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SPECIALIST LEADERS AND MANAGERS

WASTE MANAGEMENT PLAN

Manilla Combined MPS / Health One

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(Revision 5)

HUNTER NEW ENGLAND
NSW HEALTH

Coffey Projects (Australia) Pty Ltd ABN 65 092 167 970
213 Darby Street Cooks Hill NSW 2300 Australia
PO Box 690 The Junction NSW 2291 Australia
T (+61) (2) 4924 8400 F (+61) (2) 4927 0993 coffey.com

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1 INTRODUCTION

Since 2001 Hunter New England Area Health Service (HNEAHS) has been planning with the local community the integration of health services through the redevelopment of Manilla District Hospital. The proposed redevelopment is to embrace the elements of both the Multipurpose Service (MPS) and HealthOne models and provide an efficient, fully integrated health service.

The current service provided by Manilla Hospital has been deemed to be inadequate and unable to effectively provide the required level of integrated health care to the 3,300 strong Manilla shire population. The proposed re-development will bring together the healthcare services that currently exsist both within the current hospital and scattered throughout the town. The new facility will form a *"one stop shop"* for health and aged care services and will aid in the strengthening of local partnerships and superior working relationships for healthcare providers.

In July of 2008 Coffey Projects were engaged by Health Infrastructure (NSW Health) as Project Director Procurment (PDPr). The role of the PDPr is the primary leadership and facilitation for the delivery of proposed Health facilities within the approved scope, budget and program through the co-ordination and management of all activities and stakeholders.

Within the preparation of this Waste Management Plan Coffey Projects has worked with project stakeholders through a series of user consultation meetings. This process has facilitated the collation of accurate information that has enabled the identification of both current and future anticipated waste management arrangements.

2 WASTE MANAGEMENT PLAN

This Waste Management Plan comprises the following sections:

- Land use or activity proposed
- Details of waste management
- Type and amount of waste to be generated
- On-site storage and treatment of waste
- Disposal of waste
- Ongoing management of waste from Hospital for the life of the facility

2.1 Description of the Development/Land Use

The proposed facility is generally aligned east / west around a central courtyard with the long façade facing north to maximise natural light to the individual departments.

The proposed development will contain the following components:

- Entrance Cluster
- Emergency & Imaging Cluster
- Acute/ Sub Acute Cluster
- Primary & Community Health Cluster (HealthOne)
- Residential Aged Care Cluster
- Support Cluster
- Staff Cluster
- External service and parking areas
- Staff Accommodation

Construction of a new facility will address the following service parameters:

- Maintain effective health services appropriate for the extent of isolation of the local communities.
- Co-locate all health services in the one facility.
- Enable integration of services
- Provide the number and type of treatment spaces needed to meet current and projected future service needs.
- Provide spaces which comply with Australasian Health Facility Guidelines.
- Provide adequate office accommodation and support areas to provide the services.
- Provide privacy and safety for clients and staff.
- Meet OHS and Infection Control requirements.
- Provide under cover access for clients.
- Permit incorporation of IT and future technology.
- Provide for flexibility and future change.
- Provide a facility which will assist in attracting new staff to the service and retaining existing staff.

Figure 1 on the following page details the general arrangement for the re-development overlaid with the existing facility.

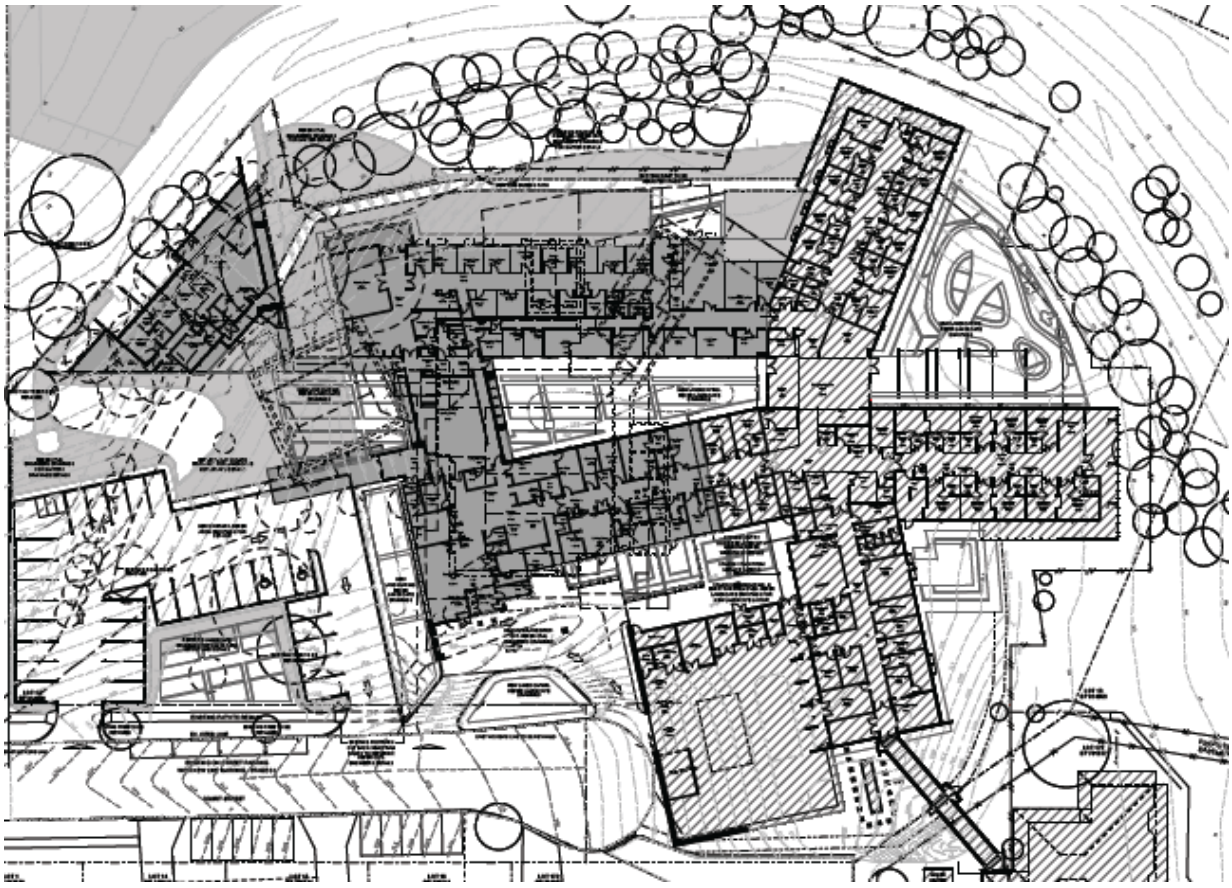

Figure 1: Current and proposed facilities (overlaid)

2.2 Details of Waste Management

Tables 2, 3 & 4 identify and quantify the waste generation through the three stages of the re-development. These tables also detail the manner in which the waste will be treated and or disposed of.

The Three stages of the re-development that are considered throughout this waste management plan are:

- Demolition.
- Construction phase.
- Operational (hospital operational waste for both the existing and proposed facility)

Types of waste to be managed by the Building Contractor are detailed in table 1 on the following page.

Demolition/Excavation	Construction
• bricks • tiles • concrete • timber • plasterboard • windows, doors • metals (including roofing, guttering, pipes • excavation materials • greenwaste • fixtures and fittings • carpet and underlay • linoleum • vinyl floor covering • hazardous waste e.g. asbestos	• bricks • tiles • timber • concrete • plaster board • metals (including roofing, pipes, caps) • plastics including pipes and gutters • insulation materials • excavation materials • cardboard packaging • sundry waste such as paint tins, glue • cartridges etc. • excavation material • green waste

Table 1 : Details of building / demolition waste

Certain waste elements are difficult to identify or quantify beforehand such as hidden (in ground) services, and structural systems. As the existing facility has been extended in a piecemeal fashion since 1905 some assumptions have been made in the quantification of demolition waste as there are very limited historical plans and drawings available.

During the construction phase the contractor is responsible for the management of waste and will typically engage a waste management firm to dispose of waste generated throughout the project. The contractor will also be required to consult regularly with subcontractors and suppliers to aid in the successful management of waste. The contractor will be required to prepare a waste management plan as part of their service methodology and include waste management procedures within their planning process.

Manilla Hospital will continue to operate during the project and will manage all Clinical and General Waste related to Hospital operations both during the staged demolition/construction and throughout the continued operation of the facility.

3 DEMOLITION & CONSTRUCTION PHASE WASTE

3.1 Details of Waste Management –Demolition Phase

Materials On-Site			Destination		
Type of Materials	**Estimated Volume (m^3)**	**Estimated Weight (t)**	**Reuse and Recycling Onsite**	**Reuse and Recycling Off-site**	**Disposal**
			specify proposed reuse or on-site recycling methods	**specify contractor and recycling outlet**	**specify contractor and landfill site**
Spoil (earth material)	-	-			
Concrete (hardstanding, strip footings)	84	84		Forest Road Landfill - Tamworth	
Flexible pavement (bitumen)	34.50	34.50		Forest Road Landfill - Tamworth	
Green waste (turf, trees, gardens)	10	2	Mulched on-site, recycled off-site	Forest Road Landfill - Tamworth	
Masonry (bricks)	280	210		Forest Road Landfill - Tamworth	
Framing timber (floor, roof, walls)	113	56.50		Forest Road Landfill - Tamworth	
Windows and Doors (Timber)	7.80	3.90		Forest Road Landfill - Tamworth	
Windows and Doors (Aluminium)	9	4.50		Forest Road Landfill - Tamworth	

Table 2: Identification of waste during demolition phase

Materials On-Site			Destination		
Type of Materials	**Estimated Volume (m^3)**	**Estimated Weight (t)**	**Reuse and Recycling Onsite**	**Reuse and Recycling Off-site**	**Disposal**
			specify proposed reuse or on-site recycling methods	**specify contractor and recycling outlet**	**specify contractor and landfill site**
Asbestos (from the existing Hospital building)	8	19			Forest Road Landfill - Tamworth
Wall linings (gypsum)	29	69			Forest Road Landfill - Tamworth
Floor sheeting (sheet and strip)	34	17		Forest Road Landfill - Tamworth	
Roof material (sheet metal)	58.60	29		Forest Road Landfill - Tamworth	
Roof material (tiles)	13.50	10		Forest Road Landfill - Tamworth	

Table 2: Identification of waste during demolition phase

3.2 Details of Waste Management – Construction Phase

Materials On-Site			Destination		
Type of Materials	**Estimated Volume (m^3)**	**Estimated Weight (t)**	**Reuse and Recycling Onsite**	**Reuse and Recycling Off-site**	**Disposal**
			specify proposed reuse or on-site recycling methods	**specify contractor and recycling outlet**	**specify contractor and landfill site**
Spoil (clean earth material)	3000 - 4000	4500 - 6000		Forest Road Landfill - Tamworth	
Contaminated spoil (possibly generated from the existing underground storage tank and workshop)	100 – 250	150 - 375			Forest Road Landfill - Tamworth
Bricks/Blocks	5.10	3.85		Forest Road Landfill - Tamworth	
Compressed FC	1.90	4.50			Forest Road Landfill - Tamworth
Plywood beams	-	-			
Plasterboard	4.30	10.30			Forest Road Landfill - Tamworth
Floor/Wall Tiles	0.10	0.10			Forest Road Landfill - Tamworth
Roof Sheeting/flashings (Colorbond)	0.70	0.40		Forest Road Landfill - Tamworth	
Resilient finishes	0.64	0.32			Forest Road Landfill - Tamworth
Pavers	1.25	0.94		Crushed. Forest Road Landfill - Tamworth	

Table 3: Identification of waste during construction phase

Materials On-Site			Destination		
Type of Materials	**Estimated Volume (m^3)**	**Estimated Weight (t)**	**Reuse and Recycling Onsite**	**Reuse and Recycling Off-site**	**Disposal**
			specify proposed reuse or on-site recycling methods	**specify contractor and recycling outlet**	**specify contractor and landfill site**
Plastic wrapping	0.40	-			Forest Road Landfill - Tamworth
Mixed waste	4	-			Forest Road Landfill - Tamworth

Table 3: Identification of waste during construction phase

Note: The excess spoil (earth material) being generated from the associate earthworks has been calculated using Civil 12D modelling and existing survey information. It is however noted that these figures can be treated as approximation as the actual ground level below the existing Manilla Hospital will be unknown until the facility has been demolished. The Waste Management Plan identifies that there will be 3000m^3 - 4000m^3 of **clean** material exported from site.

As per the Remedial Action Plan prepared by Coffey Environments approximately 1300 - 1450m^3 of asbestos containing material will be excavated from the existing Northern land batter to allow for the new Hospital structure. This material will be treated on site as per the recommendations made within the Remedial Action Plan.

The Remedial Action Plan also identifies that there may be some localised contamination associated with the existing Under Ground Storage Tank. Environmental testing in the vicinity of this infrastructure does not identify any contamination. However, as this type of infrastructure is prone t localised contamination an allowance of 100 – 250m^3 of contaminated material has been identified in the Waste Management Plan. This allowance also picks up some very minor contaminated material associated with the existing workshop as identified in the Remedial Action Plan

3.3 Building Contractors Waste Management Plan Checklist

After award of tender, the contractor will be required to submit as part of their service methodology a waste management plan. The following items identify the requirements of this plan:

- Estimate volumes of waste generated.
- Identification of the use of Geotechnical Engineer to classify all spoil to be taken from site and disposed/recycled at a nominated land fill facility.
- State whether waste is mixed or separated and disposal details.
- Provide a site plan showing location of bin(s) and/or stock-piles if necessary off-site.
- Negotiate an agreement with the waste sub-contractor that includes:
  - Recycling opportunities and requirements
  - Mixed or leftover waste landfill
  - Verifying waste destination
- Select waste contractor.
- Includes plan for ongoing management of waste.

3.4 Estimating Quantities of Waste During Demolition & Construction

The following process is used to estimate waste:

A. Quantify materials for the project
B. Use margins normally allowed in ordering
C. Copy these amounts of waste into the Waste Management Plan

The following percentages are building “rule of thumb” and relate to similar projects

- Timber 5 – 7%
- Plasterboard 5 – 20%
- Concrete 3 – 5%
- Bricks 5 – 10%
- Galvanised Iron Sheeting 2 – 5%

These amounts are supplied from demolition and waste contractors and staff at transfer stations. While not entirely scientific they do provide a useful guide.

- Timber 0.5 tonne per m^3
- Plasterboard 2.4 tonne per m^3
- Concrete 1 tonne per m^3
- Bricks 0.75 tonne per m^3
- Steel 2 – 4 tonne per m^3
- Spoil (moist excavated) 1.42 tonne per m^3

In order to improve the contractor's estimates and provide more reliable figures:

- Compare projected waste quantities with actual waste produced.
- Conduct a waste audit of current projects.
- Note waste generated and disposal methods.
- Record this information to help estimate future waste management plans.

3.5 Waste Management Responsibility

The contractor generates the waste during the project and is the owner of the waste and in addition to this is required to complete the waste management plan.

Builder Responsibilities:

- Undertake to meet the 60% reduction target.
- Identify a waste "handler", to take charge of the waste plan.
- Timetable monthly reports on how the plan is working.
- Develop new purchasing policy with suppliers – buy less waste, specify no packaging.
- Instruct subcontractors in writing about their role in the plan.
- Revise and improve the plan with each new project.
- Choose waste contractors who will comply with the plan.

Subcontractor's Responsibilities:

- Not to place builder in breach of the waste regulations.
- Comply with waste management directions of the builder.

Waste Contractor's Responsibilities:

- Comply with reasonable directions from the Regional Waste Boards and respective councils.
- Provide accurate reporting on waste removed – amount, type, destination.
- Disposal of waste in the agreed manner.
- Be familiar with client's Waste Management Plan.
- Discuss new and improved waste services with main contractor.

Waste contractors are required to provide the following information to the main contractor:

- Reduction of waste weight to landfill.
- Verification of destination of materials recovered.

- Total data on material recovered from site.

3.6 Education and Training

Education and training are vital to the success of waste reduction.

- The contractor is required to educate staff to understand the need for waste minimisation.
- Train staff in waste management procedures using signage, posters and other information to reinforce key messages. Initiate waste reduction in the staffroom and site offices:
- Reuse and recycle paper.
- Sort food waste for recycling – cans, bottles, food scraps.
- Encourage BYO lunch practices.
- Give each staff member their own mug for takeaway coffee.

Education and training programs should include:

- Awareness and knowledge of Waste Management Plan.
- Understanding of the different roles and responsibilities that make the plan work.
- Knowledge of the overall waste minimisation goal.
- Procedures for reducing waste.
- Incentives to increase efforts e.g. rewards, competitions, challenges.
- Celebration of success.

3.7 Managing Waste On-Site

The different stages of the project will place different demands on waste management.

Stages of Project Relevant To Waste Management

1. Demolition

- Licensed demolisher does the entire job and provides a report.
- Negotiate beforehand which materials are left behind for reuse.
- Collect waste receipts for contractor conformance records.

2. Excavation

Clean fill

- Stock pile and backfill (reuse).
- Take to another site and reuse or send to landfill based on the spoil classification.

Green waste

- Stock pile and backfill (reuse).

3. Construction

- Appoint supervisor to oversee waste.
- Identify waste materials before work commences.
- Consider site offices, sheds and day-to-day waste produced by staff and subcontractors.
- Identify reusable and recyclable materials from existing buildings.
- Involve waste contractors to ensure records will be kept and waste targets met.
- Develop disposal procedure:
    - Specify number and types of containers – allowing for different stages in the project.
    - Organise signage and location of bins, skips and stockpiles.
    - Designate areas for reusable, returnables and recyclables.
    - Keep separate waste materials clean.
    - Provide training and education to ensure waste management objectives are met.

4. Fit out and finishing

The number and variety of trades working together plus budget and time constraints make this the most important stage in the waste plan.

Site arrangements will require:

- Allowing space for a dedicated cardboard skip for packaging waste of cardboard compactor.
- Separate plasterboard and keeping it clean for recycling.
- Arranging more frequent waste pickups.
- Maintaining a clean waste stream.

5. Waste Minimisation

The contractor is required to use the Waste Minimisation hierarchy as a basis for reducing waste.

- AVOID – waste at source
- REUSE – materials and components
- RECYCLE – materials into new products

- DISPOSE – in responsible manner as last resort
- RECOVER – valuable resources from the waste stream for recycling and reuse.

Resources Recovery reduces disposal costs, prevents further environmental damage and saves resources for future use.

3.8 Recycling Of Waste

The contractor is required to:

- Provide clean uncontaminated material acceptable to the recycler.
- Organise on-site sorting and/or collection systems for processing including:
  - colour coded, clearly labelled bins
  - signage
  - timetable and skip pickups
- Investigate potential markets as part of waste planning.
- Participate in recycling opportunities.
- Train staff to recover recyclable materials.

4 DETAILS OF WASTE MANAGEMENT – HOSPITAL OPERATIONS

Type of waste to be generated	Description of waste	Current Volume per Month	Units	Future (estimated volume / month	Units	Proposed on site storage
Hospital						
General	Paper, hand towels, newspapers and all other general waste	5880L	28 x 210L Sulo Bins	7560L	36 x 210L Sulo Bins	General waste area within Hospital
Contaminated	Continence waste, dressings and clinically contaminated waste	840L	4 x 210L Sulo Bins	1260L	6 x 210L Sulo Bins	General waste area within Hospital
Contaminated	Used X-Ray fixer is put into 20litre drums and collected by SteriHealth.	40L	240L Sulo Bins	Nil-All X-Rays on computer via PACS system	-	General waste area within Hospital
Contaminated	Sharps are stored in specific bins.	4 large, 2 small	Sharps Containers	4 large, 6 small	Sharps Containers	General waste area within Hospital
Contaminated	Used Developer runs into the local Sullage System.	N/A	N/A	N/A	N/A	N/A
	Used Toner	Recycled through Tamworth		Recycled through Tamworth Regional		

Type of waste to be generated	Description of waste	Current Volume per Month	Units	Future (estimated volume / month	Units	Proposed on site storage
General	cartridges	Regional Council Sub Branch Office when necessary.		Council Sub Branch Office when necessary.		
General	Computer Processing Units (CPUs) (units)	N/A	N/A	N/A	N/A	NA
General	Computer monitors (units)	Recycled through Tamworth Rural Referral Hospital Data Centre.		Recycled through Tamworth Rural Referral Hospital Data Centre.		
General Health Service						
General	Drink cans only	50L	1 x 150L Sulo Bins (Tri-monthly)	70L	1 x 150L Sulo Bins (Bi-monthly)	General waste area within Hospital
Kitchen						
General	Slops go into buckets and are transported to the Manilla Landfill.	1680L	8 x 210L Sulo Bins	2520L	12 x 210L Sulo bins	General waste area within Hospital
General/Recycled	Aluminium cans	600L	4 x 150L Sulo Bins (Monthly)	900L	6 x 150L Sulo Bins (Monthly)	General waste area within Hospital
General/Recycled	Plastic	50L	1 x 150L Sulo Bins (Tri-monthly)	70L	1 x 150L Sulo Bins (Bi-monthly)	General waste area within Hospital
	Glass	50L	1 x 150L Sulo	70L	1 x 150L Sulo Bins	General waste area

Type of waste to be generated	Description of waste	Current Volume per Month	Units	Future (estimated volume / month	Units	Proposed on site storage
General/Recycled			Bins (Tri-monthly)		(Bi-monthly)	within Hospital
General/Recycled	Cardboard	$1m^3$	Trailer load fortnightly	$1.50m^3$	Trailer load fortnightly	General waste area within Hospital
Services						
Maintenance		40L	1 x 150L Sulo Bins (quarterly)	40L	1 x 150L Sulo Bins (quarterly)	
Engineering	Coal Ash (coal fired boiler)	Summer-12 x 44 gallon drums, Winter-20 x 44 gallon drums.		N/A	Hot water will be provided via heat pump and supplementary solar.	General waste area within Hospital
Green	Landscape waste materials - grass clippings, tree trimmings etc	$2m^3$	Trailer load fortnightly	$2m^3$	Trailer load fortnightly	General waste area within Hospital

Table 4: Identification of waste during hospital operation

4.1 HOSPITAL WASTE MANAGEMENT

Effective Waste Management ensures that hazardous material discharged from the Hospital does not become a source of infection, disease or pollution. It is important that at the point of waste generation, appropriate segregation of waste occurs to ensure hazardous and non-hazardous wastes are separated and disposed of appropriately.

Definition of Infection Waste: "Waste capable of producing disease"

Factors involved in the induction of disease include:

- Presence of a pathogen
- Sufficient virulence
- Adequate dose
- Provide portal of entry
- Presence of susceptible host

All factors must be presented simultaneously to cause disease. Hospital waste can be categorised into the different types of waste as detailed in table 5 below.

TYPE OF WASTE	METHOD OF DISPOSAL
CLINICAL WASTE Sharps: i.e. used needles and syringes, used scalpel blades, razors and other contaminated sharp objects	Needles are never re-capped bent, broken or disconnected from syringes following use. Disposed directly into puncture proof yellow sharps containers. Containers must be sited appropriately at a height between 1.1 and 1.3 metres to enable visualisation of the opening. Containers must be fixed to trolleys, walls or on mobile trolleys. Containers must never be placed directly on the floor to allow access by children. When full containers are sealed and removed to collection/disposal site. Sharps are disposed via approved state governing body method.
CLINICAL WASTE Including materials or solutions that contain free flowing or expressible blood. Urine and faeces only if visibly blood contaminated.	Placed into yellow containers or bags displaying the international black biohazard symbol. When full bags are removed and transported to collection/disposal site Clinical waste is disposed via approved state governing body method.

TYPE OF WASTE	METHOD OF DISPOSAL
Sanitary Waste	Sanitary waste from hospitals is not deemed to be clinical, therefore can be disposed via the general waste stream. According to Tamworth Regional Council Guidelines, Sanitary Waste is contaminated Waste and CANNOT be disposed of via the general waste stream
CLINICAL WASTE Tissue/Pathology Waste	All tissue is containerised, labelled and sent to pathology for examination. Disposal is via pathology service. Placentas following examination are placed into yellow biohazard plastic bags and disposed.
GENERAL WASTE General Waste Contaminated Waste	Paper, metal, unbroken glass or plastic that cannot by recycled, flowers, kitchen waste. Dressings/bandages materials stained with or having contact with blood or body fluids, containers emptied of blood or other body fluids (no rinsing) disposable nappies, sanitary napkins and incontinent sheets is disposed into plastic garbage bags.

Table 5: Clinical waste disposal

4.2 Clinical Waste Storage

1. Clinical waste storage areas must be locked at all times. Alternatively bins must be locked and fixed to prevent removal by unauthorised personnel.
2. Storage areas must facilitate cleaning practices.
3. Cleaning equipment and protective clothing must be available in area if a blood/body fluid spill should occur. A displayed procedure must also be available.
4. International black biohazard symbol marked 'Clinical Waste' must be displayed externally to this site.
5. The hospital is responsible for the safe removal and transport of all clinical waste '

Used and Unused Chemicals

These are disposed of in accordance with manufacturer's recommendations, local council regulations and the DECC.

Paper

All confidential papers are to be shredded prior to disposal.

4.3 Work Practices

All waste must be handled carefully. Protective attire and heavy duty gloves must be worn.

Contaminated Waste - Bins are colour coded yellow with a biohazard label. Biohazard waste should be disposed of in contaminated waste bags. They are sealed when three quarters full and placed in the designated whiz bins.

Bloods, fluids, excretions can be carefully poured down the drain connected to a sanitary sewer system provided the health care worker is wearing protective attire such as gloves, apron and protective glasses.

Biohazard Waste - Must be collected and transported in a sealed and puncture resistant container that is colour coded and labelled with a biohazard symbol then stored in an area accessible only to personnel involved in the disposal process.

4.4 Waste Handling

Transport within Hospital

Designated Sulo bins are used for transport of waste within the hospital. This is designed to minimise the operators contact with the waste. Waste collection rounds are performed three times daily and more frequently if the need arises.

Waste Disposal and Transport

All contaminated clinical and general waste generated on the hospital site is removed and transported to appropriate sites for treatment by nominated licensed contractors. The Area Health Service would negotiate the contracts and they would comply with all Environmental Protection Authority regulations.

General Waste

Goes to landfill licensed by the DECC.

4.5 Waste Recycling Program

Cardboard

All cardboard is flattened, placed in a trailer and taken to Tamworth Council Land Fill every second Wednesday for recycling.

Glass

Glass is placed in a recycling bin at the rear of the hospital kitchen and collected from this designated disposal area weekly, or as required. It is then taken to the Tamworth Council Land Fill and placed in designated skips for recycling.

4.6 Reference

NHMRC – National Guidelines for the Management of Clinical and Related Wastes 1999
Australia/New Zealand Standard for Management of Clinical and Related Waste (AS/NZS 3186-1998)