil from maintenance dredging will be dewatered and dried on a landscaped open space area within the SHMD.

2. WASTE MANAGEMENT STRATEGIES

2.1 Legislative Requirements

2.1.1 Environmental Protection Act 1994

The Queensland *Environmental Protection Act 1994* (EP Act), predominantly administered by the Queensland Environmental Protection Agency (EPA), was enacted to protect the environment while allowing development that improves the total quality of life, now and in the future, in a way that maintains the ecological processes on which life depends, often referred to as 'ecologically sustainable development'.

The EPA uses a number of mechanisms to achieve the objectives of the EP Act, including:

- Granting Development Approvals (DA) & Registration Certificates for a Material Change of Use (MCU) for a variety of Environmentally Relevant Activities (ERAs);
- Regulating the activities operated by registration certificate holders for compliance with the EP Act & a variety of subordinate legislation, including the Regulations & Environmental Protection Policies (EPPs);
- Ensuring the activities operated by registration certificate holders administered by the EPA are conducted responsibly, practicing the General Environmental Duty (GED). More particularly, Section 319 of the EP Act establishes a duty for a person to take all reasonable and practicable measures to prevent or minimise environmental harm when carrying out an activity & this is known as the GED;
- Offering incentives (economic or otherwise) for operators of activities to implement the principles of BPEM, as stated in Section 21 of the EP Act. The EP Act states that the BPEM of an activity is the management of the activity to achieve an ongoing minimisation of the activity's environmental harm through cost-effective measures assessed against the measures currently used nationally and internationally for the activity. With respect to waste, in deciding the BPEM of an activity, the EPA Act states that regard must be had to waste prevention, treatment & disposal; &
- Where necessary, using a variety of statutory tools to enforce the legislation administered by the EPA, including issuing a Penalty Infringement Notice (PIN), an Environmental Protection Order (EPO) or requiring an Environmental Evaluation (EE) to be conducted, where issues of non-compliance with the relevant legislation are identified.

2.1.2 Environmental Protection (Waste Management) Regulation 2000

The regulatory requirements concerning waste management are provided within the within the EP Act and *Environmental Protection Regulation 1998* & also in the Waste Regulation.

The Waste Regulation allows provision for the following:

- Offences for littering, waste dumping, unlawful disposal of hypodermic needles and unlawful activities at waste facilities;
- A waste tracking system that requires certain information to be submitted to the EPA regarding waste generation, transportation and disposal within Queensland and interstate, including provisions for reporting on regulated wastes;
- Responsibilities for waste handlers (including waste generators, transporters & receivers);
- A procedure for approval of wastes for beneficial reuse;

- Approval processes for beneficial use of wastes; &
- Design rules for waste equipment.

2.1.3 Environmental Protection (Waste Management) Policy 2000

The Waste EPP details the waste management hierarchy & lists the most preferred options of waste management, from waste avoidance, to the reuse of waste, recycling, and energy recovery, through to waste disposal (which is the least preferred option).

Three other important concepts of the Waste EPP are:

1. The "polluter pays principle" — all costs associated with waste management should, where possible, be borne by the waste generator.
2. The "user pays principle" — all costs associated with the use of a resource should, where possible, be included in the price of goods and services developed from that resource.
3. "Product stewardship principle" — the producer or importer of a product should take all reasonable steps to minimise environmental harm from the production, use and disposal of the product.

The Waste EPP and the Waste Regulation are two of the primary legislative instruments governing waste management in Queensland.

The Waste EPP provides for the preparation of waste management programmes to minimise waste generation, promote the efficient use of non-renewable resources and promote the use of waste as a resource in order to achieve the objectives of the EP Act. The EPP Waste outlines a hierarchy of waste management options to be adopted in preparing waste management programs. This hierarchy lists waste management practices in the preferred order of adoption. These include waste avoidance as a first option, then reuse, recycling and energy recovery with waste disposal as a least preferred option.

2.1.4 Whitsunday Regional Council Local Laws

Whitsunday Shire Council Local Law No. 7 Parks Reserves and Foreshores is the main litter management law within the Shire. Local Law No. 7 provides provisions for penalties and enforcement by Council's Ranger Services for person(s) found littering. The law states that:

"A person shall not in a park –

- Do any act which would be likely to injure, displace, pollute, foul, litter, deface, or disorder a park or anything appertaining thereto or to cause waste, loss or inconvenience to the Council or its servants."

2.2 Other Requirements

Other documents which have been considered in the preparation of this report are as follows.

- National Waste Minimisation and Recycling Strategy (CEPA, 1992);
- Waste Management Strategy for Queensland, (Queensland Environmental Protection Agency (EPA), 1996) & the Draft Queensland Waste Management Strategy, yet to be enacted;
- Wastewise Construction Program; Waste Reduction Guidelines (National Heritage Trust, 2000); &

- Best Practice Guidelines for Waste Reception Facilities at Ports, Marina and Boat Harbours in Australia and New Zealand (ANZECC et.al.).

2.3 Waste Management Hierarchy

SHMR will utilise the waste management hierarchy to guide design and implementation choices in all phases of the project development and operation. Some measures will apply across the hierarchy, such as:

- Design of site development, infrastructure, and guidelines for buildings;
- Training in construction environmental best practices for construction contractors and their employees;
- Environmental best practices for commercial and retail outlets, the marina, and open space areas; &
- Covenants, restrictions, and regulations placed upon the different precincts.

More particularly, wherever possible, SMHR will seek to avoid creating waste in the first instance & use the priority of waste management techniques listed in the waste hierarchy as a guide for waste management.

2.3.1 Waste Avoidance

Waste avoidance may be achieved by preventing or reducing the amount of waste generated by an activity through process or product redesign or substitution of raw materials. Waste production may also be avoided by improving the efficiency of processes where waste is produced. During the design and operation of the SHMD, waste avoidance and minimisation practices will include the following:

- Incorporation of waste avoidance measures and sustainable building principles in to the design of the development;
- Design principles seeking efficient use of all resources in the development process and in the lifecycle of the buildings and infrastructure;
- Efficient use of non-renewable resources including improved equipment use;
- Accurate estimation of raw material quantities to avoid excessive unused materials requiring disposal;
- Selection of materials on the basis of waste minimisation (quantity of packaging etc);
- Installation of resource efficient appliances and fittings to reduce operational waste; &
- Provision of alternatives to plastic bags provided at retail outlets.

Waste avoidance provides the greatest opportunity for limiting waste during construction and operation of the development.

2.3.2 Waste Reduction

Waste reduction principles will be implemented during design, construction and operation. Opportunities for waste reduction through the design of the buildings and construction best practices will include the following measures.

- Project management control during construction.
- Management of estimating and ordering, such as material ordering, delivery, placement and tracking of materials.

- Implementation of supplier and service provider contracts which focus on environmental performance, such as “just-in-time” ordering of construction materials and supplies, reduction in packaging materials.
- Reducing toxic materials risks through material substitution.
- Retention of vegetation, when feasible, during design and construction.

2.3.3 Waste Reuse

Waste reuse refers to the further use of waste products without further processing. The promotion of multi-use containers and pallets are examples of resource conservation measures. Such measures may include the following:

- The reuse of material containers;
- Purchase in bulk to avoid individual packaging;
- Promotion of the use of container return programs such as the delivery of materials on crates that are then returned to the manufacturer for reuse;
- Mulching or composting of vegetation and other organic waste to be reused as landscaping material on the site as an effective growth medium for grass, plants & trees.

2.3.4 Waste Recycling

Waste recycling refers to the reprocessing of waste materials to produce new products. Materials should be selected on the basis of recyclability including end-of-life recyclability. Opportunities for waste recycling may include the following measures.

- Materials salvaged and reused where possible;
- Purchasing recyclable or recycled materials; &
- Separation and collection of recyclable materials.

All wastes unable to be reused on site will be collected by a recycling contractor where waste will be sorted into re-usable, recyclable and waste disposal streams.

There are options for recycling of waste stream elements at the development during construction. There is the potential for reuse or re-milling of timber materials collected from construction sites. Timber may also be reused onsite or chipped for use in landscaping.

Operators of the development may encourage waste reuse and recycling through provision of waste separation facilities and collection of recyclable materials. This element of the waste hierarchy provides the greatest opportunity for limiting waste disposed to landfill.

2.3.5 Cleaner Production

The EPP Waste defines ‘Cleaner Production’ as a program to identify and implement ways of improving a production process so that the process:

- Uses less energy, water or another input; or
- Generates less waste; or
- Generates waste that is less environmentally harmful.

Opportunities for cleaner production and best practice waste management techniques may include the following measures.

- Support to the hotel, commercial and retail outlets to incorporate cleaner production in all aspects of their operations, as well as their physical facilities;
- Sustainable building principles incorporated into the design controls and guidelines for development of each lot;
- Selection of renewable resources for construction materials, where possible;
- Inclusion of a proportion of renewable fuel sources for construction vehicles, plant and equipment;
- Provision of public transport and pedestrian pathways to reduce the reliance on motor vehicle transport;
- Reuse of greywater on large lots;
- Packaging and environmental measures used as a selection criterion for suppliers;
- Colour-coded and/or labelled wheelie bins used for recyclable waste streams such as paper, cardboard and aluminium cans; &
- Waste storage and recycling areas located and designed to blend in with the surrounding environment and will compliment the existing public place “Recycling Stations” in accordance with the “Don’t Waste the Whitsunday’s” initiative implemented throughout the Whitsunday Shire.

Sustainable building principles will promote self sufficiency at the household, community and commercial level by maximising water and energy efficiency and minimising waste generation throughout the lifecycle of each building.

2.3.6 Waste Disposal

Waste disposal refers to the final deposit of waste when the material cannot be reused or recycled, including disposal to landfill. This is considered the least preferred and final option for the management of waste and should only be used where the waste cannot be otherwise reused or recycled.

Waste for disposal will be collected and transported, using appropriately licensed waste contractors, and deposited at the Kelsey Creek Road landfill, located just 3 kilometres from Proserpine within the Whitsunday Shire. The landfill is approximately 35 kilometres from the site.

3. WASTE STREAMS

In order to facilitate the waste avoidance, reuse, reduction and recycle options of the waste management hierarchy, waste collection areas will be provided within the development for storage and segregation of waste materials. The management of some waste streams is well defined, such as colour-coded waste receptacles for paper, cardboard and general wastes.

Waste disposal is only considered when the implementation of the waste management hierarchy principles, outlined in Section 2.3 of this WMP, is not practicable. In selecting a waste disposal method, the characteristics of the waste, the transport pathway for potential contamination & the DA requirements of the proposed landfill are considered.

According to the Australian Bureau of Statistics (ABS), typically domestic waste comprises approximately 50% of the volume of waste generated and disposed to landfill, Construction and Demolition (C&D) waste consists of 25% of waste generated and the remaining 25% of waste streams are re-usable and/or recyclable.

3.1 Construction Wastes

Whenever feasible, construction will include the use of modular components, purchase of materials cut to standard sizes or pre-fabricated materials to reduce the need for off-cuts. Material choices for building construction shall include a proportion of renewable or recyclable components, although use of renewable and recyclable components shall not compromise the construction of the buildings in accordance with the relevant development codes and the Building Code of Australia.

Separate skip bins will be provided within the construction compound to facilitate waste segregation and maximise economic reuse and recycling.

Contracts for builders and suppliers shall include an environmental performance component. Contractors and suppliers will have to pre-qualify for tendering based on environmental performance and consideration of potential environmental impact of supplying the material or good. Builders and suppliers shall also be required to identify the source of the material or good, seek to provide alternatives and not just automatically use new materials, provide options for pre-fabrication, minimise packaging materials and access to “just in time” ordering.

Construction project management is also important for managing waste streams. For example, works scheduling organising trades, material delivery and placement, construction compound layout and organisation can contribute to effective reuse and minimisation of wastes.

Plastic waste will be kept to a minimum with alternatives to plastic being a selection criterion for suppliers delivering materials for construction. For example when feasible, requisitions will order metal strapping instead of plastic wrapping or shrink wrap. Any plastic waste generated will be recycled, where possible.

Fuel storage will be kept to a minimum and will be used for refuelling of equipment during construction. The storage and handling of flammable & combustible liquids, including fuels, will be conducted in accordance with *AS1940 – 2004 for the storage and handling of flammable and combustible liquids*. More particularly, care will be taken to avoid spills & any spill to land or a water & any spill will be cleaned up as soon as practicable. It should also be noted that where possible, a proportion of the fuel used in the construction vehicles, plant and equipment shall include renewable fuels and/or ethanol-based fuel.

Capital dredging of the marina basin will be conducted during construction. Approximately 737,716m^3 of dredge spoil will be generated. The dredge spoil shall be treated for potential Acid Sulphate Soils (ASS) and used as fill for the reclaimed land part of the development. The dredge spoil disposal area is approximately two (2) hectares in size.

Tailwater from the dredge spoil area may be produced during dredging activities. The tailwater treatment system will include a series of treatment ponds to be constructed within the dredge spoil disposal area on the west of the isthmus. The tailwater treatment system will enable further settlement of sediment from the tailwaters. The water will be tested, and treated if necessary to ensure the required water quality parameters are met, prior to being released to the receiving environment, namely Shute Harbour.

Any construction waste that cannot be recycled or reused and requires disposal will be transported to the Kelsey Creek Road landfill. A waste acceptance agreement must be sought from the Landfill Manager prior to dispatch of waste from the site. Records of approval will be kept on file as part of the recording requirement of this WMP, outlined in further detail in Section 5.

An inventory of wastes likely to be generated during the construction of the development is outlined in Table 1 below. Actual waste estimates are approximate and may vary from that anticipated. C&D waste generated is anticipated to be 5m^3/day based on examples of construction of marinas in Australia.

Table 1 Inventory of Solid and Liquid Wastes Produced on site during Construction

Waste Description	Anticipated Waste Volume Generated (% of total materials ordered, or otherwise specified)	Waste Storage	Waste Management Technique	Frequency of Collection
Fill and soil (not contaminated)	No surplus fill anticipated.	Dedicated stockpile location at each stage of construction located away from overland flowpaths and near the construction compound.	Reused on the site where possible.	As required.
Capital dredge spoil and tailwaters	737,716m^3	Dredge spoil shall be transferred directly from the marina basin to the dredge spoil treatment location within the development.	Treated for potential ASS and deposited within the dredge spoil disposal location. Tailwater will be collected in a sediment pond & treated with hydrated lime prior to discharge at Shute Harbour.	Capital dredging works over a 12 month period.
ASS	To be validated during construction.	Dedicated stockpile location at the construction compound located away	On site treatment and reuse as fill.	As required.

Waste Description	Anticipated Waste Volume Generated (% of total materials ordered, or otherwise specified)	Waste Storage	Waste Management Technique	Frequency of Collection
		from overland flowpaths, in accordance with the Acid Sulfate Soils Management Plan (11 January 2008).		
Timber	5%	Storage bay with separation of reusable materials from wood scrap.	Timber off cuts to be reused onsite where possible, otherwise will be disposed of at the Kelsey Creek Road landfill.	Weekly during construction.
Vegetation	Minimal	Dedicated green waste storage bay in construction compound.	Composted/mulched wherever possible.	As required.
Scrap metal	3-5%	Metal recycling skip bin in construction compound.	Metal recycling contractor off site.	Weekly during construction.
Cable and wire	1%	Metal waste segregated into metal recycling skip bin. Plastic waste segregated into dedicated plastic skip bin. Other waste not able to be reused or recycled to be placed in the general waste skip bin within the construction compound.	Metal Recycling Contractor off site. Plastic Recycling Contractor off site. Other waste disposed to Kelsey Creek Road landfill.	Weekly during construction.
Concrete, bricks, tile and rubble	5-20%	Dedicated construction waste skip bin within the construction compound.	Disposal to Kelsey Creek Road landfill or if feasible ground for reuse as aggregate.	Weekly during construction.
Plasterboard	5-20%	Dedicated construction waste skip bin within the construction compound.	Reused on site, where possible or disposed of at Kelsey Creek Road landfill.	Weekly during construction.

Waste Description	Anticipated Waste Volume Generated (% of total materials ordered, or otherwise specified)	Waste Storage	Waste Management Technique	Frequency of Collection
Packaging wastes, plastic, glass and timber	5%	Separate skip bins provided for plastic, glass and timber within the construction compound.	Recycled off site.	Weekly during construction.
Domestic and general waste, incl. organic and food waste	52%	Dedicated general waste skip bins within the construction compound.	Disposal to Kelsey Creek Road landfill & wherever possible, organic wastes will be composted or mulched.	Twice weekly during construction.
Domestic wastewater	140 litres per Equivalent Person (EP), per day[1].	Direct collection by a licensed waste contractor.	Disposal to Sewage Treatment Plant.	Continuous.
Contaminated stormwater runoff	Dependant on rain event.	Stormwater containment and treatment devices.	Containment, treatment and release as per the CEMP.	Following a rain event.
Diesel and other fuels	Unknown	Bunded drum store within construction compound.	To be collected, transported and recycled by a Fuel Recycling Contractor off site.	Monthly during construction.
Paints and other chemicals	1%	Bunded drum store within construction compound.	Disposal through Drummuster and Chemclear initiatives.	As required.
Water collected in waste storage and bunded areas.	Dependant on volume of bund.	Bunded area	Treatment to water quality objectives outlined in CEMP and then discharged, otherwise collection by an approved EPA waste contractor.	Following a rain event.
Batteries	< 1%	Undercover, in a bunded area	Transported to a battery recycling facility by a regulated waste transporter who holds a Registration Certificate & a Code of Environmental Compliance for ERA 83 regulated waste transport.	As frequently as required, after incidental receival of such waste.
Tyres	< 1%	Undercover	Transported to a tyre recycling facility by a regulated waste transporter	As frequently as required, after incidental receival of such waste.

Waste Description	Anticipated Waste Volume Generated (% of total materials ordered, or otherwise specified)	Waste Storage	Waste Management Technique	Frequency of Collection
			who holds a Registration Certificate & Code of Environmental Compliance for ERA 83 regulated waste transport.	

[1] Source: AS/NZS 1547:2000 On-site domestic wastewater management.

3.1.1 Waste Collection

Wastes will be temporarily stored in the construction compound prior to being transported to either the Kelsey Creek Road landfill or collected by an appropriately licensed waste recycling contractor. Wastes will be sorted and stored according to waste stream. It should be noted that wastes will be stored in an environmentally responsible manner, to prevent any adverse impacts to the receiving environment. More particularly:

- Incidentally received batteries will be stored in a bunded area & undercover where they are not exposed to sunlight;
- Incidentally received tyres will also be stored undercover to prevent mosquito breeding habitats developing in water stored in the tyres; &
- Vegetation waste will be stored in a protected area in the dedicated green waste storage bay away from any water to prevent the migration of excess Total Organic Carbon (TOC) in contaminated stormwater entering a water.

The Contractor will be responsible for entering into a waste agreement with appropriately licensed waste contractors. Timber pallets and packaging material shall be collected and returned to the suppliers at the time of the next delivery.

3.1.2 Waste Transportation

The majority of wastes that cannot be reused or recycled on site will be transported to the Kelsey Creek Road landfill. The distance of the landfill to the site is approximately 35 kilometres, therefore the travel cost and time will not significantly impact on the reuse, reduction, recycling and disposal of wastes.

The Waste Regulation provides the framework for waste tracking in Queensland of “trackable wastes”. Trackable wastes are outlined in Schedule 1 of this Regulation.

Wastes are tracked and reported to the EPA in order to protect the environment by minimising the impact of waste on the environment and the community. A waste tracking system enables regulatory agencies to track waste from the place of generation to the place of storage, recycling, treatment or disposal. The objectives of waste tracking are to ensure that all parties involved with the management of the waste take a responsible attitude towards this management and to ensure that the waste is transported and managed appropriately to prevent environmental harm from occurring.

Waste generators, transporters and receivers provide information to the EPA about the transport of trackable waste by paper or electronic systems.

The EPP Waste outlines the prescribed information to be recorded when transporting regulated and trackable waste, such as:

- The type of waste;
- The vehicles, storage tanks, containers and other equipment used for the transportation;
- Sampling of the waste;
- Monitoring and reporting of matters concerning the waste;
- Emergency response planning; &
- Keeping of records about the transportation.

Wastes generated by the supply and delivery of raw materials and wastes disposed off site will be minimised. As far as practicable, the transport of raw materials, products and waste will involve full loads, to minimise fuel usage.

All outgoing wastes from the site will be transported by road using appropriately licensed waste transporters and a copy of the waste tracking documentation will be completed and retained, as per the WMP outlined in Section 5. All waste loads transported off site will be covered.

3.1.3 Waste Disposal

All wastes will be segregated and stored according to waste streams within the construction compound before transportation to the Kelsey Creek Road landfill. Kelsey Creek Road landfill is operated by North West Services and lawfully allowed to accept solid wastes. Alternatively there are licensed waste collectors in the region that can collect, segregate and recycle most waste streams generated during the construction of the proposed development, such as JJ Richards.

No burial of wastes will occur on site. All domestic and general waste that cannot be recycled will be disposed of at Kelsey Creek Road landfill within the Whitsunday Shire. No hazardous waste will be disposed of on the site. Waste management disposal options for construction wastes are identified in Table 1, Section 3.1.

Waste disposal records will be retained as part of the Waste Management Plan, outlined in further detail in Section 5 of this report.

3.2 Operational Wastes

Domestic and general waste will be the largest waste stream generated during operation of the development. The remaining wastes streams generated include recyclable wastes such as paper, cardboard, plastics, glass, metals and organic waste.

Colour-coded and/or labelled wheelie bins will be provided to segregate and collect these wastes streams. These bins will be located at temporary waste compounds to be designed and located at each residential lot, marina, hotel, commercial and retail outlet. These temporary bin compounds will be designed and located to ensure they are easily accessible from each part of the building and from the collection point, including adequate access and manoeuvring space of at least an area equivalent to the combined footprint of the bins.

Plastic waste will be kept to a minimum and retail outlets will be encouraged to supply alternatives to plastic bags, such as biodegradable or cotton bags. Any plastic waste generated will be recycled, where possible.

Based on siltation modelling of Shute Harbour conducted in January 2008 by Cardno Lawson and Treloar, maintenance dredging will be required every 5 - 7 years. Dredging of the navigational channel and marina basin will generate 3000m^3 of dredge spoil per annum.

The dredge spoil location for maintenance dredging will be on the west of the isthmus, when it is not being used for maintenance dredge spoil treatment and disposal it will be used as open parkland.

Use of hazardous chemicals will be minimal however some cleaning and other chemicals may be used during cleaning and maintenance of the hotel and other open space areas. Storage and handling of hazardous and other chemicals will be conducted in accordance with the relevant Australian Standards.

An inventory of wastes likely to be generated during the operation of the development is outlined in Table 2 below. Actual waste estimates may vary from that anticipated.

Table 2 Inventory of Solid and Liquid Wastes Produced on Site during Operation

Waste Description	Anticipated Waste Volume Generated	Waste Storage	Waste Management Technique	Frequency of Collection (during normal operation)
Domestic and general waste	1.05 tonnes per person, per annum[1]	Individual general waste bins at each residence, business and at temporary bin compounds at commercial, retail and tourist sites.	To be collected and transported to Kelsey Creek Road landfill by the approved Council waste contractor.	Weekly.
Organic and food waste		Promotion of composting at individual residence/premises, where feasible.	Reuse as landscaping material and soil conditioners within the development.	As Required.
Maintenance dredge spoil and tailwaters	3000 - 9000m^3 every two-three years.	Dredge spoil shall be transferred directly from the marina basin to the dredge spoil disposal location on the isthmus.	Treated for potential ASS and deposited within the dredge spoil disposal location. Tailwater will be collected in a sediment pond & treated with hydrated lime prior to discharge at Shute Harbour.	Every two to three years.
Green waste	Minimal	Various locations within the development.	To be mulched and reused on site, where feasible. Alternatively, it will be collected and transported to the Kelsey Creek Road landfill.	As required.

Waste Description	Anticipated Waste Volume Generated	Waste Storage	Waste Management Technique	Frequency of Collection (during normal operation)
Domestic wastewater	140 litres per EP, per day[2]	Direct collection by a licensed waste contractor.	Disposal to Sewage Treatment Plant.	Continuous.
Metals	0.75 tonnes of domestic recyclable waste per person, per annum[1]	Dedicated metal recycling bins at various locations within the development.	Recycling contractor off site.	Fortnightly, or as required.
Plastics		Domestic recycling bin provided at each residence/premises. Non-domestic recycling bin(s) provided within each precinct.	To be collected and transported off site to be recycled by a licensed waste contractor.	Fortnightly, or as required.
Glass		Domestic recycling bin provided at each residence/premises. Non-domestic recycling bin(s) provided within each precinct.	To be collected and transported off site by a licensed waste contractor.	Fortnightly, or as required.
Paper and cardboard		Domestic recycling bin provided at each residence/premises. Non-domestic recycling bin(s) provided within each precinct.	To be collected and transported off site for recycling wherever possible by a licensed waste contractor.	Fortnightly, or as required.
Diesel and other fuels	Marina fuel storage not more than 100,000 litres.	Storage in bunded storage areas within the marina.	Commercial quantities to be collected by a licensed recycling contractor.	As required.
Hazardous and other chemicals	Not known.	Storage in bunded storage areas within the marina and hotel general maintenance area.	To be collected and transported off site by a licensed waste contractor to a facility lawfully allowed to accept such wastes.	As required.
Marina wastes (sewage and bilge water pump-out facilities)	Dependant on throughput.	Storage tank provided at the marina.	To be emptied by an appropriately licensed waste contractor.	Not less than weekly, or as required during busy periods.
Contaminated stormwater runoff	Dependant on rain event.	Stormwater containment and treatment devices.	Containment, treatment and release as per the SBMP.	Following a rain event.
Water collected in waste storage and bunded areas	Dependant on volume of bund.	Bunded area.	Treatment to water quality objectives outlined in SBMP	Following a rain event.

Waste Description	Anticipated Waste Volume Generated	Waste Storage	Waste Management Technique	Frequency of Collection (during normal operation)
			and then discharged, otherwise collection by an EPA licensed waste contractor.	
Quarantine waste	Unknown	Dedicated waste storage area, separated from other wastes.	Disposal in accordance with Australian Quarantine and Inspection Service (AQIS) approval.	As required.
Batteries	< 1%	Undercover, in a bunded area	Transported to a battery recycling facility by a regulated waste transporter who holds a Registration Certificate & a Code of Environmental Compliance for ERA 83 regulated waste transport.	As frequently as required, after incidental receival of such waste.
Tyres	< 1%	Undercover	Transported to a tyre recycling facility by a regulated waste transporter who holds a Registration Certificate & Code of Environmental Compliance for ERA 83 regulated waste transport.	As frequently as required, after incidental receival of such waste.

[1] Source: Australian Bureau of Statistics (4613.0 – Australia's Environment: Issues and Trends, 2006).
[2] Source: AS/NZS 1547:2000 On-site domestic wastewater management.

3.2.1 Waste Collection

It is anticipated that commercial waste collection operations will be utilised during construction and operation for the collection and appropriate disposal of generated commercial waste. It will be the responsibility of the construction contractor or commercial operation to engage the commercial waste collection service.

Domestic waste collection will be conducted by JJ Richards on behalf of the Local Government as part of domestic waste collection services. Domestic waste will be collected weekly with recyclables collected fortnightly.

3.2.2 Waste Transportation

The Waste Regulation provides the framework for waste tracking in Queensland of "trackable wastes". Trackable wastes are outlined in Schedule 1 of this Regulation.

Wastes are tracked and reported to the EPA in order to protect the environment by minimising the impact of waste on the environment and human health. A waste tracking system enables regulatory agencies to track waste from the place of generation to the place of storage, recycling, treatment or disposal. The objectives of waste tracking are to ensure that all parties involved with the management of the waste take a responsible attitude towards this management and to ensure that the waste is transported and managed appropriately so as to prevent environmental harm.

Waste generators, transporters and receivers provide information to the EPA about the transport of trackable waste by paper or electronic systems.

The EPP Waste outlines the prescribed information to be recorded when transporting regulated and trackable waste, such as:

- The type of waste;
- The vehicles, storage tanks, containers and other equipment used for the transportation;
- Sampling of the waste;
- Monitoring and reporting of matters concerning the waste;
- Emergency response planning; &
- Keeping of records regarding the transportation.

Wastes generated by the supply and delivery of raw materials and wastes disposed off site will be minimised. As far as practicable, the transport of raw materials, products and waste will involve full loads, so as to minimise fuel usage.

All outgoing wastes from the site will be transported by road using appropriately licensed waste transporters and a copy of the waste tracking documentation will be completed and retained, outlined in further detail in Section 5. All waste loads transported off the site will be covered, where practicable.

3.2.3 Waste Disposal

All wastes will be segregated and stored according to waste streams before their transport to the Kelsey Creek Road landfill. All wastes will be segregated and stored in colour-coded and/or labelled bins according to waste streams at the facility.

No burial of wastes will be conducted on the site. All domestic and general waste that cannot be reused or recycled will be disposed of at Kelsey Creek Road landfill within the Whitsunday Shire. No hazardous waste will be disposed of on the site. Waste management disposal options for operational wastes are identified in Table 2, Section 3.2.

Waste disposal records will be retained as part of the Waste Management Plan, outlined in further detail in Section 5 of this report.

Each residential lot will be provided with a 240 litre wheelie bin for general refuse and a 240 litre wheelie bin for recyclables, such as paper, cardboard, aluminium cans and glass. Residential lots will be serviced by a kerbside collection where general refuse will be collected weekly and recyclables collected fortnightly.

Apartment buildings will have collection and storage areas for household waste and recyclables, at a frequency to be nominated by the Body Corporate.

Commercial and retail premises will need to enter into a waste arrangement with a licensed waste contractor for collection and disposal of general waste and recyclables. Each business will be responsible for their own waste management.

4. POTENTIAL IMPACTS AND MITIGATION MEASURES

The SHMR site is located within Shute Harbour, adjacent to the Conway National Park, and Great Barrier Reef World Heritage Area and Marine Park. Some risks to the environment may occur as a result of waste management activities. The environmental risks range from potential environmental harm, such as pollution of waterways, to environmental nuisance, such as odour complaints. The potential impacts of the proposed development on the receiving environment are listed below:

- Waste spills and loss of containment of waste could result in impacts to soils, surface water, groundwater, terrestrial and marine fauna, and human health;
- Flooding of temporary waste storage areas may cause dispersal of waste;
- Litter can kill aquatic life through ingestion or choking;
- The chemical components of litter can also pollute the water which may be harmful to aquatic organisms;
- Litter can reduce the visual amenity of a place;
- Plastic waste may cause mortality to marine fauna;
- Waste spills and related incidents could arise from transportation of waste on and off the site;
- Cross contamination of wastes would make wastes unsuitable for reuse and/or recycling, thus increasing the quantity of waste being disposed of to landfill;
- Generation of wastes may increase pressure on regional landfills, requiring early closure and replacement;
- Odour and noise generation from waste handling and storage; &
- Propagation of pests, vermin and disease vectors.

To minimise the impacts outlined above, the following mitigation measures will be implemented during construction and operation of the proposed development:

- Wastes to be managed in accordance with the Waste Regulation;
- Waste avoidance, minimisation, reuse and recycling principles to be utilised wherever possible, especially those provided in Section 2 of this report;
- Wastes to be segregated to assist in recovery and recycling;
- Construction wastes to be reused and recycled, wherever possible;
- No disposal of solid or hazardous wastes on site;
- Construction materials will be fabricated off site where possible to minimise the generation of waste;
- In order to reduce waste volumes, where possible, all wastes generated from construction and operational activities will be reused on site or sent to recyclers. Disposal to appropriately licensed waste facilities will only be undertaken where reuse or recycling is not possible or feasible;
- Where appropriate waste generators will be encouraged to segregate wastes at the source to minimise cross contamination of waste streams;
- Waste will only be transported by appropriately licensed waste transporters;
- Colour-coded and/or labelled bins will be provided for each waste stream to assist in the segregation of wastes and maximise waste recovery and recycling;
- Alternatives to plastic bags to be provided at retail outlets;

- Design of marina waste facilities will be in accordance with 'Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand';
- The marina will be operated with regard to the Marina Industries Association of Australia (MIAA) 'Clean Marinas' accreditation programme;
- Records of waste quantities removed from the site will be maintained;
- A waste audit will be conducted when the development is operational and when each new stage of development becomes operational. The purpose of the waste audit will be to identify:
    - Types and volumes of wastes generated;
    - Further opportunities for waste avoidance, reuse and recycling;
    - Waste storage and segregation methods;
    - Waste treatment and disposal techniques; and
    - Destination of waste materials.
- A Waste Management Plan will be implemented.

A summary of the wastes generated during construction and operation of the development and their proposed waste management technique is provided in Table 3.

Table 3 Waste Management Summary

Waste Source	Waste Type	Waste Management Technique
Construction	Fill and soil (not contaminated)	Reuse, as fill
Construction	Dredge spoil	Reuse, as fill
Construction	Tailwaters from dredge spoil disposal.	Treatment and discharge or disposal
Construction	Acid Sulphate Soils	Treatment and reuse as fill
Construction	Timber	Reuse
Construction	Vegetation	Mulching/composting wherever possible
Construction	Scrap metal	Recycle
Construction	Cable and wire	Recycle or disposal
Construction	Concrete, bricks, tiles and rubble	Reuse as crushed aggregate, where feasible
Construction	Plasterboard	Reuse or disposal
Construction	Packaging wastes, plastic, glass and timber	Recycle
Construction	Domestic and general waste	Disposal
Construction	Domestic wastewater	Disposal
Construction	Contaminated stormwater runoff	Treatment and discharge, or disposal
Construction	Diesel and other fuels	Recycle
Construction	Paint and other chemicals	Disposal

Waste Source	Waste Type	Waste Management Technique
Construction	Water collected in waste storage and bunded areas	Treatment and discharge, or disposal
Operation	Domestic waste	Disposal
Operation	Organic and food waste	Compost, wherever possible
Operation	Maintenance dredge spoil	Treatment
Operation	Green waste	Compost/mulch, wherever possible
Operation	Domestic wastewater	Disposal
Operation	Metals	Recycle
Operation	Plastics	Recycle
Operation	Glass	Recycle
Operation	Paper and cardboard	Recycle
Operation	Diesel and other fuels	Recycle
Operation	Hazardous and other chemicals	Disposal, through approved technology
Operation	Marina sewage pump out	Disposal
Operation	Contaminated stormwater runoff	Treatment and discharge, or disposal
Operation	Water collected in waste storage and bunded areas	Treatment and discharge, or disposal
Operation	Quarantine waste	Disposal in accordance with AQIS guidelines.

5. WASTE MANAGEMENT PLAN

This Waste Management Plan (WMP) has been prepared to prevent the risk of environmental harm occurring as a result of waste generation during the construction and operation of the proposed development.

A waste management component has been incorporated in to a Construction Environmental Management Plan (CEMP) and Site Based Management Plan (SBMP) for Environmentally Relevant Activities. The CEMP and SBMP have been prepared to support the Environmental Impact Statement and will be implemented prior to commencement of construction and operation, respectively. This WMP should be read in conjunction with the CEMP and SBMP.

In developing the waste management component of the CEMP and SBMP the following issues were considered:

- The waste management hierarchy;
- To address waste reduction at source (eg, orders to size, purchases in bulk);
- To encourage trials into alternative sustainable packaging techniques (eg, metal strapping in preference to shrink wrap, paper packaging as opposed to plastic, and shredded paper as opposed to foam);
- The use of reusable delivery and storage containers where possible;
- Efficient ordering systems to ensure minimal wastage;
- Reducing waste deposited in landfills; &
- The Marina Industries Association of Australia (MIAA) 'Clean Marinas' accreditation programme.

5.1 Components of the Waste Management Plan

Objectives: the specific goals that are set for waste management to be achieved with regard to the rationale.

Tasks/Actions: the measures to be implemented to manage the identified impacts and to implement the objectives.

Performance Indicators: the criteria to be measured to ensure achievement of the objectives for waste management.

Frequency/Timelines: the timeframe in which each of the tasks or actions is to be completed.

Responsibility: Assignment of responsibility for implementing measures, monitoring impacts and reporting.

Monitoring and Reporting: the required monitoring and reporting arrangements for implementation measures.

Corrective Actions: the measures to be undertaken if the objectives are not met as identified by monitoring for improvement of environmental performance.

5.2 Objectives

The following objectives will be adopted for management of waste during development.

- To ensure procedures are implemented during construction to minimise environmental impacts and properly dispose of pollutants and waste materials arising from construction processes;
- To employ waste avoidance and reduction strategies during construction and operation to eliminate waste at the source by reviewing site procedures and purchase of materials;
- To implement measures for evaluation of all waste stream elements and identification of wastes that can be reused or recycled;
- To adopt implementation measures during construction and operation of the development to minimise the volume of waste sent to landfill and to prevent wastes entering the stormwater drainage network; &
- Prevent litter entering waterways and the marine environment.

5.3 Tasks / Actions

The following waste management tasks and actions shall be implemented during the construction and operation of the development.

5.3.1 Documentation

Construction

Construction Contractors shall maintain a regular waste removal schedule and document all waste disposal activities. These activities shall be listed on a Waste Register Form, an example of which is provided in Appendix A of this WMP.

Operation

The Operator of the development shall maintain a regular waste removal schedule and document all waste disposal activities. These activities shall be listed on a Waste Register Form, an example of which is provided in Appendix A of this WMP.

Marina

The Marina Manager shall maintain a regular waste removal schedule and document all waste disposal activities, especially in relation to the marina sewage pump out facilities. These activities shall be listed on a Waste Register Form, an example of which is provided in Appendix A of this WMP. Other important documentation for marina management should include maintenance procedures, cleaning procedures including frequency and cleaning agents used.

5.3.2 Training and Education

Construction

Waste management training shall be included in the site induction prior to personnel commencing work in the development area to inform all staff and contractors of the relevant policies and legal requirements; the potential impacts of waste spillage and dispersal; the correct procedures for separation and appropriate disposal of waste materials and the roles and responsibilities of all parties.

The Contractor shall provide appropriate methods for the collection and lawful disposal of any wastes generated at the site during the works. Instructions to site workers for the handling, storage, and disposal of each type of waste shall be provided by the Contractor in an induction and training programme during both the site preparation and construction phases. The Contractor shall maintain records of training.

All contractors and staff shall be provided with a copy of this WMP and shall be informed of the location of waste holding and collection areas on the site.

Operation

The Operator of the development shall provide adequate information to residents on the opportunities and procedures for waste minimisation and recycling on the site and the handling of household toxic materials.

The waste receptacles provided for each lot will be colour-coded and/or labelled to identify the waste types that can be deposited in each bin.

Waste education, litter reduction and clean-up initiatives such as Clean-Up Australia Day, Don't Waste the Whitsunday's and Keep Australia Beautiful campaigns will be implemented at the site.

Residents and commercial operators will be encouraged not to use plastic bags.

Marina

Marina management and staff, both permanent and casual, must be trained in all facets of marina operations, such as for the operation of piping, pumping, tank arrangements and tank cleaning methods. Other aspects of marina operation include emergency response procedures, safety, hazard prevention, fuel spillage, sewage and pollution, navigation, community amenity and marina user regulations.

5.3.3 Separation of Waste Materials

Construction

All waste materials shall be assessed for the ability to be reused or recycled to minimise the volume of waste requiring disposal. Separate waste bins shall be provided for reuse of these waste materials. Waste materials that cannot be reused on the site shall be separated into designated storage bins for collection. Disposal of waste shall be considered as the last option, when all other strategies in the hierarchy of waste management have been considered.

Temporary waste storage bins shall be provided within the construction compound for each stage of construction prior to transporting the waste to the Kelsey Creek Road landfill.

Waste storage bins shall be colour coded and/or labelled for separation of wastes into categories. Australian Standard *AS4123.7 – 2006 Mobile waste containers Part 7: Colours, markings and designation requirements* specifies the appropriate bin and/or label colour for the associated waste streams.

General waste	Dark Green or black bin with a red lid
Green waste (for mulching)	Dark green or black bin with a lime green lid
Plastics	Dark green or black bin with an orange lid
Paper and cardboard	Dark green or black bin with a blue lid

Glass	Nature green bin with a yellow lid
Aluminium cans	Yellow
Metal	Dark green or black bin with a light grey lid
Organic and food waste (for composting)	Dark green or black bin with a burgundy lid
Electronics	Dark green or black bin with a white lid

Adequate signage shall be provided for all waste storage bins and disposal skip bins.

Large items of waste that do not fit into waste receptacles shall be removed as soon as is practicable and not accumulate on site.

Domestic litter generated by construction workers shall be delivered to the designated skip bins within the construction compound on a daily basis.

No waste materials shall be buried or burnt at the site.

Designated skip bins shall be provided within the temporary waste compound for separation of:

- Domestic wastes of staff and contractors;
- Waste materials intended for disposal; &
- Paper, cardboard, unusable timber, glass, metals and plastic for recycling.

Operation

The Operator of the development shall provide colour-coded and/or labelled wheelie bins at each lot for the separation of domestic waste and recyclable materials generated as a result of operation activities. Information shall be provided to residents and visitors on the appropriate materials and methods for recycling. The colour of the bin and/or label will follow *AS4123.7 – 2006 Mobile waste containers Part 7: Colours, markings and designation requirements* outlined above.

Bin compounds at each lot are to be designed and landscaped to blend in with the environment. Bin compounds shall be located so unobstructed access is available for manoeuvring bins for waste collection.

The Operator shall ensure that a waste contractor is engaged to manage commercial wastes. The Local Government will provide waste collection services for domestic premises which will ensure that the waste from each lot is collected and transported to the Kelsey Creek Road landfill.

Marina

Waste storage facilities will be provided in accordance with the 'Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand'.

Bin compounds provided at the marina will be designed and landscaped to blend in with the environment. Bin compounds shall be located so unobstructed access is available for manoeuvring bins for waste collection.

The Marina Manager shall ensure that a waste contractor is engaged to manage all wastes produced in the marina.

5.3.4 Waste Storage and Processing

Construction

During construction, the temporary bin compounds shall be located in an appropriate area away from overland flowpaths and sensitive environments. The construction compound waste storage bins shall be collected weekly.

Enclosed bunded storage facilities are to be provided for fuels and other chemical wastes. Dangerous and hazardous materials shall not be disposed of into general waste bins or disposed of on the site.

All dangerous and hazardous waste materials shall be listed on the Waste Register Forms provided in Appendix A and appropriate storage and disposal procedures shall be identified. Waste shall not be incinerated at the site.

Waste materials such as concrete, plaster or paint shall be allowed to dry and removed to a facility licensed to receive the waste. Solid wastes shall be stored in suitable refuse containers to prevent contamination of stormwater. Waste containers shall be located in accessible areas.

Material stockpiles shall be located within the temporary construction compound and shall not be placed in surface water overland flowpaths.

A spill response procedure shall be established and appropriate cleanup materials provided where construction activities are undertaken.

All waste shall be removed from the site by a licensed waste contractor.

All regulated waste as defined by the EP Regulation shall be removed by a regulated waste transporter approved by the EPA. More particularly, the regulated waste transporter must hold a Registration Certificate to which a Code of Environmental Compliance for ERA 83 regulated waste transport relates. Waste tracking shall be undertaken to provide details of waste classification and volume, date of removal, transporter details and proposed destination, for all trackable wastes transported.

Operation

During operation, all domestic waste will be transferred to the Kelsey Creek Road landfill by the Whitsunday Shire Council appointed licensed waste contractor (e.g. JJ Richards).

Waste storage bins will be provided for the waste streams identified in Section 3, additional bins may be required during peak periods. General waste and recyclable waste generation rates per person per annum are anticipated to be 1.05 tonnes and 0.75 tonnes, respectively. The population on the site for the whole development is estimated to be between 493 and 623 people.

All wastes will be processed off the site.

The Operator shall ensure there are no unnecessary obstructions to waste and recycling collection vehicles on the site. The bulk waste skip bins shall be positioned so that the waste collection vehicles have unimpeded access to the waste skip bins. The collection shall be twice per week during normal trading, and every second day during peak periods.

Marina

During operation, all waste will be transferred to the Kelsey Creek Road landfill by a licensed waste contractor.

Waste storage bins will be provided for the waste streams identified in Section 3, additional bins may be required during peak periods. All wastes will be processed off the site.

The Marina Manager shall have due regard to the waste management hierarchy.

The Marina Manager shall provide appropriate methods for the collection and lawful disposal of any wastes produced at the site during operation including:

- The location of waste receptacles in designated areas suitable for collection by waste disposal vehicles;
- All waste to be collected and disposed of by appropriately licensed contractors at appropriate intervals;
- The storage of solid waste in suitable refuse containers to prevent contamination of stormwater, and access to vermin and birds;
- Waste containers located in convenient locations to encourage use; &
- Facilities for the reception of wastes shall include provision for a range of materials likely to be produced, and are well labelled and sign posted.

Facilities for the washing of waste containers are to be provided. Any waste container washing will be collected and treated before discharge.

Facilities for the segregation of wastes shall be provided to facilitate the reuse or recycling of waste materials.

Facilities for waste collection are to be maintained in a serviceable condition.

Implement a strict “no discharge in marina” policy and inspection program.

Hull and propeller cleaning is not allowed in marina waters to prevent the possible release of contaminants or introduced marina pests.

The operation of hardstands and use of antifouling products must be in accordance with the Australian and New Zealand Environment and Conservation Council (ANZECC) Code of practice (1997). Codes recommend that all antifouling paints be treated as contaminated waters.

Any hardstand must be operated to strict environmental requirements documented in the ANZECC *Code of Practice for Antifouling and In-water Hull Cleaning and Maintenance*.

In-water cleaning or scrubbing of hulls painted with biocide-containing antifouling paints for the purpose of delaying dockings or attempting to rejuvenate depleted antifouling coatings must not be undertaken. All boat maintenance and repairs must be undertaken in such a way that debris and waste is kept to a controlled minimum and is collected and disposed of in an environmentally responsible manner.

Site-specific housekeeping rules shall be clearly displayed in the marina office and a copy shall be provided to each customer, as amended from time to time.

The Marina Manager shall ensure that all personnel are appropriately trained in the correct techniques for responsible waste disposal.

Marina Sewage Pump-out Facility, Bilge Water and Oil

A pump out facility for the reception of sewage and bilge water will be provided in the marina. It will be maintained to ensure it is working efficiently. Other facilities such as clean and adequate land-based site ablution, showers and laundry facilities will also be made available.

A waste oil collection and storage will also be provided, which will be regularly emptied by a licensed waste oil recycling contractor.

Contracts for marina berths, storage and mooring agreement will contain conditions relating to nil release policy from vessels into waters of the marina. The Marina Manager will enure the Agreement is formally completed, explained to the customer and a customer copy is issued.

The sewage pump-out and bilge water policy will be displayed in the marina office and at other prominent locations, and a copy provided to each customer.

Marina patrons are to be directed to waste reception facilities for the proper disposal of sewage and bilge water.

Wastes that are considered to require quarantine, because of their international source will be segregated from all other wastes and stored and subsequently disposed of in a manner approved by AQIS.

Litter Control

According the Whitsunday Shire Council 'Litter Management Strategy' (May, 2007) Shute Harbour and Shute Harbour Road are litter hot spots. A daily inspection of the waste storage areas will be completed by the Operator, or appointed representative. The inspection will review bin capacity and determine if additional waste collection services are required.

'Recycling Stations', similar to those already implemented throughout the Whitsunday Shire will be provided within the SHMD.

Waste receptacles provided for the storage of paper and plastics will be covered to prevent wind-blown litter and restrict access by bird, animals and vermin.

Waste receptacles will be emptied frequently to minimise litter production and regular surveillance and cleaning of public areas will be undertaken.

All waste transported on and off the site will be covered.

Installation of gross pollutant traps, bunds and other controls to prevent litter, from on shore areas from reaching waterways will be installed and maintained regularly to ensure maximum efficiency.

Odour and Dust Control

The following strategies will be followed to minimise odour and dust generation and prevent environmental nuisance:

- Waste receptacles and storage bins for organic and food wastes will be covered;
- Minimising retention time of wastes on site before removal off site;
- Water captured in bunds and sumps will be assessed and disposed of as soon as practicable; &

- All vehicles entering and leaving the site must be clean and loads securely stowed, and covered.

Sweeping of commercial and retail shopfronts will be conducted using dry methods only. Sweeping should be conducted not less than weekly to minimise the amount of litter and contaminants entering waterways. General waste collected as a result of sweeping is to be collected and deposited into general waste bins.

Pest and Vermin Control

The following strategies will be followed to prevent attracting pests, vermin and disease vectors to the facility:

- Waste receptacles and storage bins for organic and food wastes will be covered;
- No pooling or ponding will be allowed around storage areas;
- Pest exterminators may be required periodically;
- Incidental tyres will be removed from the site as soon as practicable to prevent harbourage of mosquitoes (particularly ades aegypti which can cause Dengue Fever); &
- Awareness training will be provided to staff and contractors.

Stormwater Management

The following measures will be implemented to manage stormwater:

- Clean stormwater will be diverted from potentially contaminated areas, thereby limiting the quantity of contaminated stormwater generated;
- All storage of hazardous and other chemical waste will be stored in a bunded area;
- Spill management procedures will be developed and implemented for the facility and spill kits provided for use at the site;
- A regular inspection of waste storage containers provided in open space and public areas will be completed by the Operator, or appointed representative. The inspection will assess housekeeping and ensure all drains are free of litter and operating at optimum efficiency; &
- Litter catchment devices to be installed and maintained at stormwater outlets.

Removal of Waste

All vehicles entering and leaving the site must be clean and loads securely stowed, and covered.

Copies of appropriate environmental approvals will be obtained from waste transporters and waste disposal facilities who accept waste generated at the site, prior to removal of the waste from the site. Copies of these records along with waste tracking documentation (as per section 3.1.2 and 3.2.2) will be retained by the Operator of the development and provided to the relevant regulatory authority upon request.

All wastes removed from the site will be recorded on a Waste Register Form, an example of which is provided in Appendix A of this WMP. Wastes will only to be transported to recycling or disposal facilities licensed for the particular waste stream(s).

5.4 Performance Indicators

Visual inspection of the temporary waste compound and waste storage areas shall be undertaken on a daily basis during construction and weekly during operation. Evidence of waste spillage or dispersal shall indicate non-compliance with the objectives and the tasks/actions outlined in this WMP.

Visual inspection of stormwater treatment measures shall be undertaken on a daily basis during construction and weekly during operation. Evidence of stormwater blockage by wastes or pollution shall indicate non-compliance with the objectives and the tasks/actions outlined in this WMP.

No waste of any type shall be released from the development site in an uncontrolled manner.

5.5 Frequency / Timelines

During construction, waste materials shall be transported from the construction compound to the Kelsey Creek Road landfill weekly to ensure that no spillage or dispersal of wastes occurs within construction working spaces. All waste storage bins shall be inspected daily by the site Contractor during construction to determine the need for additional removals to the disposal skip bin(s).

During operation in normal trading periods, waste shall be collected for disposal weekly by an appropriately licensed waste contractor, and additional services arranged if required. During operation in peak trading periods, waste collection may be required more frequently.

Visual inspections of waste storage areas and stormwater drains shall be undertaken by the Contractor on a daily basis during construction and by the Operator on a weekly basis during operation.

5.6 Responsibility

Construction

During construction, each Contractor will be responsible for all activities and identified impacts associated with the activities undertaken during their contract. All contractors will be responsible for reporting waste spillage and dispersal and cases of non-compliance to the proponent.

All contractors will be responsible for ensuring that waste is disposed of as required. Contractors will be responsible for ensuring compliance of their own staff and will inform staff of the waste disposal facilities, separation methods and collection timetable. The Contractor will also be responsible for ensuring training and compliance of staff with this WMP and for reporting compliance or non-compliance to the Proponent.

During construction, the Proponent will be responsible for reviewing objectives and targets with regard to the rationale, ensuring that implementation measures are adequate to achieve the set objectives and targets and ensuring continual improvement of environmental performance.

Operation

During operation of the development, the Operator will be responsible for ensuring compliance with the requirements of this WMP and for continual improvement of waste management practices within the development.

Contractors employed by the Operator for site maintenance or further site development works will be responsible for ensuring that waste is disposed of as required during their contract.

Marina

During operation of the marina, the Marina Manager will be responsible for ensuring compliance with the requirements of this WMP and for continual improvement of waste management practices within the development.

5.7 Monitoring and Recording

The Contractor shall maintain records of waste streams during construction to be reviewed by regulatory authorities, if required. The Contractor shall monitor waste disposal and any spillage or dispersal of waste materials that may occur during their contract.

Spillage or dispersal of waste material occurring during construction will be immediately reported to the Proponent. In the event of non-compliance with this WMP, a review of the reasons for the failure will be undertaken and corrective measures will be implemented by the Contractor. Corrective measures may include provision of additional waste containers or increase in the frequency of waste collection.

If a spillage or dispersal of waste causes contamination on the site, the area affected by the spillage will be immediately remediated and contamination reported to the relevant authorities. At completion of construction, the Contractor shall review all construction areas and report to the Proponent that the WMP has been correctly administered and the site is free of waste materials.

In some instances, further investigation or monitoring may be required to establish whether the Contractor has failed to adequately implement the WMP, or has failed to comply with relevant legislation, guidelines and statutes. In these instances, an independent party such as a Consultant shall carry out the investigation or monitoring.

The Contractor shall monitor waste performance against the measurable targets and objectives.

The Contractor shall periodically review incident reports to ensure implemented corrective actions have been effective.

5.8 Corrective Actions

A corrective request (CAR) form is to be completed and authorised where appropriate in general compliance with the CAR form provided in Appendix B of this WMP. During Construction, the Contractor is required to maintain a register of CARs, which shall demonstrate that appropriate actions have been completed within a suitable timeframe.

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented.

- Identification of the cause of the non-compliance;
- Implementation of appropriate mitigation measures as determined by the Contractor in consultation with the Consultant; and
- Relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Contractor shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

5.8.1 Incidents and Emergency Response

An emergency management plan will be developed for the following scenarios:

- Management of wastes during extreme weather or cyclonic condition; &
- Spill and incident response procedures.

In the event that an environmental incident occurs the Contractor or Operator shall follow the response procedures outlined below.

- Make an assessment of any events that may be considered an environmental incident;
- The Contractor or Operator shall notify the Council and/or EPA of any incidents that have caused environmental harm; &
- Complete an Environmental Incident Form and CAR for any environmental incidents.

Environmental monitoring may be required as part of the incident investigation and corrective action plan.

5.8.2 Complaints

The following procedure should be implemented in the event of receipt of a complaint, which relates directly to waste management.

- Complete a Complaint Register Form.
- Determine if the complaint is valid and if further action is required.
- Determine whether notification to the EPA is required.
- Notify the complainant within 24 hours advising of corrective actions that will be taken.
- If the issue cannot be investigated and finalised within 24 hours, information regarding the preliminary assessment of the complaint and a date when a full response will be available shall be provided to the complainant within 24 hours.
- Ensure the complaint response is signed off indicating that it has been managed in a satisfactory manner.

Environmental monitoring may be required as part of the complaint investigation and corrective action plan.

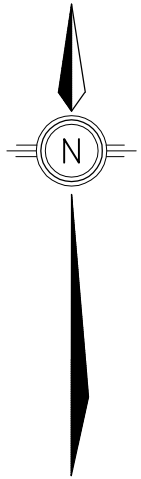
5.8.3 Audits

Waste audits should be undertaken of the construction works, including the waste storage and construction compound during construction, as required. Regular audits of waste records should be undertaken annually to identify if additional waste avoidance, reduction, reuse or recycling measures can be achieved.

Waste composition surveys may also be conducted from time-to-time, to ensure the waste types & quantities are consistent with the wastes listed in Tables 1 & 2 (inventories for solid & liquid wastes produced on site during construction & operation).

All issues identified in an audit are to be documented on a CAR.

FIGURES



0.4 0 0.4 0.8 1.2 1.6 2km
1:40,000

Scale 1:40,000(A4)

FIGURE 1
REGIONAL LOCALITY

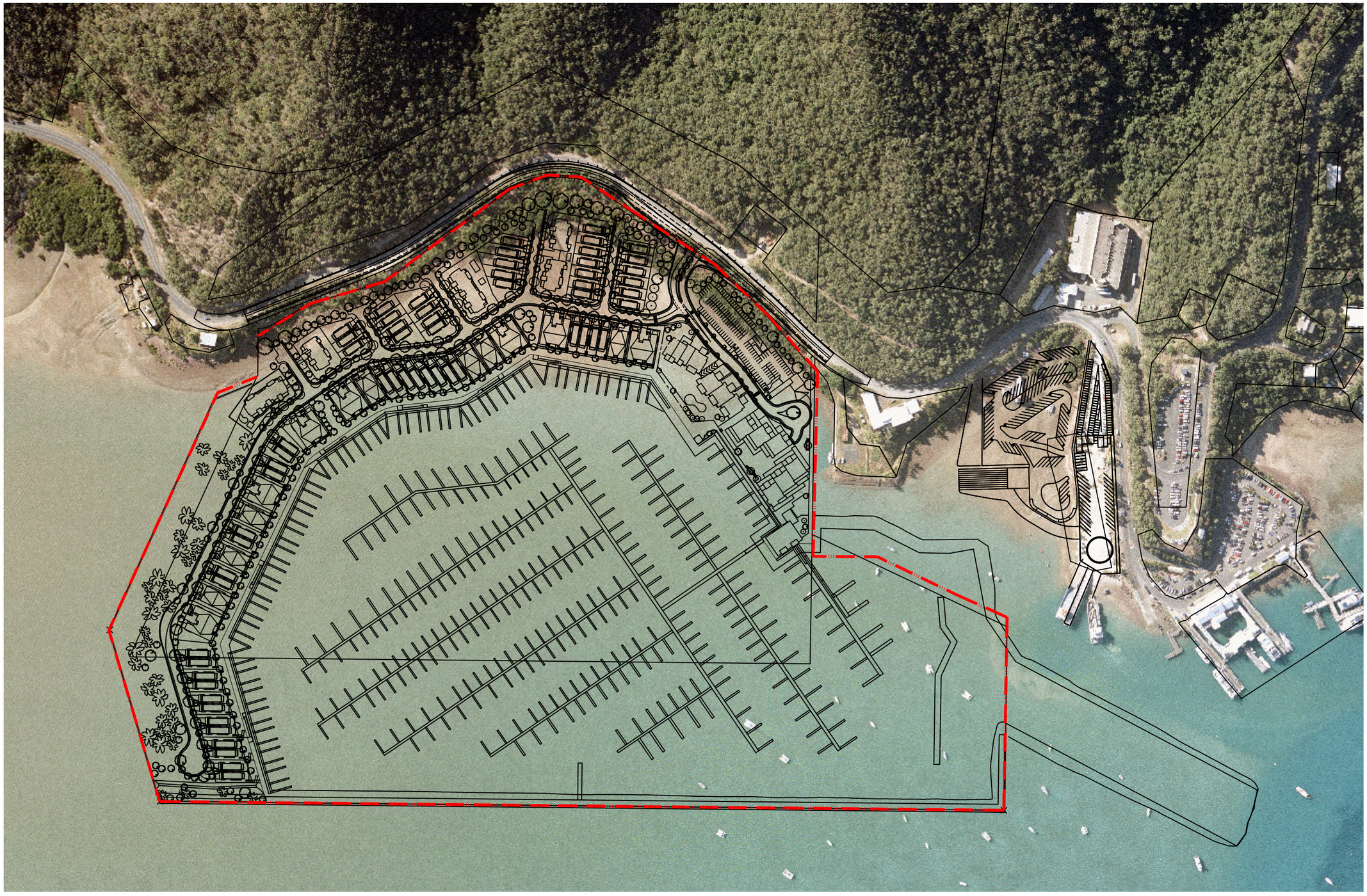
Rev: Orig. Date: 17 July 2008

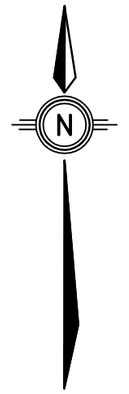
Project No.: 7800/41

Sute Harbour Marina Development Pty Ltd

CAD FILE: I:\7800-41\ACAD\Waste Management Plan\Figure 1 - Regional Locality.dwg
XREF's:

PRINT DATE: 17 July, 2008 - 4:13pm





LEGEND

Site boundry

40 0 40 80 120 160 200m
1:4000

Rev: v.2 Date: 11 February 2008

Shute Harbour Marina Development Pty Ltd

CAD FILE: I:\7800-41\ACAD\Waste Management Plan\Figure 2 - Proposed Development Plan_v3.dwg
XREF's: Master Plan July 2008

Scale 1:4,000 (A3)

FIGURE 02
PROPOSED DEVELOPMENT PLAN

Project No.: 7800/41

PRINT DATE: 21 October, 2008 - 9:43am

Waste Register: Construction

Site Material		Destination		
		Reuse and Recycling		Disposal
Type of material	Estimated Volume (m^3)	On Site (Specify proposed reuse or on-site recycling methods)	Off Site (Specify contractor and recycling outlet)	Specify disposal facility
Fill and soil (not contaminated)				
Fill and soil (contaminated)				
Timber and vegetation				
Scrap metal				
Cable and wires				
Concrete, bricks, tiles and rubble				
Plasterboard				
Packaging materials (plastics, glass and timber)				
Domestic and general waste				
Organic and food waste				
Wastewater				
Diesel and other fuels				
Paints and other chemicals				
Asbestos				

Waste Register: Operation

Site Material		Destination		
		Reuse and Recycling		Disposal
Type of material	Estimated Volume (m^3)	On Site (Specify proposed reuse or on-site recycling methods)	Off Site (Specify contractor and recycling outlet)	Specify disposal facility
Domestic and general waste				
Organic and food waste				
Green waste				
Wastewater				
Metals				
Plastics				
Glass				
Paper and cardboard				
Diesel and other fuels				
Hazardous and other chemicals				
Electrical and electronic equipment (E-waste)				
Waste by-products from the tertiary wastewater treatment plant				

APPENDIX B

Corrective Action Request Form

CORRECTIVE ACTION REQUEST

Report no: .....

Date: .....

DETAILS OF NON-CONFORMANCE: Inspected by:
DETAILS OF PROPOSED ACTION Passed to the Principal (as applicable):y/n Date: Reply required by:
THE PRINCIPAL / COUNCIL ADVICE (as required): Date action required by (if applicable): Signed (by the Principal or the Principal's representative): Date:
AUTHORITY TO PROCEED Sign: Date:
ACTION CARRIED OUT Sign: Date:
ELEMENT RE-INSPECTED BY Sign: Date:
COPY ISSUED TO COUNCIL Date: Sign: