

# APPENDIX L

## Waste and Hazards Report



# Safety Engineering & Technical Services Pty Ltd

OCCUPATIONAL *HEALTH*, *SAFETY* & *ENGINEERING* CONSULTANTS

ABN: 90 003 112 945



14 April 2013

The Manager  
Health Infrastructure  
c/- Johnstaff Projects (NSW) Pty Ltd  
Level 8, 16 O'Connell Street  
SYDNEY NSW 2000

Attention: Mr Brody Atterby

Dear Sir,

**re: OH&S and Dangerous Goods Matters – Contribution to the State Significant Development and Infrastructure Submission Addressing the Director General's Environmental Assessment Requests in Respect of Hazards and Wastes – Kempsey District Hospital Redevelopment**

This letter of advice has been prepared pursuant to your request to contribute to the State Significant Development and Infrastructure written submission for planning approval for the proposed Stage 1 Redevelopment of the Kempsey District Hospital ("KDH").

## 1. EXECUTIVE SUMMARY

The advice addresses those parts of the Director General's Environment Assessment Requirements (DGEARs) for hazards posed by the proposed use of dangerous goods and hazardous substances at Kempsey District Hospital, including issues pertaining to wastes, for the hospital redevelopment works at the site.

The report:

- describes the nature and quantities of goods and substances that will be present at the premises
- provides a reasoned conclusion that State Environmental Planning Policy 33 (SEPP 33) does not apply to the proposed development

- identifies hazards posed by the presence of dangerous goods and hazardous substances and describes the means (generally through compliance with relevant Australian Standards, health policies, and other codes of practice) by which those hazards are to be managed, and
- concludes that the proposed facilities for the storage, handling and use of dangerous goods and hazardous substances, will be, by design, in compliance with all relevant legislative requirements in accordance with best practice principles for the management of risk to health and safety, and will as a consequence secure a level of safety and environmental performance described in the relevant standards and codes of practice applying to clinical facilities.

## 2. SCOPE OF THIS ADVICE

The Director General's requirements for the Kempsey District Hospital Redevelopment Project pertaining to waste and hazardous chemicals as described in the NSW Government Planning & Infrastructure letter dated 5 December 2012 *Reissued DGRs for Kempsey District Hospital Redevelopment [SSD 5363 – 2012]*, are to provide information on:

### 16. *Servicing and Waste*

*Prepare a Waste Management Strategy that:*

- *Identifies, quantifies and classifies the likely waste streams to be generated during construction and operation; and*
- *Describes the measures to be implemented to manage, reuse, recycle and safely dispose of this waste, and*
- *Identifies appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site*

### 17. *Hazards*

*(Provide) a description of*

- *the proposed storage, use and management of any hazardous materials, and measures to be implemented to manage hazards and risks associated with the storage.*

This report has been prepared as a direct response to address these requirements.

### **3. A DESCRIPTION OF THE FACILITIES RELEVANT TO THIS REPORT**

#### **Overview**

Kempsey District Hospital is a 66 bed facility providing level 3 services including emergency, high dependency and coronary care, general medicine, general surgery, rehabilitation, maternity, mental health, renal dialysis, and a broad range of primary health care services.

The Hospital predominantly services the Kempsey Local Government Area (approximately 29,000 residents) and is located in West Kempsey, a short distance from the Kempsey Central Business District.

Kempsey District Hospital is located within the Mid North Coast Local Health District, which also comprises facilities at Bellingen, Coffs Harbour, Dorrigo, Kempsey, Macksville, and Port Macquarie, and is part of the Hastings Macleay Clinical Network, which also includes Port Macquarie Base Hospital and Wauchope District Memorial Hospital.

#### **Project Background**

In 2011, the NSW Government submitted an application to the Health and Hospital Fund for the Kempsey District Hospital Redevelopment. In May 2012, the NSW Government and the Australian Government announced a major capital investment of \$80 million for the Kempsey District Hospital Redevelopment.

#### **Project Description**

The Kempsey District Hospital Redevelopment will provide the following facilities:

- new main entrance and front of house services.
- new emergency department (with 2 resuscitation bays, 10 adult acute bays, 2 fast track bays, 4 paediatric bays, and associated consultation rooms and support areas).
- new 6 bed emergency medical unit.
- A newly established integrated community care centre.

- new medical imaging department with CT, general x-ray, ultrasound and OPG.
- new 4 space medical day procedures unit.
- new 32 bed acute inpatient unit with an additional 8 shell beds.
- new 8 bed high dependency and coronary care unit.
- new operating theatre suite with two operating theatres, one shell operating theatre, a recovery unit, and a 9-space day surgery unit.
- an expanded renal dialysis services (from 5 to 10 chairs), and the establishment of a renal dialysis training unit.
- an expanded oral health service (from 2 to 4 chairs).
- relocated and/or expanded primary health care, community, and ambulatory services.

In addition to these facilities, the Redevelopment will also comprise:

- connections between new facilities and the existing facilities to achieve good connectivity and operational efficiency across the site.
- external site works such as landscaping, pathways etc.
- reconfigured of car parking provision for patients, visitors, and staff.
- reconfigured/upgraded engineering services to meet the future needs of the hospital.

The building is comprised of three clinical storeys (with an additional ‘lower ground’ floor due to topography) in order to maximise site utilisation and future development potential. Ultimately it is planned the Hospital activity will consist of two core clinical buildings on the site.

In addition to this, there is a significant refurbishment works package that is to deliver:

- an integrated community care centre (in the existing primary and community health building at the north east of the site).
- a major expansion of renal dialysis services (from 5 to 10 chairs) in the existing emergency department which will be vacated following completion of the new building

- an expanded oral health service (from 2 to 4 chairs) in the existing operating theatres which will be vacated following the completion of the new building
- relocated and/ or expanded facilities for primary health care, community, and ambulatory services in the existing ground and or first floor of the existing inpatient building in spaces that will be vacated following the completion of the new building.

#### **4. WASTE MANAGEMENT STRATEGY**

This section of the report describes:

- a commitment to develop a plan for the likely waste streams to be generated during construction
- the likely waste streams arising from the operation of those parts of the Hospital that are being provided as an outcome of the works project
- the measures to be implemented to minimize, reuse, recycle and safely dispose of this waste: and,
- the measures to be implemented to manage the disposal of contaminated and potentially contaminated biological and sewage waste

##### **4.1 Construction Wastes**

The only demolition proposed as part of the SDA is of the existing Blood Bank.

Demolition of other buildings that may contain hazardous materials are to be handled as a part of a separate process under the provisions of the Infrastructure SEPP prior to the commencement of the SSDA works.

.A Waste Management Plan (Construction) will be prepared as part of the Construction Environment Management Plan. This plan to be prepared prior to the commencement of any demolition and construction works, will, in addition to describing the objectives of the plan, detail the involvement of the waste contractor and any other specific requirements as identified during the pre-planning of demolition and construction works.

This separate study will address the waste streams likely to be generated, including those that may contain dangerous goods and hazardous substances expected to be created during demolition and construction (including the hazardous materials present in the old buildings and facilities already identified in the *North Coast Area Health*

*Services Asbestos Register – March 2011*). This report, based on a detailed consultant's study conducted by Noel Arnold & Associates Pty Ltd in May 2006, identifies where asbestos is present at the Hospital that will be removed as part of the demolition process.

Removal of asbestos must be done in accordance with the NSW *Work, Health and Safety Regulation 2011*. Safety compliant procedures are described in the NSW *WorkCover Code of Practice – How to safely remove asbestos – December 2011*. The main obligations of persons removing the asbestos (or directing asbestos to be removed) under the regulation are:

- ensuring an asbestos removalist supervisor is readily available or present when the work is being carried out [Regulation 459]
- providing appropriate training and ensuring the asbestos removal worker has undertaken the relevant units of competencies associated with the asbestos removal [Regulation 460-461]
- telling various parties about the asbestos removal and providing them with appropriate information [Regulation 467-468]
- obtaining the workplace's asbestos register [Regulation 463]
- preparing an asbestos removal control plan [Regulation 464-465]
- notifying the regulator about the work before it starts [Regulation 466]
- displaying signs and labels in the asbestos work area [Regulation 469]
- limiting access to the asbestos work area [Regulation 470]
- ensuring appropriate decontamination facilities are in place [Regulation 471]
- ensuring waste containment and disposal procedures are in place [Regulation 472]
- ensuring clearance inspections are conducted and issuing clearance certificates [Regulation 473-474], and
- ensuring air monitoring is conducted, where appropriate [Regulation 475-477]..

With the exception of any hazardous waste materials, wherever practicable, measures will be implemented to minimise, re-use, and recycle any construction and demolition wastes.

Where this is cannot be reasonably achieved, wastes will be disposed of responsibly and in full compliance with all statutory requirements, using licensed waste transport and waste disposal contractors with fully compliant documentation to prove due diligence has been exercised over the transport, custody and disposal processes.

#### **4.2 Waste from Operations**

Waste streams from the proposed Redeveloped Hospital operations will include:

- general waste (including putrescible garbage)
- recyclable waste (glass, plastic, metal cans, paper, cardboard)
- confidential waste
- contaminated waste including clinical waste and sharps (Class 6, Division 6.2 infectious waste)
- cytotoxic waste (Class 6, Division 6.1), and
- trade waste and sewage.

No nuclear waste streams are to be generated by, or emanate from, KBH facilities or its operations (all patients receiving radiotherapy procedures are transported to Port Macquarie Hospital for treatment).

No chemical waste will be generated in (or by) the proposed redeveloped hospital.

#### **The collection and handling of waste within the Proposed Hospital Building**

Each of the designated waste streams will be segregated in appropriate waste containers at the point of generation, and placed in receptacles (bins) in waste holding bays located adjacent to work areas on each level of the building. This is to ensure that there is no cross contamination of the various streams, nor the inadvertent creation of unnecessary quantities of higher hazard wastes.

Waste disposal collection points are located in a central location on each floor.

Waste accumulation points are provided in the Dirty Utility rooms in the following departments:

- Emergency Department (2)
- HDU/CCU (1)

- Imaging (1)
- Medical Day Procedure (1)
- Medical In-patients Unit (2)
- Peri-Operative – Level 2 (1)

Each Disposal Room will house

- a 240 L general waste bin - collected from each point daily, 7 days per week and transferred to a central waste collection/disposal building elsewhere on the KDH campus where it is placed in a 3 m<sup>3</sup> skip for pick up by the waste disposal contractor J R Richards
- a 240 L recyclable waste bin for co-mingled waste (glass and recyclable plastics) - collected from each point daily, 7 days per week and taken to the same central collection point on the KDH campus – these bins are collected by J R Richards
- a 240 L bin for secure paper – emptied on an as needed basis

Clinical wastes will be placed in either a 240 L bin located in each Dirty Utility Room (there are 8 within the proposed new Hospital building) - or as they become available in a C64 bin lockable purpose-designed bin (see the attached brochure attached to this report as APPENDIX C) – these bins will be collected daily and conveyed to the KDH central waste accumulation/collection facility Dock for weekly pick up by a licensed waste transport contractor (Steri-Health).

#### The disposal of waste from the clinical hospital facilities

The wastes will be conveyed to a new Waste Building, that is being separately provided (and approved under the provisions of the Infrastructure SEPP), south of the new hospital building that is designed to rationalise and improve the existing accumulation facilities for the KDH campus.

This waste facility will provide improved vehicle and logistical access for waste pick up as well as securing another important benefit of better supervision and management of wastes.

All waste streams will be transported by approved (licensed) waste transporters - the current contractors to the Mid North Coast Local Health District are:- J R Richards (for

general waste); SteriHealth (for clinical waste and confidential document disposal), and J R Richards (for recyclable wastes).

All wastes generated by the KDH are disposed of responsibly at approved waste disposal activities in accordance with NSW Health written Policies and Guidelines, and in full compliance with all relevant legislation for waste transport and disposal.

Estimates of the quantity of each of the waste streams being generated by the proposed new KD Hospital, have been based on the typical reported waste streams from all activities at the existing facility (anecdotal advice having been received that the Waste for the existing clinical hospital activities represents about 80-90% of the collected waste for the KDH campus).

A scale up factor of 130% (1.3x) has been applied to reflect the increase in operating suite capacity, the increase in the number of patient beds, the additional services, and the anticipated increase of in-patient surgical and medical activities.

The tabulation on the following pages describes the nature and quantity of each of these waste streams, along with the measures to be implemented to minimise, reuse, recycle and safely dispose of these waste streams (including, as appropriate, the measures to responsibly manage the disposal of hazardous and/or contaminated waste).

Four **Clinical Waste** streams currently being disposed of have been identified. While there is some consolidation can be identified from KDH and Waste Disposal Contractor records

- **Anatomical Waste** (human tissue) double –is bagged and collected in a 240 L bin and then conveyed to a refrigerator in the waste accumulation building – an average for the four (4) months February to May 2012 of about 17 kg per month – currently picked up under NSW Health Contract by SteriHealth and incinerated (in a high temperature furnace at Silverwater)
- **Clinical Wastes** in 120 L & 240 L bins (these streams being separately reported) - an average for the 12 month period July 2010 to June 2011 of about 776 kg per month (less an average of 223.5 kg of sharps— currently picked up under NSW

Health contract and autoclaved before being disposed of in a specialist approved land-fill tip – this stream includes sharps

- **Sharps** – in S2 (2 L), S14 (14 L), S22 (20-22 L) and S32 (30-32 L) containers – these are emptied and their contents autoclaved and ultimately disposed of to an approved landfill – the containers undergo a 6-stage process of sterilisation and reassembly before being returned on an exchange system for re-use
- **Cytotoxic Wastes** – in 240 L bins - an average for the 12 month period July 2010 to July 2011 of about 6 kg per month – the current practice is to put all collected cytotoxic sharps containers into these bins for disposal - currently picked up under NSW Health contract and incinerated

As a matter of policy the MNCLHD will limit clinical waste storage to no more than 500 kg.

**Recyclable Waste** streams from the Hospital are not separated on site – 240 L bins of co-mingled recyclable wastes from each of the Disposal Rooms (or other nominated local collection point) are picked up daily and conveyed to the central wastes building where they are placed in 3 m<sup>3</sup> bins. These 3 m<sup>3</sup> bins are picked up once per week and then transported by the waste contractor (J R Richards) to their Cairncross Waste Site at Telegraph Point. Co-mingled wastes then undergo a mechanised sortation process that segregates wastes into the following streams

- **Cardboard/Paper**
- **Glass**
- **Plastics**
- **Steel and aluminium cans and other metals**
- **General wastes** (*about 7% on average of the total throughput*).

With the exception of the general waste component (that is disposed of by dumping at an approved landfill), the remainder of the segregated recyclable waste streams are transported to Sydney for beneficial re-use. Currently neither the Hospital nor the waste contractor separately quantifies the various components of the co-mingled wastes. The annual aggregate total of co-mingled waste for Year Ending June 2011 (YEJ 2011) was 579 m<sup>3</sup>.

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The Hospital segregates **Confidential Documents** for secure disposal by SteriHealth. The annual quantity of confidential documents that were disposed of for the year ending June 2011 was 8 m<sup>3</sup>.

**General Waste** (including putrescible waste) is currently decanted from 240 L bins into 3 m<sup>3</sup> skips (3) at the waste accumulation/despatch building, 5 days per week (with a daily pick up Monday to Thursday and 2 pick-ups on Friday) by the current waste contractor J R Richards. The waste is compacted on loading into the truck – it is transported to the local land-fill tip operated by Kempsey Shire Council at Crescent Head Road, South Kempsey..

Waste type	Description	Average Qt'y/month KDH (existing)	Scale factor	Proposed KDH after Redevel't completion Qty/month	Comment
General Waste	General waste from KDH redeveloped facilities is to be collected from specific departments daily by KDH hotel services.	76 m <sup>3</sup> per month	1.3	99 m <sup>3</sup> per month	<ul style="list-style-type: none"> <li>General waste is transferred to the waste accumulation/despatch building on the KDH campus where 240 L drums are decanted into 3 m<sup>3</sup> skips to be picked up by the contracted waste collection/disposal contractor J R Richards – waste is taken to the Kempsey Shire Council landfill tip site at Crescent Head Road - a licensed waste disposal landfill facility.</li> </ul>
Recyclable Waste	Co-mingled waste consisting of the following streams: <ul style="list-style-type: none"> <li>Cardboard/paper</li> <li>Glass</li> <li>Plastics</li> <li>Steel/aluminium and other metals</li> </ul>	49.3 m <sup>3</sup> per month		63 m <sup>3</sup> per month	<ul style="list-style-type: none"> <li>Wastes are picked up by the contractor and segregated by a sortation process at the Cairncross waste transfer site at Telegraph Point operated by J R Richards</li> <li>Segregated waste is then transported to Sydney for beneficial re-use</li> <li>Local efforts to exclude general wastes from recyclable waste have shown a long-term reduction in volume – these efforts will continue</li> </ul>
Confidential waste	Lockable bins of confidential records and patient information	2.3 m <sup>3</sup> per month	'1.3	3 m <sup>3</sup> per month	<ul style="list-style-type: none"> <li>Security shredding bags and 240 L bins will be located at each photocopier station generating confidential waste. As bins are filled they will be conveyed to a central collection site at the waste building elsewhere on the KDH campus to be picked up on request, the licensed contractor shreds, bales, and on-sells the paper for recycling into paper.</li> </ul>

**Table 1 Details of Kempsey District Hospital Waste Streams**

Waste type	Description	Average Qty/month KDH (existing)	Scale factor	Proposed KDH Clinical Hospital Qty/month	Comment
Contaminated waste including sharps and Clinical Waste	Anatomical (human tissue) waste collected in colour coded bins (yellow with a burgundy lid) held in the departments	17 kg per month	1.1	19 kg per month	<ul style="list-style-type: none"> <li>Maximum stored inventory based on a full month's accumulation is 19 kg</li> <li>Assume at worst all wastes classified as Class 6.2 infectious waste</li> <li>All anatomical wastes are to be incinerated at a high temperature at a licensed waste disposal facility</li> </ul>
	Clinical waste in C64 (100 L) & 240 L bins	353 kg/month	1.3	460 kg kg/month	<ul style="list-style-type: none"> <li>Wastes are picked up weekly by the contractor to MNCLHD (SteriHealth)</li> <li>Assume at worst all wastes classified as Class 6.2 infectious waste</li> <li>Maximum stored inventory is 115 kg (average)</li> <li>These clinical wastes are taken to a processing centre at Silverwater, are autoclaved and then buried at an authorised land-fill waste disposal activity (tip) operated by SITA subject to EPA licence conditions</li> </ul>
	Sharps	233.7 kg 2 x S2 (1.2 kg) 15 x S14 (60 kg) 25 x S22 (145 kg) 4.x S32 (27.2 kg)	1.2	280 kg per month	<ul style="list-style-type: none"> <li>Average figures from SteriHealth records for calendar year 2012 and based on estimated weights for the various size Sharp containers of: 0.6 kg (S2); 4.0 kg (S14); 5.8 kg (S22); and, 6.8 kg (S32)</li> <li>Sharps are picked up fortnightly from a lockable container by SteriHealth under contract to MNCLHD</li> <li>Maximum stored inventory is 140 kg</li> <li>Sharps (other than those contaminated with cytotoxic drugs) are autoclaved and are buried at an authorised land-fill waste disposal activity (tip) operated by SITA subject to EPA licence conditions</li> </ul>
	Cytotoxic Waste materials	3.7 kg/month	1.3	5 kg per month	<ul style="list-style-type: none"> <li>There is only a small intermittent demand for disposing of</li> </ul>

Waste type	Description	Average Qty/month KDH (existing)	Scale factor	Proposed KDH Clinical Hospital Qty/month	Comment
	including sharps contaminated with a cytotoxic drug	(average), 39 kg/month (peak demand)		50 kg/month (peak demand)	<p>cytotoxic wastes (68.5 kg for the entire year ending June 2011 on then only in 4 months of the year)</p> <ul style="list-style-type: none"> <li>• Pick up from KDH campus is on an as-needed basis - maximum stored inventory at KDH based on bi-weekly pick-up at peak rate is ~ 25 kg</li> <li>• Assume at worst case all cytotoxic waste is classified as dangerous goods Class 6.1 PG II</li> <li>• These clinical wastes are transported from site by SteriHealth and incinerated at high temperature at a licensed waste disposal activity</li> </ul>
Chemical Waste	Other than a small quantity of flammable liquid, cytotoxic drugs and wastes, infectious wastes, and corrosive substances, no other dangerous goods are kept in quantities above a fraction of Minor Storage limits.	Not quantified	Not assessed	Nil	<ul style="list-style-type: none"> <li>• There is no requirement for chemicals (other than cleaning/sanitation proprietary chemicals) to be stored and used. It is not expected that any chemical wastes will be generated or stored</li> </ul>

**Table 1** *Details of Kempsey District Hospital Waste Streams* (continued)

Waste type	Description	Average Qt'y/month KDH (existing)	Scale factor	Proposed KDH Acute Hospital Qty/month	Comment
Trade Waste Plumbing and Drainage	Waste from fixtures and equipment that generate non domestic waste (sewage) are considered Trade Waste discharges.	Not quantified	Not assessed	Not quantified	<ul style="list-style-type: none"> <li>• KDH is serviced with gravity sanitary drainage running from west to east, north to south and towards the south east corner of the site where it discharges through a boundary trap to Kempsey Shire Council's sewer main located in Tozer Street.</li> <li>• Currently KDH has a trade waste agreement with Kempsey Shire Council for an existing trade waste system on site serving a commercial kitchen. Trade waste from the existing kitchen is discharged to the sanitary system through a grease arrestor – grease trap waste will continue to be collected on-site and disposed of in accordance with EPA and Kempsey Shire Council requirements.</li> <li>• The proposed new building will be connected to the existing system.</li> <li>• A new deluge shower decontamination system located in the emergency department will discharge directly to 5,000 L holding tanks – captured contaminated water will be collected by a waste disposal contractor and disposed of on an as-required basis – this system will be provided with a high level alarm -any effluent water overflowing from the tank once maximum capacity is reached, will be retained in a landscaped area away from the building</li> </ul>

**Table 1** Details of Kempsey District Hospital Waste Streams (continued)

Waste type	Description	Average Qt'y/month KDH (existing)	Scale factor	Proposed KDH Acute Hospital Qty/month	Comment
Trade Waste Plumbing and Drainage (continued)	Waste from fixtures and equipment that generate non domestic waste (sewage) are considered Trade Waste discharges.	Not quantified	Not assessed	Not quantified	<p>In order to comply with discharge conditions:</p> <ul style="list-style-type: none"> <li>• kitchen trade waste or trade waste from retail or food outlets will be collected by a special system of arrestor basket floor drainage, before discharging to the grease arrestor.</li> <li>• high temperature discharges may be treated on site to limit temperature discharge to the sewer main to maximum 38 degrees Celsius, to meet requirements of Kempsey Shire Council. Additional pipe support and additional allowance for thermal expansion will be considered in the immediate vicinity of very hot discharges. Pipe materials will be selected on their ability to handle the high discharge temperatures</li> <li>• Laundry waste products – KDH does not have a laundry – linen services will be provided off-site subject to a service contract – no laundry effluent will be discharged</li> <li>• Plaster rooms discharge – plaster sinks will be provided with plaster traps located beneath the sink. The plaster traps will be stainless steel with castor mounts and union disconnection pipe work for ease of removal and service</li> <li>• Helipad surface water drainage will be provided in accordance with Office of State Water and Kempsey Shire Council requirements.</li> </ul>

**Table 1** (continued)

### Sewage discharge quality

KDH facilities will discharge sewage to the Kempsey Shire Council system. These clinical operations are known to discharge e-coli and other pathogens present in any human excrement, but at potentially higher levels than domestic sewage.

Notwithstanding this, I am advised that Kempsey Shire Council do not require separate treatment of pathogens in the Hospital's sewage effluent, in that any e-coli or other dangerous pathogens are already contained within all human waste as a normal event, and that Public Health safeguards already incorporated within the design rules for sanitary drainage systems are sufficient to manage this hazard.

There are some exceptions to the above; for

- 1) Viral haemorrhaging diseases which have a high mortality rate and can be spread by water, require patient isolation and heat sterilisation of all waste matter from infected patients. Such installations are not common. There is a unit on standby at Port Macquarie Hospital and there may be similar units at other Hospitals. *It is proposed that where patients are diagnosed with any such disease, they will be transferred to a Hospital adequately equipped to manage this hazard.*
- 2) Highly infectious water borne diseases which require patient isolation – any instances where such a disease was diagnosed would be drawn to the attention of Kempsey Shire Council via the Department of Health - *it is noted that neither AS/NZS 3500 Plumbing and Drainage set and NSW Engineering Services & Sustainable Development Guidelines - Technical Series **TS11** calls for any specific precautions in respect to pathogen treatment.*
- 3) Patients treated by radioactive isotope Iodine 131 require isolation and the bodily fluids contained for the half life of the isotope in a suitable plant - *it is proposed that no Iodine 131 treatment will be administered within the KDH Hospital facilities.*
- 4) Laboratories - The waste water products from all laboratories requires approval of appropriate trade waste treatment, in the case of infectious material this may require chlorine, ozone or ultra violet irradiation as is appropriate. *It is noted that there are no laboratory facilities located within the KDH building precinct*

5) Laundry Waste - Where fouled bed linen and similar is dealt with in-house, some hospitals laundries undertake Ozone treatment of the waste stream as a precautionary biocide. Ozone is a gas treatment that is in common use in swimming pool water sterilisation, the gas being generated by discharging an electrical current in dry air, the product of this process being then diffused through the water to be treated for an instant bacteria kill. *No linen service will occur within KDH – it will be collected for off-site processing.*

## 5. HAZARDS

This report, by addressing the items specified in the DGRs, ensures that the proponent properly considers specific hazards in order to provide an assurance that the design of the facilities is fit-for-purpose and adequate to maintain an acceptable level of safety, It is part of a process for ensuring that all the implications of the intended usage of hazardous chemicals are fully described before any consent is granted.

Certain high hazard activities are additionally required to undergo a more rigorous process of safety assurance than others of inherently lower risk potential as part of the development consent process. These high hazard activities are identified by a screening process pursuant to a planning instrument, State Environmental Planning Policy 33 (SEPP 33). All development proposals are required to determine whether SEPP 33 applies.

### 5.1 The Applicability of State Environmental Planning Policy 33 (SEPP 33) to the Phase 1 components of the Kempsey District Hospital Development Project

State Environmental Planning Policy (SEPP) 33 is an enabling instrument that links safety and pollution control performance, to the permissibility of an industrial proposal.

SEPP 33 applies to proposals that fall under the policy's definition of:

- **'potentially hazardous industry'** - where the quantities of dangerous goods or transport movements involving dangerous goods exceeds the threshold limits described in the document *Applying SEPP 33*, or
- **'potentially offensive industry'** - a proposal that, in the absence of safeguards, would emit a polluting discharge which would cause a significant level of offence.

## 5.2 Assessing whether a proposal is potentially hazardous industry

The screening process relies on a sorting procedure related to the nature and quantity of dangerous goods present on the site of the proposed development.

Dangerous goods are a group of substances that have been recognised as having some immediate public safety threat due to their hazardous properties. Dangerous goods have been listed in a number of national and international publications (in Australia this list is set out in the *Australian Dangerous Goods Code* – currently in the 7<sup>th</sup> edition).

A system of classification and labelling of dangerous goods has been adopted throughout Australia which is consistent with systems used throughout most of the world. This system has been devised to help people quickly recognise dangerous goods and their properties and hazard potential.

All dangerous goods that are handled or transported must be accurately classified into classes that reflect their characteristics (it being the responsibility of the manufacturer or importing agent to ensure that the dangerous goods are accurately classified).

Dangerous goods are divided into nine '**classes**' (and in the case of dangerous goods of Classes 1, 2, 4, 5 and 6 these classes are further subdivided into '**divisions**'). Each 'class group' is comprised of substances which have similar properties or hazards. Goods having more than one hazardous property are classified under their primary class and where they have some additional hazard, they are also assigned a '**subsidiary risk**'.

An example occurring frequently in clinical areas such as the Acute Care Hospital, is compressed oxygen which is assigned to Class 2 gases, Division 2.2, Sub risk 5.1, to indicate that not only is it a compressed non-flammable gas, but that it also has oxidising properties (that render it capable of making say the severity of a fire situation, worse).

Substances within Classes 3, 4, 5, 6 and 8 are further subdivided into **Packing Groups** (abbreviated as PG) to indicate their relative inherent risk (PG I - high risk, PG II - moderate risk, and PG III - least risk).

The various dangerous goods classes are:

**Class 1 – Explosives** - are substances and articles used to produce explosions or pyrotechnic effects.

**Class 2 – Gases** - includes gases which are compressed, liquefied or dissolved under pressure. Some gases have subsidiary risk classes (i.e. other risk characteristics such as 'flammable' or 'corrosive'):

- **Division 2.1** - Flammable gases are gases which ignite on contact with an ignition source (such as acetylene, hydrogen, LP gas)
- **Division 2.2** - Non-flammable gases are gases which are neither flammable nor poisonous (such as oxygen, nitrogen, medical air, argon)
- **Division 2.3** - Poisonous gases are gases liable to cause death or serious injury to human health if inhaled - such as ammonia, chlorine, carbon monoxide

**Class 3 - Flammable liquids** – are liquids which can be ignited and will burn on contact with ignition sources

**C1 & C2 combustible liquids** – are liquids that will burn (often fiercely) when they are heated and ignited – C1 combustible liquids are of relatively lower flashpoint and include liquids such as diesel fuel, olive oil and other vegetable oils while C2 combustible liquids have a high flashpoint and include substances such as lubricating and hydraulic oils

**Class 4 - Flammable Solids** – are solids that have characteristics that pose a risk of fire and/or explosion and includes:

- **Division 4.1** - flammable solids that are easily ignited and readily combustible - such as nitrocellulose, phosphorus, matches, hexamine;
- **Division 4.2** - spontaneously combustible substances - such as aluminium alkyls, white phosphorus);
- **Division 4.3** - substances emitting a flammable gas when wet, or which react violently with water (such as aluminium phosphide, calcium carbide).

**Class 5 – Oxidisers** – are substances that can promote or exacerbate the effect of fire and include

- **Division 5.1** - Oxidizing agents other than organic peroxides (such as calcium hypochlorite (pool chlorine), ammonium nitrate, hydrogen peroxide); and.

- Division 5.2 - Organic peroxides, (liquid or solid) (such as methyl ethyl ketone peroxide, benzoyl peroxides, cumyl hydroperoxide).

**Class 6 – Toxic and Infectious Substances** - (this classification does not include poisonous gases), and are further classified as being either:

- Division 6.1 - Toxic substances - which may be liquids or solid) and which are liable to cause death or serious injury to human health if inhaled, swallowed or absorbed through the skin (such as cyanides, arsenic compounds), or which are harmful to human health (such as low toxicity pesticides).
- Division 6.2 – are Infectious substances (such as vaccines, pathology specimens).

**Class 7 – Radioactive Substances** – are substances that either alone, or in a combination of substances, emit ionising radiation (such as uranium, radioisotopes).

**Class 8 – Corrosives** - are substances (either solids or liquids) which may harm living tissue or damage equipment - such as hydrochloric acid, sodium hypochlorite (liquid pool chlorine), sodium hydroxide, and lead acid batteries.

**Class 9 - Miscellaneous Dangerous Goods** - are substances that are not classified elsewhere but which are known to have a safety risk when being transported - such as molten naphthalene, molten bitumen, polyester beads, and lithium batteries.

### **5.3 Nature and quantities of dangerous goods being stored and handled at the proposed new building of the Kempsey District Hospital**

A manifest of dangerous goods present at the premises has been developed (see APPENDIX A).

It should be noted that several facilities listed in Appendix A (such as the LP Gas tanks, the bulk cryogenic gas storage tanks and the underground diesel tank that are to be located in a service compound) are outside. These facilities are to be provided separately under the provisions of ISEPP and do not form part of the SDA of the hospital building

The dangerous goods described in APPENDIX A include:

- a tank farm containing 3 x 7,500 L tanks having a maximum capacity of 9,716 kg if all 3 tanks were to be filled concurrently to maximum capacity (source: Elgas) – an increase of 50 % from the existing 2 x 7,500 L tanks currently at KDH
- cryogenic liquefied oxygen (to be stored in two bulk storage tanks in a relocated compound for reticulation to the entire Hospital campus
- small quantities of compressed oxygen in cylinders in portable ready use units (say up to a maximum of 10 x G-size – total cylinder water capacity 500 L)
- flammable liquids in very small quantities (only in proprietary cleaning solutions such as methylated spirits) in Cleaner’s stores – estimated to be less than a maximum of 60 L – also allow for 1 x 250 L cabinet in the Maintenance area for paint and paint-related material - these could be goods of PG II & III
- Class 6.1 cytotoxic drugs (with small quantities of active ingredients) – the active component will be less than 1 kg, and cytotoxic contaminated waste is only 4 kg, and
- Class 6.2 infectious substances – the maximum quantity of clinical waste to be kept at the Hospital at any one time is about 315 kg (a figure based on current transport scheduling – it could be reduced with more frequent pick-up should this be necessary to meet the policy objective of keeping < 500 kg, and
- Class 8 corrosive substances (in 6 Cleaners Stores with an assumed average maximum quantity of 8 L per store – aggregating to 48 L)

It has been confirmed that no radioactive wastes of Class 7 (radioactive substances) are to be generated or kept in the building. .

Based on the quantities of goods listed in APPENDIX A, and in accordance with the outcome of the screening method for potentially hazardous development summarised in Table 2 overleaf, the provisions of SEPP 33 do not apply to the proposed development.

<b>SEPP 33 applies if</b>	<b>Threshold</b>	<b>Actual</b>
The total maximum quantity of LPG stored on site in above-ground tanks exceeds 10 tonnes	10 tonnes as per Table 3 – <i>General Screening Threshold Quantities</i> as described in <i>Applying SEPP 33</i> January 2011 edition	9,716 kg – SEPP 33 does not apply

<b>SEPP 33 applies if</b>	<b>Threshold</b>	<b>Actual</b>
Class 2 non-flammable gases and cryogenic liquids exceed limit described in Table 1 in the section Risk Screening - Figure 9 of the document <i>Applying SEPP 33</i>	No limit is set	2 bulk liquid oxygen tanks (1 x 3000 L and 1 x 15,000 L are to be provided – also gas cylinder storage of up to 10 x G-size cylinders to be provided - SEPP 33 - does not apply
Class 3 dangerous goods (flammable liquids) exceed the lower threshold limit) <u>and</u> are not sufficiently separated from the boundary by the distance given in the section Risk Screening - Figure 9 of the document <i>Applying SEPP 33</i>	In the case of Class 3 PG II/PG III flammable liquids, the lowest threshold limit below which SEPP 33 does not apply is 2,000 L if worst case of PG I goods is assumed	Quantities to be kept at the Acute Hospital are below threshold limit - SEPP 33 does not apply
Quantity of goods of Class 6.1 exceeds threshold limit	Threshold quantities: <ul style="list-style-type: none"> <li>• 0.5 tonnes for PG I;</li> <li>• 2.5 tonnes PG II/III</li> </ul>	Quantities below threshold limit - SEPP 33 does not apply
Quantity of goods of Class 8 exceeds threshold limit	Threshold quantities: <ul style="list-style-type: none"> <li>• 5 tonnes for PG I</li> <li>• 25 tonnes PG II;</li> <li>• 50 tonnes PG III</li> </ul>	Quantities below threshold limit - SEPP 33 does not apply
Quantity of Class 6.2 clinical wastes exceeds threshold quantities	Threshold quantity is 0.5 tonne	SEPP 33 does not apply - the maximum quantity of clinical waste kept at any one time is about 310 kg- no more than 500 kg is ever present
Number of significant transport movements meeting the specified criteria are exceeded	Number of traffic movements of dangerous goods greater than 1 tonne capacity exceed the frequencies set in the screening threshold for LPG the threshold is more than 30 loads per week – no limit is set for bulk cryogenic non-flammable gases	The only transport operations exceeding this capacity are bulk LPG deliveries (2 loads per week) and liquid oxygen (say 1 load per 2 weeks) - SEPP 33 does not apply

*Table 2 – Applicability of SEPP 33 for potentially hazardous industry*

#### **5.4 Assessing whether a proposal is potentially offensive industry**

The primary consideration in assessing whether any proposal falls within the ‘potentially offensive industry’ category is whether the consent authority is satisfied that there are adequate safeguards to ensure that any emissions from a facility can be controlled to a level at which they are not significant. Where proposed activities do not require a licence pursuant to protection of the environment legislation, or where they do require a licence but in the opinion of the environmental regulator the proponent can fully meet its licence requirements, a proposal is not deemed to be ‘offensive industry’.

I am advised that no licence is required pursuant to the Chapter 3 of the *Protection of the Environment Operations Act* hence the KDH is not potentially offensive development in accordance with the screening method for the application of SEPP 33.

#### **5.5 Conclusion on the applicability of SEPP 33**

As a consequence of being neither potentially hazardous nor potentially offensive industry, SEPP 33 does not apply to the Acute Hospital project.

### **6. THE PROPOSED STORAGE, USE AND MANAGEMENT OF HAZARDOUS MATERIALS**

The design of the facilities for the receiving, storage, handling and use of hazardous materials, and the proposed operations of the KDH acute care activity, will be in accordance with:

- the National Construction Code 2012
- the NSW *Work Health and Safety Act* 2011 and the *Work Health and Safety Regulation 2011* (particularly Chapter 7 – *Hazardous Chemicals*)
- the various standards relating to the storage and handling of specific classes of dangerous goods, including:
  - AS 1894-1997 *The storage and handling of non-flammable cryogenic and refrigerated liquids*
  - AS/NZS 4332-2004 *The storage and handling of gases in cylinders*
  - AS 1940-2004 *The storage and handling of flammable and combustible liquids*
  - AS/NZS 4452-1997 *The storage and handling of toxic substances*
  - AS 3780-2008 *The storage and handling of corrosive substances, and*

- AS/NZS 4681-2000 *The storage and handling of Class 9 (miscellaneous) dangerous goods and articles*
  - standards covering the classification of hazardous areas that describe the spaces from which ignition sources must be excluded, particularly AS/NZS 60079.10.1- 2009 Explosive Atmospheres – *Part 10.1 : Classification of areas – Explosive gas atmospheres (IEC 60079-10-1, Ed. 1.0(2008) MOD)*
  - the *Code of Practice – Storage and Handling of Dangerous Goods (2005)* – WorkCover NSW.

## 6.1 Radiation hazards

Diagnostic and clinical treatment radiation equipment will be present and used in the KDH.

A radiation consultant has been engaged by Health Infrastructure and once the selection of diagnostic imaging equipment has been finalised, an expert report of the shielding requirements for the structure internally and surrounding this department will be prepared for coordination with the project manager.

Shielding requirements for imaging equipment is make/model dependant and is identified and specified by the equipment suppliers. When the equipment selection is finalised, KDH will follow all the shielding guidelines nominated by the equipment supplier/s.

The design will be developed so as to fully comply with the following Australian Standards:

- AS/NZS 3200.1.3:1996 - *Approval and test specification - Medical electrical equipment, Part 1.3: General requirements for safety - Collateral Standard: Requirements for radiation protection in diagnostic X-ray equipment*
- AS 2814-1985 - *Diagnostic X-Ray facilities – Safe practices* (reference only – standard withdrawn)
- AS 1319 – 1994 - *Safety signs for the occupational environment.*
- AS 2243.4 – 1998 - *Safety in laboratories. Part 4: Ionizing radiations*
- AS/NZS 2211.1:2004 – *Safety of laser products – Equipment classification, requirements and users guide (EC 60825-1:2005, MOD)*
- AS/NZS 4173:2004 - *Guide to the safe use of lasers in health care.*

- AS/NZS 4543.1:1999 - *Protective devices against diagnostic medical X-radiation. Part 1: Determination of attenuation properties of materials.*
- AS/NZS 4543.2:1999 - *Protective devices against diagnostic medical X-radiation - Part 2: Protective glass plates.*

Adherence to these standards and to those listed earlier in relation to dangerous goods safety, ensures that the facilities and activities resulting from the proposed redevelopment of Kempsey District Hospital, will be in accordance with best-practice achievable for a bio-medical clinical facility, and will secure an acceptable level of safety.

## **7. GENERAL CONCLUSION**

As stated earlier in this advice, based on the information provided to me as described in this report, it is my opinion that SEPP 33 does not apply to the redevelopment of Kempsey District Hospital.

Further, the proposed facilities for the storage, handling and use of dangerous goods and hazardous substances, will be designed and constructed in compliance with all relevant legislative requirements.


This is consistent with best practice principles for the management of risk to health and safety posed by the materials to be kept and used. It will therefore secure a level of safety and environmental performance described in the relevant standards and codes of practice applying clinical facilities, thereby meeting deemed compliance with relevant statutory instruments and obligations.

Should you need to clarify any of this advice, or raise any other issues, I would be happy provide further assistance.

I thank you for the opportunity of providing advice in these matters.

Yours sincerely

Safety Engineering & Technical Services Pty Ltd



Ross Underwood, MIEAust, CPEng, MSIA, MAIDGC  
General Manager

**DISCLAIMER**

This opinion in relation to the compliance of the facilities to be provided at the Kempsey District Hospital Redevelopment Project was prepared impartially and the assessment completed independently by Safety Engineering & Technical Services Pty Ltd. The report reflects our best judgement based on the information available at the time of preparation. Any use that any party makes of the documentation, however, is the responsibility of such party. Safety Engineering & Technical Services Pty Ltd accepts no responsibility whatsoever for damages (if any) suffered by any party in reliance on information contained in this report.

## APPENDIX A List of dangerous goods storage depots at the proposed Redeveloped Kempsey District Hospital

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
<b>Hospital Service Area Precinct</b>					
<u>Ground Floor – Yard Precinct</u> Bulk LPG storage tanks (a shared facility) reticulated throughout the KDH Campus	2.1	-	LPG	7,500 L w.c.	Above ground tank (1 of 3) in a compound supplying the KDH campus – installation in accordance with AS/NZS 1596-2008 <i>The storage and handling of LP Gas – Total aggregate gas capacity of all 3 LP Gas tanks is 9,716 kg – REF works - subject to ISEPP</i>
	2.1	-	LPG	7,500 L w.c.	Above ground tank (1 of 3) in a compound supplying the KDH campus – installation in accordance with AS/NZS 1596-2008 <i>The storage and handling of LP Gas - REF works - subject to ISEPP</i>
	2.1	-	LPG	7,500 L w.c.	Above ground tank (1 of 3) in a compound supplying the KDH campus – installation in accordance with AS/NZS 1596-2008 <i>The storage and handling of LP Gas - REF works - subject to ISEPP</i>
<u>Ground Floor – Yard Precinct</u> Bulk cryogenic oxygen supply (a shared facility) reticulated throughout the KDH Campus	2.2/5.1	-	Liquefied oxygen	15,000 L	• Above ground tank (1 of 2) in a compound supplying the KDH campus – installation in accordance with AS 1894-1997 – all pipework to be installed in accordance with AS 2896-2011 <i>Medical gas systems – Installation and testing of non-flammable gas pipeline systems - REF works - subject to ISEPP</i>
	2.2/5.1	-	Liquefied oxygen	3,000 L	• Above ground tank (1 of 2) in a compound supplying the KDH campus – installation in accordance with AS 1894-1997 – all pipework to be installed in accordance with AS 2896-2011 <i>Medical gas systems – Installation and testing of non-flammable gas pipeline systems - REF works - subject to ISEPP</i>
<u>Ground Floor – Yard Precinct</u> Bulk diesel tank (underground)	C1 or flammable liquid Category 4	-	Diesel fuel	10,000 L	• Underground tank – installation in accordance with AS 1940-2004 - - REF works - subject to ISEPP

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
<b>Lower Ground Floor</b>					
Engineering Service Area	3	II/III	Paint/Paint-related materials	250 L	<ul style="list-style-type: none"> <li>Approved flammable liquid cabinet to AS 1940-2004</li> </ul>
<b>Ground Floor Level 00</b>					
Dirty Utility Room (Room 13037)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>Capacity refers to the physical size of bin and is not related to the volume of waste</li> </ul>
Dirty Utility Room (Room 13038)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>As above</li> </ul>
Disposal Room (Room 13039)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>As above</li> </ul>
Cleaner's Room (Room 13032)	8	III	Corrosives (acids/alkalis)	8 L	<ul style="list-style-type: none"> <li>While most cleaning chemicals are either detergents or other non-hazardous goods, bleach solutions and acidic toilet bowl cleaning solutions can be used in a Hospital environment</li> </ul>
Cleaner's Room (Room 11025)	8	III	Corrosives (acids/alkalis)	8 L	<ul style="list-style-type: none"> <li>While most cleaning chemicals are either detergents or other non-hazardous goods, bleach solutions and acidic toilet bowl cleaning solutions can be used in a Hospital environment</li> </ul>
Dirty Utility Room (Room 11027)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>As for other Dirty Utility Rooms</li> </ul>
Cleaners Room (Room 12012)	8	III	Corrosives (acids/alkalis)	8 L	<ul style="list-style-type: none"> <li>While most cleaning chemicals are either detergents or other non-hazardous goods, bleach solutions and acidic toilet bowl cleaning solutions can be used in a Hospital environment</li> </ul>
Dirty Utility Room (Room 12018)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>As for other Dirty Utility Rooms</li> </ul>
Dirty Utility Room (Room 16012)	6.2	II	Clinical waste	240 L	<ul style="list-style-type: none"> <li>As for other Dirty Utility Rooms</li> </ul>

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Cleaners Room (Room 10010)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
<b>First Floor (Level 01)</b>					
Cleaners Room – (Room 14052)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaner's Stores
Dirty Utility Room (Room 14054)	6.2	II	Clinical waste	240 L	• As for other Dirty Utility Rooms
Disposal Room (Room 14056)	6.2	II	Clinical waste	240 L	• As for other Disposal Rooms
Dirty Utility Room (Room 14055)	6.2	II	Clinical waste	240 L	• As for other Disposal Rooms
<b>2nd Floor – Level 02</b>					
Dirty Utility Room – (Room 15042)	6.2	II	Clinical waste	240 L	• As for other Dirty Utility Rooms
Cleaners Room - (Room 15028)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaner's Stores
Disposal Room – (Room 15041)	6.2	II	Clinical waste	240 L	• As for other Disposal Rooms

**NOTES:**

PG - Packing Group – a measure of the relative hazard of a dangerous good of Class 3, 4, 5, 6, 8 & 9 – (PG I goods are those of highest hazard, PG II goods are of moderate hazard, and PG III are goods of relatively low hazard) – this is a term still extant in the current Australian Dangerous Goods Code (ADG 7) and will remain in common use until 2015 when it will be replaced with the term 'Category' as GHS classification systems come into force

## **APPENDIX B                      Who provided the advice in this report?**

This report was prepared by Ross Underwood, a graduate mechanical engineer with postgraduate qualifications in industrial engineering from the University of New South Wales, with over 43 years experience in industrial practice.

The first 12 years of his professional career were spent in the petrochemical industry where he was involved in a variety of different functions including engineering maintenance, major new plant construction, project work associated with energy conservation and improving environmental performance, and chemical plant production management. He then spent 3 years managing reconstruction works at the Pymont Sugar Refinery, before being appointed as Personnel and Administration Manager for a major manufacturing activity, a position he held for 5 years.

In 1986 he established Safety Engineering and Technical Services Pty Ltd, a safety consulting and engineering contracting/consulting business. His company has undertaken a substantial number of consulting tasks in safety management for a very diverse range of private sector industrial and government clients including what was then the NSW WorkCover Authority.

Ross has conducted specific training programs and seminar sessions in safety awareness, accident investigation & other safety skills at all organisational levels. He was formerly accredited by WorkCover NSW as a trainer in workplace consultation, building industry induction, hazardous substances and risk management courses. He has trained management & employee safety committee representatives from over 80 different organisations. He has lectured in OH&S for both undergraduate and postgraduate students at the universities of UNSW, Sydney, Western Sydney and the University of Technology. He has undertaken longer term engineering contracting/consulting assignments in the brewing, building and manufacturing/industrial, warehousing and transport, government and military sectors.

His particular areas of expertise include:- dangerous goods storage, handling and transport matters; laboratory design; occupational health and safety performance auditing; construction management; plant & machinery safety, maintenance; industrial relations; accident investigation; workplace and safety system auditing; product packaging and labelling; and, the formulation and maintenance of safe work systems (including the preparation of emergency response and environment management plans). He has also been involved in the pre-planning and design of a number of major manufacturing plant and warehouse projects and has prepared risk and hazard analyses as part of the process for securing development approval for these facilities. He has provided a number of expert opinion reports for litigated matters related to oh&s and dangerous goods matters.

He has provided specialist advice on dangerous goods and more general occupational health and safety issues associated with several major building/re-building projects most recently including:- the Ingham Health Research Institute at Liverpool Hospital; the Hunter Medical Research Institute; the Australasian Institute for Innovative Materials at the University of Wollongong; a Veterinary Diagnostic laboratory at Charles Sturt University at Wagga Wagga; the Special Operations Working Accommodation Upgrade Project; the 171 Aviation Squadron (Blackhawk helicopter) Relocation Project; HMAS CRESWELL Redevelopment at Jervis Bay, the ASC Shipyard Redevelopment, and the upgrade of HMAS PENGUIN – all for the Australian Defence Forces; and, the major redevelopment of the University of New South Wales North Mall (including new facilities for Applied Science and Chemistry)

Ross has contributed as an author to a number of technical journals and to the CCH International *Occupational Health & Safety Manual*, the *Plant Safety* manual, the *OHS Manager- The Hands on Guide* and the *2003 Australian master OH&S & environment guide*.

He is a Member of the Institution of Engineers, Australia, a Member of the Safety Institute of Australia, a Chartered Member of the Australian Human Resources Institute, and a founding member of the Australasian Institute of Dangerous Goods Consultants.

He has completed Certificate IV courses in Workplace Safety, and Workplace Assessment and Training, and the Risk & Liability Management short course convened by Engineering Education Australia.

## **APPENDIX C      Brochure on CliniSmart Waste Disposal Bins - Sterihealth**



**Clinismart**

## The future of clinical waste management

- ✓ Reduces infection transfer
- ✓ Decreases your environmental footprint
- ✓ Minimises logistics handling time
- ✓ Dramatically improves aesthetic appeal



**SteriHealth**  
Safer Simpler Smarter



## The smarter way to manage clinical waste

The reusable Clinismart system sets new standards in infection control, environmental effectiveness and logistical cost savings and, of course, is fully compliant.

Evolved from the industry-leading Sharpsmart system, the user-friendly and aesthetically pleasing Clinismart system delivers a revolutionary advancement in the field of clinical waste collection.



### **Dramatically reduced infection transfer**

Using a foot-pedal opening mechanism and a bagless system now means hand contact with the collector is no longer required. This results in a dramatic reduction in the infection transfer risk that currently exists with standard clinical waste collectors.

The new, reusable collector system ensures that once full, each container is removed from your premises, emptied, and then subjected to a rigorous 6-stage wash and sanitation process. This process is so effective that the risk of infection from a returned empty collector is less than 1 in 100 billion!

### **Reduced waste through improved waste segregation**

The reusable Clinismart system will help you make a significant waste reduction impact. Clear labelling and the easily identifiable design of the Clinismart collector encourages better waste segregation because the collectors are far less likely to be used for general waste, resulting in fewer bin exchanges.

### **Optimised space**

The compact, clean design is far less intrusive in the clinical setting, and it also helps to optimize space usage in high demand utility and waste areas like loading docks.

### **Reusable system that's eco-friendly**

As the Clinismart system is reusable, there are no plastic rubbish bags required, eliminating disposable plastic waste. The eco-friendly wash process Washsmart uses a fully automated wash system that even uses recycled water to ensure minimum environmental impact.

### **Time saving**

The compact design allows the Clinismart collectors to be located at the point of waste generation, eliminating the need to transfer waste to larger bins after disposal.

Easy to use transportation trolleys allow for simpler, more efficient movement of Clinismart collectors by environmental services staff.

### **Cost-effective**

Clinismart delivers a range of cost efficiencies. For example, the more clinical appearance of the Clinismart collector, combined with clear labelling, discourages staff and patients from using it for general waste disposal. This ensures that you are not paying clinical waste disposal premiums for general waste.

In addition, more efficient logistics resulting from the compact design and Clinismart transportation accessories reduces the workload on environmental services staff.

# Packed with safer, more eco-friendly features



Accessmart trolley with foot pedal (pictured) is sold separately

## Neat, compact design

Clinismart's compact and sleek design allows you to locate it exactly where it's needed, without the unsightly visual impact of the garbage bin alternative. Similarly, the foot pedal option also eliminates the previously awkward and unhygienic task of opening and closing the lid by hand.

### Wide opening

for safe and simple waste disposal

### No plastic bags

- minimises germ exposure due to bin and bag handling
- reduces your environmental footprint

### Secure locking systems

- temporary front-locking mechanism enhances safety
- once full, tamper-proof side locks are engaged, preventing spillage at the docking station

### No leaks

leakproof seal eliminates spills

### Effective labelling

encourages better waste segregation and therefore fewer bin exchanges

### Foot-pedal operation

the hands-free operating system provides superior infection control

### Pivoting wheels

- easy to manoeuvre
- wheel locks prevent movement once positioned

Service Code: DC64.

Dimensions: 730mm (H) x 400mm (W) x 350mm (D).

Capacity: nominal 64L, effective 56L.

Nominal maximum weight: 18kg.

**Note: this is not a sharps container. Soft clinical waste only.**

# Clinismart system options

There are numerous accessory options available for the Clinismart clinical waste collector – all designed to improve your waste stream efficiency and effectiveness.

Talk with a SteriHealth representative to determine the most suitable accessories for your needs.

## Clinismart holders

### Accessmart Trolley (with foot pedal)

The Accessmart Trolley is aesthetically pleasing and is easy to manoeuvre. It's the smartest way to make Clinismart mobile whilst providing hands-free operation via the foot pedal.

**Dimensions:**  
912mm H, 490mm W, 464mm D  
**Order Code:** I-11193



### Dynamic Floorstand (with foot pedal)

The Dynamic Floorstand keeps Clinismart off the ground while providing hands-free operation via the foot pedal. Small sturdy back wheels allow short distance mobility.

**Dimensions:**  
924mm H, 417mm W, 552mm D  
**Order Code:** I-11329



### Static Floorstand (with foot pedal)

This Static Floorstand keeps Clinismart off the ground in a fixed position. Hands-free operation is enabled via the foot pedal.

**Dimensions:**  
782mm H, 417mm W, 477mm D  
**Order Code:** I-11332



### Static Floorstand (without foot pedal)

This Static Floorstand holds Clinismart off the ground in a fixed position and has a hand-operated opening mechanism.

**Dimensions:**  
643mm H, 305mm W, 371mm D  
**Order Code:** I-11333



### Cartsmart 1 Trolley (without foot pedal)

The Cartsmart Trolley provides convenient mobility for the Clinismart collector using a hand-operated opening mechanism.

**Dimensions:**  
835mm H, 435mm W, 432mm D  
**Order Code:** I-11190



## Bulk delivery carts

### Small Internal Delivery Cart

The Small Internal Delivery cart is ideal for transporting up to 6 Clinismart units (3 on each side) between the Dock and Ward. Also pictured with Sharpsmart range.

**Dimensions:**  
1440mm H, 1422mm W, 870mm D  
**Order Code:** I-11326



### Large Internal Delivery Cart

The Large Internal Delivery cart is ideal for transporting up to 8 Clinismart units (4 on each side) between the Dock and Ward. Also pictured with Sharpsmart range.

**Dimensions:**  
1385mm H, 1879mm W, 870mm D  
**Order Code:** I-11327



## Logistical optimisation

### External Transporter

Used for vehicle transportation between your loading dock and our treatment facility, the SteriHealth Transporter holds up to 12 Clinismart collectors and is available to high volume healthcare centres.

**Dimensions:**  
1834mm H, 756mm W, 1217mm D





“ Finally someone has found a way to get unsightly mobile garbage bins out of hospital wards...”

# Can you risk using any other system?

In one clean sweep, the Clinismart system removes a major source of germ transfer from healthcare facilities. Can you risk using any other system?

## What the experts say

“The new Clinismart system encourages positive waste segregation and improves waste handling logistics throughout our facility...space efficiency gains in our Utility and Waste room are a huge bonus.”

Tim Milner, Environmental Services Manager  
Ramsay Hospital, North Shore Private

“The Clinismart cleaning process was tested by coating bins with 6-log blood-suspensions of Staph aureus, E. faecalis and Mycobacterium phlei. On swabbing them after the wash, not a single pathogen remained. The risk of infection was less than 1 in 100 billion!”

Terry Grimmond, Microbiologist



## Clinismart is perfect for:

- Hospital wards
- Day procedure centres
- Pan rooms
- Isolation rooms
- Recovery bays
- Emergency departments
- Intensive care unit bays
- Medical centres
- Research institutes
- Pathology collection rooms
- Medical imaging centres
- Blood collection centres
- General practice rooms
- Laboratories
- Veterinary clinics
- Dialysis clinics

## We're here to help

Learn more about how Clinismart can enhance the safety and efficiency of your clinical waste system.

Freecall: 1300 66 77 87  
Visit: [www.sterihealth.com.au](http://www.sterihealth.com.au)  
Email: [enquiries@sterihealth.com.au](mailto:enquiries@sterihealth.com.au)