

# Port Macquarie Base Hospital

## Redevelopment & Construction Waste Management Plan

- PMBH CWMP Rev B

Revision	Comments	Date
A	Issued as Draft	20/12/2011
B	Issued as Draft with metrics	23/12/2011

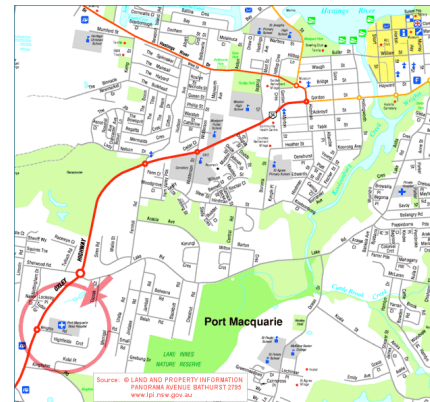
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### Project Abstract

#### Site:

Port Macquarie Base Hospital, located on the Mid North Coast of New South Wales at:

Wright's Road,  
Port Macquarie, 2444



#### Structures Currently On Site:

There is a fully functioning hospital on the site which provides 24 hour Emergency Services, Critical Care, Obstetrics/Gynaecology, Medicine, General and Vascular Surgery, Orthopaedic Surgery, ENT, Ophthalmology, Gastroenterology, Paediatric Care and Mental Health inpatients (voluntary) and a Mental Health Community Service.

#### Outline of Work:

A new wing with additional In Patients Units, Operating Theatres, Sterile Services, Improved Logistics buildings and access

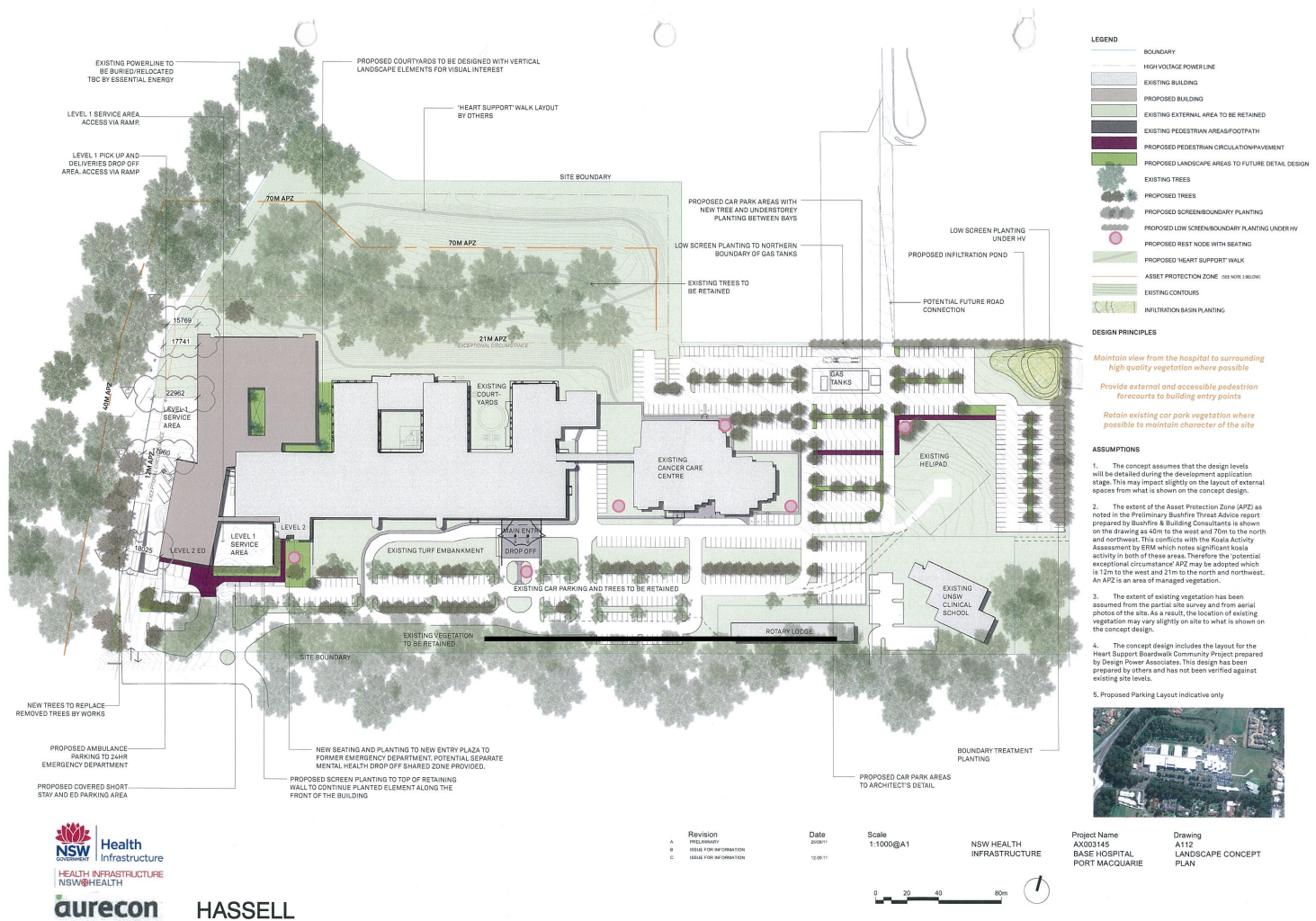
- 12,500m<sup>2</sup> of New Building
- 1,500m<sup>2</sup> equivalent demolition

#### Ongoing Waste Operations:

Ongoing operations and the location of the new structures will require temporary waste collection areas to be established.

#### Construction Waste Management Strategy :

Contract mandated minimisation and education, waste stream collection and measurement and proof of next life to minimise land fill.



e<sup>3</sup> - Ecology/Energy/Environment

# Executive Summary

## Elimination and Minimisation

### Objective

To control waste the generated and control the end use of waste generated from construction activities and augment the The Port Macquarie-Hastings Waste Management Strategy 2007 - 2010

### Waste Management Philosophy

The Port Macquarie Base Hospital Redevelopment will have a Waste Management Strategy. The seven-tier waste management hierarchy shown in Figure one below is a visual representation of the preferred approach to waste management. The first tier, waste avoidance, is the most sustainable form of action. The second and third tiers involve the reuse and recycling, including composting of wastes, using products again instead of throwing them out and creating new materials from old without the energy expense or environmental damage from mining for raw materials. Waste that cannot be prevented, reused or recycled can be combusted with energy recovery (tier 4). Treatment and containment both involve energy use and are relatively poor outcomes for waste. The final tier, disposal, refers to landfilling or incineration without energy recovery which is the least preferred option. Actions for PMBH's waste management will be prioritised according to this hierarchy:

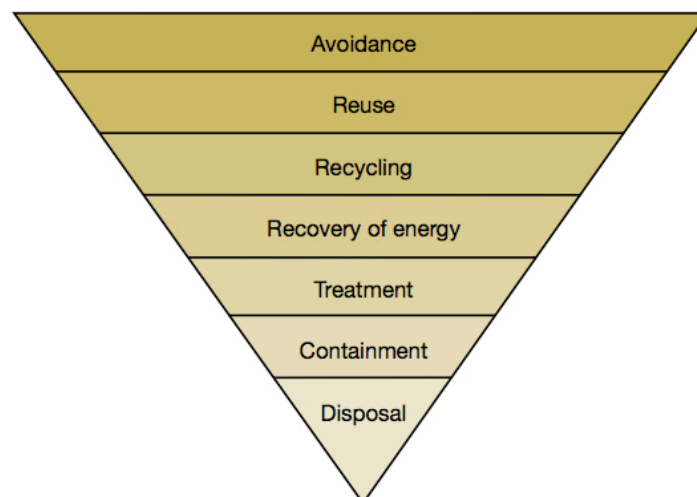


Figure One : Waste Hierarchy

Of course, all Australian Standards need to be satisfied, as do the Port Macquarie Hastings Council local regulations and ordinances. At the time of writing, it was yet to be decided whether the construction contractor would collect waste en masse and send to a third party for segregation and reuse, or whether this would be done on site.

# Waste Identification

## Safety Continuity, Elimination and Minimisation

### ***Establishes Spaces to Maintain Operational Waste from the Hospital***

The hospital will continue operating during the construction period and thus generate the current volumes of General, Recyclable and Clinical Waste. These are found in Attachment-1: Operational Waste Streams and Volumes.

The Port Macquarie Hospital generates a variety of waste streams. Each of which will need a home at various of construction and new and improved facilities are constructed.

When the construction program is finalised a location and strategy for handling the waste streams will be devised. The project will mandate that all stakeholders (not just the construction contractor) that:

*Hospital operational waste collection areas must be established during the entire period of construction. These areas will be used by hospital staff and will require safe access and egress by pedestrians, and also by the collection contractor's vehicles. These will be heavy rigid vehicles. The area must also be able to contain the waste and not have the collection skips, bins and compactors at risk of wind and weather fouling that may cause spillage or infiltration into soils nor water runoffs nor sources. The management of these areas is collaborative, and will require supervision by all project participants.*

### ***Demolition and New Construction Waste***

An analysis based on the current architectural plans has been performed and the predicted demolition and construction waste profile detail can be found in Attachment-2: Estimated Construction Waste Stream Metrics.

In summary

Waste Type	Demolition (kg) <sup>1</sup>	New Construction (kg)
Recycled/ Reused	2,036	3,973
Disposed	426	544
TOTAL Waste	2,462	4,517
Recovery %	88%	83%

This will be revised as the detailed architectural specifications become known.

#### **FOOTNOTE:**

1. This does not include the bitumen and other concrete hard stand areas to be demolished. The waste plan will be updated when the quantity for this area is known<sup>1</sup>

# Waste Avoidance

## Responsible and Creative Procurement, Reuse & Recycling

### Format of Arrival

Clauses will be placed in the Construction Contracts and Purchase Orders that will:

Preclude the purchase and use of any materials that contravene the current Australian Standards Occupational Health and Safety Act, the State of New South Wales definition of Hazardous Waste Materials, the Port Macquarie Hastings Council list of Hazardous Materials and any other materials that will be identified as part of the design process.

Identify any Hazardous Materials prior to procurement: All construction materials used on site will require a Material Safety Data Sheet that will identify any hazardous materials and flag a disposal process if required.

Mandate that insulation material will exceed 85% or greater of recycled content.

Provide demolition material waste volumes and a summary of disposal to recyclers with dockets and documentation will be required.

Identified trees that need to be removed, will be relocated and photographs of the relocations required. Especially in the new logistics entry and waste yard.

Salvage will be encouraged where possible. Some buildings that have mechanical plant and equipment will be assessed by the contractor and identified for reuse. The medical records/maintenance building will be assessed. Other areas of demolition such as roof, stairwell and facade will be encouraged to be investigated for concrete salvage.

Formwork will be specified to be of a reused material as will reinforcing steel (minimum 95% post consumer recycled), insulation materials, flooring materials, concrete (e-crete/crushed concrete etc) and bricks where such materials do not compromise the hygiene and sterility requirements of the redeveloped hospital construction areas.

All paints, flooring materials and manufactured wood products will have a low VOC content that complies with E1 Formaldehyde emission schedule in AS 1859.1, of less than 1.0mg/L



# Waste Collection

## Collection & Separation

### Streams of Collection

At the time of constructing this plan, the waste streams that are recommended to be collected for reuse, recycling and disposal are identified in Attachment-2: Construction Waste Streams and Volumes, and are:

- Timber
- Bricks
- Asphalt
- Vegetation
- Insulation
- Lining Board
- Metals
- Batteries
- Fluorescent Tubes
- Electrical
- Concrete
- Plastics (including Packaging)
- Polystyrenes
- Paper and Cardboard
- CoMingled (Glass/Aluminum/Plastic)
- Mixed Waste

### Recycled/Reuse Metrics

In terms of tonnage across the total weight of demolition waste streams and construction waste streams, the percentage of recycled and reused material has been benchmarked and expected to exceed 85% weight.

### Hazardous Waste from Demolition

There is always potential for hazardous waste to be found during demolition. A clause will be stipulated in the constructors contract for the constructor to identify, inform the principal and agree on a disposal method for hazards such as:

- ☒ Asbestos Containing Building Materials (ACBMs).
- ☒ Lead-based Paint (LBP).
- ☒ Poly-chlorinated Biphenyls (PCBs).
- ☒ Batteries containing lead and cadmium.
- ☒ Mercury.
- ☒ Chlorofluorocarbons (CFCs).
- ☒ Treated Wood.
- ☒ Miscellaneous (e.g., fluorescent lights, thermostats).

# Waste Management

## Responsibility & Pride

A protocol will be established so that the constructor will be required to submit a Project Waste Management Plan addressing the needs of this document. The guidelines for demolition and salvage, procurement and the combination of site collection an/or off site segregation will be measured and captured in monthly progress reports and a final overall report that includes all, MSDS, Certificates, Dockets, Photographs and any other evidentiary material at the end of the project. It will also provide project construction waste metrics on:

- ☒ Total Tonnage and/or Volume per waste stream
- ☒ % of Total Waste (Tonnage and Percentage) that can be used as data for future projects
- ☒ % Recycled, Reused and Land Fill per waste stream

The Waste Management Plan will be an agenda item on all Project Control Group meetings and will be assessed for compliance at each meeting.

A weekly report that itemises Waste type, measures the volume and weight collected and measure the % recycled will be a mandatory reporting criterion at Project Control Group (PCG) meetings.









Operational issues during construction that impact on the hospital will also be addressed.

A formal manifest and report will be issued at the completion of the project that highlights measurable and strategies on all waste streams such that the information can be shared with HINFRA and included in The Port Macquarie-Hastings Waste Management Strategy statistics.

# Attachment 1

## Operational Waste Streams and Volumes

**PMBH - Waste Streams**  
**Quantity Estimate**  
**Space Estimate**  
**Access Estimate**

	<p><b>GENERAL WASTE</b>  <b>COMPACTOR EMPTIED BY</b>  <b>WASTE TRUCK</b>  <b>- Waste Contractor</b></p>	<p><b>SHARED YARD to</b>  <b>Accommodate</b>  <b>compactor and 6</b>  <b>skips</b>  <b>AREA 900m<sup>2</sup></b></p>
	<p><b>RECYCLING – Comingled</b>  <i>(Plastic Metals Glass Paper)</i>  <b>3500L</b>  <b>EMPTIED BY WASTE CONTRACTOR</b>  <b>- Waste Truck</b></p>	
	<p><b>RECYCLING - UNSECURE</b>  <b>Paper/Cardboard</b></p>	
	<p><b>RECYCLING - SECURE</b>  <b>Paper</b></p>	
	<p><b>MEDICAL/CLINICAL</b>  <b>240LBINS EXCHANGED</b>  <b>Inlcuding SHARPS</b></p>	<p><b>Existing Building and</b>  <b>Store to be</b>  <b>maintained during</b>  <b>construction</b>  <b>Access to be</b>  <b>decided for bin</b>  <b>exchange vehicles</b>  <b>to be design</b></p>
	<p><b>RADIOACTIVE/CYTOTOXIC</b>  <b>Including SHARPS</b></p>	
	<p><b>PHARMACEUTICAL</b></p>	
	<p><b>ANATOMICAL</b></p>	



# Attachment 2

## Estimated Construction Waste Stream Metrics

METRIC/MATERIAL	Timber	Lining Board (no lead paint)	Metals	Crates and Pallets	Fluorescent Tubes	Electrical	Concrete/Br icks/Blocks	Fibre and Styrenes	Paper and Cardboard	CoMingled (Glass/Alu minium/Pla stic)	Other	Hazardous (mercury thermostats/un knowns)	TOTAL WASTE (weight) per square metre	PMBH Redeveloped Total Square Metres	TOTAL WASTE WEIGHT ESTIMATE (kg)
New Build (% Weight)	29.05	15.00	18.00	0.90		0.10	30.00	0.05	3.90	3.00	-		0.36	12,500.00	4,517.41
Weight	1,312.31	677.61	813.13	40.66		4.52	1,355.22	2.26	176.18	135.52	-				
New Build (% Volume)	20.00	10.00	8.00	5.00		2.00	25.00	3.00	16.00	3.00	8.00				
Volume															
Renovation (% Weight)	26.00	18.00	23.00	1.00		1.00	22.00			3.00	65.00		1.64		
Weight															
Demolition (% Weight)	9.00	5.00	18.00	0.10		1.00	59.00	0.50	1.00	3.00	3.40		14.40	4,625.00	7,592.38
Weight	683.31	379.62	1,366.63	7.59		75.92	4,479.51	37.96	75.92	227.77	258.14				

	NEW (kg)		DEMOLITION (kg)		TOTAL (kg)	
REUSED/RECYCLED	2,482.32	88%	2,437.16	83%	4,919.47	85%
RECYCLED	1,490.75		3,841.75		5,332.49	10,251.96
DISPOSED	544.35		1313.48		1857.83	
TOTAL	4,517.41		7,592.38		12,109.80	

NOTE: This does not include the bitumen and other concrete hard stand areas to be demolished. The waste plan will be updated when the quantity for this area is known1