APPENDIX M

Waste and Hazards Report

Safety Engineering & Technical Services Pty Ltd

***O**CCUPATIONAL **H**EALTH, **S**AFETY & **E**NGINEERING **C**ONSULTANTS*

ABN: 90 003 112 945

14 December 2012

The Manager
Confluence
Level M, 50 Carrington Street
SYDNEY NSW 2000

Attention: Mr Alan Beaver

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 – Wagga Wagga Base Hospital – Phases 2 & 3 (Acute Hospital) Development

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 Phase 2 & 3 redevelopment of the Wagga Wagga Base Hospital ("WWBH") - a proposed replacement Acute Hospital

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 WWBH, including issues pertaining to wastes, for the acute care hospital replacement component of 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 Acute Hospital - Wagga Wagga Base Hospital project pertaining to providing information on waste and hazardous chemicals are to:

16. Waste

- *Identify, quantify and classify the likely waste streams to be generated during construction and operation;*
- *Describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste*
- *Describe the measures to be implemented to manage the disposal of nuclear waste, if required; and*
- *Describe the measures to be implemented to manage the disposal of contaminated and potentially contaminated biological and sewage waste, if required.*

17. Hazards

- *(Provide) an assessment against State Environmental Planning Policy No. 33 – Hazardous and Offensive Development; and*
- *(Provide) a description of the proposed storage, use and management of any hazardous material, 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 STAGE 2 FACILITIES RELEVANT TO THIS REPORT

The proposed development of a new Acute Hospital will be carried out as part of the phased delivery of the overall hospital redevelopment, which allows for the ongoing service provision from the existing hospital while new facilities are built. As phases are completed, the relevant existing services will be decanted, allowing demolition of these buildings and the provision of new buildings and associated car parking in their place.

The new Acute Hospital (a building of 8 storeys including a roof-top helipad and having a gross floor area of 21,000 m^2), replaces the existing Acute Hospital building and includes:

- Ground Floor - an expanded Emergency Department, Medical Imaging Suite, Main Entrance and Client Services, Public Amenities (including a retail space), Pharmacy
- 1st Floor- a Procedures Centre/Operating Suites (including a Perioperative Unit), Angiography Suite, Sterile Services Unit
- 2nd Floor – In-Patient's Unit – Surgical, Critical Care Unit
- 3rd Floor - Paediatric & Adolescent PU, Women's Health and New Born Unit
- 4th Floor – Medical Assessment & Stroke IPU, Staff Amenities, Hospital Administration, Medical IPU
- 5th Floor – Orthopaedic/Surgical IPU and Surgical IPU
- 6th Floor – Plant Rooms & IT Services, and
- 7th Floor – Helipad.

The Acute Hospital building will be constructed south of the existing Multi-Storey Ward Building (as Phase 2) and accommodate:- 176 Acute Overnight beds (cf 153 in the existing Acute Hospital); 31 day and extended Day Surgery Beds (up from 28); 6 Birthing Suites (up from 4); 8 operating suites (up from 5); with two new Angiography/Cardiac Labs (formerly there were none).

Upon completion of Phase 2, the Multi-Storey Ward building will be demolished and the following works carried out:

- modified access arrangement from Edward Street;
- new car parking facilities; and

- integrated landscaping.

4. WASTES

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 the Acute Hospital, 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

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 from a detailed consultant's study).

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 Acute 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, WWBH Acute Hospital facilities or its operations (all patients receiving radiotherapy procedures are transported to Calvary Hospital in Wagga Wagga for treatment).

No chemical waste will be generated in (or by) the Acute Hospital.

The collection and handling of waste within the Acute Hospital

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 the following departments:

- Emergency Department
- Medical Imaging
- Critical Care
- Procedures Centre/Operating Suites
- Angiography.
- Sterile Services Unit
- Medical In-patients Unit
- Orthopaedic/ Surgical
- Women's Health and New Born

Each Disposal Room will house

- a 660 L general waste bin - collected from each point 3 times per day, 7 days per week and compacted

Note that this is different to the current system where the waste is collected in 240 L bins – these are then decanted into 3 x 3 m^3 bins for pick up each day (7 days per week) by SITA – the approved and contracted waste disposal contractor.

- a 240 L Recycle bin for co-mingled waste (glass and recyclable plastics) - collected from each point 3 times per day, 7 days per week) and taken to a collection point – these bins are collected by Kurrajong Recyclers
- a 240 L bin for cardboard (collected from each point 3 times per day, 7 days per week – to be compacted)

Clinical wastes will be placed in a 240 L bin located in each Dirty Utility Room (there are 15 within the Acute Hospital building) – these bins will be collected twice daily and conveyed to the Loading Dock for daily pick up by a licensed waste transport contractor.

The disposal of waste from the Acute Hospital

The wastes will be conveyed to a new Loading Dock facility, that is being separately provided (and approved under the provisions of the Infrastructure SEPP) at an adjoining location, to improve the existing accumulation facilities for the WWBH campus.

This Loading Dock 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 Murrumbidgee Local health District are SITA (for general waste), SteriHealth (for clinical waste), and Kurrajong Recyclers (for recyclable wastes). All wastes generated by the Acute Hospital 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 Acute Hospital, have been based on the typical reported waste streams from all activities at the existing WWBH (anecdotal advice having been received that the Waste for the existing Acute Hospital activities represents about 90-95% of the collected waste for the WWBH campus). A scale up factor of 150% (1.5x) has been applied to reflect the increase in operating suite capacity, the increase in the number of patient beds, the additional angiography services, and the anticipated increase of in-patient surgical and medical activities, unless otherwise noted in Table 1.

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).

Three **Clinical Waste** steams currently being disposed of, can be identified from WWBH and Waste Disposal Contractor records

- **Anatomical Waste** (human tissue) double –bagged and collected in a 240 L bin – an average for the four (4) months February to May 2012 of about 4 kg per month – currently picked up under NSW Health Contract 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 four (4) months February to May 2012 of about 965 kg per month – the current practice is to put all collected yellow sharps containers into these bins for disposal - currently picked up under NSW Health contract and incinerated
- **Cytotoxic Wastes** – in 240 L bins - an average for the four (4) months February to May 2012 of about 23 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 MLHD will limit clinical waste storage to no more than 500 kg.

Recyclable Waste streams, include:

- **Cardboard** (currently collected in a 4 m^3 front lift bin that is emptied on Monday, Wednesday & Friday) – average monthly quantity on data supplied by the current recycling contractor Kurrajong Recyclers, is 24 bins per month
  Note that it is proposed that cardboard waste will be compacted into bales using an elephant's foot compactor – such a press can achieve compaction rates of > 400% - the current waste volume when compacted would thus be 24 m^3.
- **Office Paper** is currently collected in 240 L bins (3) – picked up by the current recycling contractor (Kurrajong Recyclers)every Friday with an average of 12 bins per month
- **Confidential Documents** are currently collected in Shredding Bags (12) and in 240 L Shredding bins (3) - these receptacles are picked up on request – the current recycling contractor (Kurrajong Recyclers) advises that the aggregate confidential paper waste per month in bags in bags is 1,120 kg per month, and in 240 L security bins is 160 kg per month
- **Milk Bottles** are currently collected in an 820 L (blue) bin that the current recycling contractor (Kurrajong Recyclers) picks up on Friday each week (an average of 4 bins per month)
- **Glass, Plastic, Aluminium/Steel** collected in 240 L bins (15) Monday, Wednesday & Friday – average per month reported by Kurrajong Recyclers is 119 bins **–** bins are sorted at the Recycler's 'glass', 'plastic', 'aluminium', and 'steel'.

General Waste (including putrescible waste) is currently decanted from 240 L bins into 3 m^3 skips (3) - 7 days per week by the current waste contractor SITA, the waste is compacted on loading into the truck – it is transported to the local land-fill tip at Gregardoo.

Waste type	Description	Average Qt'y/month WWBH (existing)	Scale factor	Proposed WWBH Acute Hospital Qty/month	Comment
General Waste	General waste from the WWBH Acute Hospital facility collected from specific departments daily by WWBH hotel services.	275 m^3 per month (prior to compaction on pick-up)	1.5	415 m^3 per month (prior to compaction on site	• A general waste is to be compactor is located in the Loading Dock, which will be exchanged on an as-needs basis by a licensed such as the existing contractor SITA who will transport the waste to a licensed waste disposal landfill site.
Recyclable Waste	Low density polyethylene sheet (pallet wrapping), paper, commingled plastic, glass and aluminium cans and bottles	28.6 m^3 (119 x 240 L bins) per month	1.5	42.8 m^3 (180 x 240 L bins) per month	• WWEBH Acute Hospital will promote recycling of all waste by public and staff where possible throughout the facility. Appropriately colour coded bins will be located in departments - recyclable glass, paper and plastic will then be collected by cleaners and relocated to the loading dock storage area for collection by a licensed contractor to be re-used.
	Cardboard	96 m^3 per month	1.5	144 m^3 per month (prior to on-site compaction & baling)	• Will be compacted and baled by an elephants foot press in the Loading Dock – cardboard is sold to be re-pulped into cardboard
Confidential waste	Lockable bins of confidential records and patient information	1,280 kg per month	'1.5	1,920 kg per month	• 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 elsewhere on WWBH campus to be picked up on request, the licensed contractor shreds, bales, and on-sells the paper for recycling into paper.

Table 1 Details of WWBH Acute Hospital Waste Streams

Waste type	Description	Average Qty/month WWBH (existing)	Scale factor	Proposed WWBH Acute 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	4 kg per month	2	8 kg per month	• Maximum stored inventory based on a full month's accumulation is 8 kg (note that a higher a higher scale factor has been allowed for this stream • Assume at worst all wastes classified as Class 6.2 infectious waste • All anatomical wastes are to be incinerated at high temperature at a licensed waste disposal facility
	Clinical waste in 120 L & 240 L bins (includes sharps containers – yellow that are placed in clinical waste bins for disposal)	965 kg/month	1.5	1,450 kg/month	• Maximum accumulated inventory, assuming pick up on average is every second day, 7 days per week – (i.e. 15 pick-ups per month)] – is 97 kg • Assume at worst all wastes classified as Class 6.2 infectious waste • These clinical wastes are to be incinerated at a licensed waste disposal activity
	Cytotoxic Waste materials including sharps contaminated with a cytotoxic drug	23 kg/month	2	50 kg/month	• Cytotoxic waste will be collected in colour coded bins. - these will be collected daily and stored in a separate enclosure at the loading dock for collection. For this assessment it has been assumed that this waste is then collected every second day, 7 days per week by a contracted company for incineration • Maximum stored inventory based on 2 days accumulation is ~ 4 kg • Assume at worst case all cytotoxic waste is classified as dangerous goods Class 6.1 PG II • These clinical wastes are to be incinerated at high temperature at a licensed waste disposal activity

Waste type	Description	Average Qty/month WWBH (existing)	Scale factor	Proposed WWBH Acute Hospital Qty/month	Comment
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	• 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
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	• WWBH will discharge trade waste and sewage to a Wagga Wagga City Council asset sewerage pipeline in Edward Street. Currently WWBH has a trade waste agreement with Wagga Wagga City Council. In order to comply with discharge conditions: • grease waste discharges will be treated on site to the meet requirements of Wagga Wagga City Council. • 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 Wagga Wagga City 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 • Kitchen trade waste from retail or food outlets – trade

Waste type	Description	Average Qty/month WWBH (existing)	Scale factor	Proposed WWBH Acute Hospital Qty/month	Comment
Trade Waste Plumbing and Drainage (continued)					waste generated in retail food outlets will be collected by a special system of arrestor basket floor drainage, which discharges to a grease arrestor. Grease waste will be separated in the grease arrestor before being discharged into the sewer system • Laundry waste products – WWBH does not have a laundry – linen services will be provided off-site subject to a service contract – no laundry effluent will be discharged • 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 • Helipad surface water drainage will be provided in accordance with Office of State Water and Wagga Wagga City Council requirements.

Table 1 (continued)

Sewage discharge quality

WWBH Stage 2 Acute Care facilities will discharge sewage to the Wagga Wagga City 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 Wagga wagga City Council do not call for the 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 Westmead 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 Sydney Water - *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 WWBH Acute Hospital.*

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 WWBH Stage 2 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 WWBH – it will be collected for off-site processing*.

5. HAZARDS

This report, by addressing the items specified in the DGEARs, 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 2 & 3 components of the Wagga Wagga Base Hospital Redevelopment 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.

5.3 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 7th 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.

5.4 Nature and quantities of dangerous goods being stored and handled at the WWBH Acute Hospital

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

Minor storage is a concept incorporated in all the relevant standards for keeping the various classes of dangerous goods. Minor storage recognizes that for small quantities of dangerous goods and where the goods are sufficiently dispersed, the presence of the dangerous goods adds marginally little to the overall hazard of the proposed facility and/or its operations).

The dangerous goods described in APPENDIX A include:

- cryogenic liquefied oxygen (note that this is not stored in the Acute Hospital but is reticulated) from a bulk tank in the precinct
- small quantities of compressed oxygen in cylinders in portable ready use units
- flammable liquids (in very small quantities only – the only identified storage being a maximum of 60 L in the Pharmacy) – these could be goods of PG I, 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 110 kg, and
- Class 8 corrosive substances (13 Cleaning Stores with an assumed average maximum quantity of 8 L per store – aggregating to 104 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.

SEPP 33 applies if	**Threshold**	**Actual**
Class 2 non-flammable gases and cryogenic liquids exceed limit described in Table 1 in the section Risk Screening - Figure 9 of the document *Applying SEPP 33*	No limit is set	SEPP 33 - does not apply
Class 3 dangerous goods (flammable liquids) exceed the lower threshold limit) and are not sufficiently separated from the boundary by the distance given in the section Risk Screening - Figure 9 of the document *Applying SEPP 33*	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: • 0.5 tonnes for PG I; • 2.5 tonnes PG II/III	Quantities below threshold limit - SEPP 33 does not apply
Quantity of goods of Class 8 exceeds threshold limit	Threshold quantities: • 5 tonnes for PG I • 25 tonnes PG II; • 50 tonnes PG III	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 ~110 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	SEPP 33 does not apply – number of transport movements are below threshold limit (the only scheduled dangerous goods delivery above 1 tonne capacity is the bulk liquid oxygen supply tanker

Table 2 – Applicability of SEPP 33 for potentially hazardous industry

5.5 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 WWBH Acute Hospital is not potentially offensive development in accordance with the screening method for the application of SEPP 33.

5.6 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 WWBH 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 Acute Hospital.

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, WWBH Acute Hospital 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 of WWBH Acute 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 proposed Acute Hospital project at the Wagga Wagga Base Hospital development.

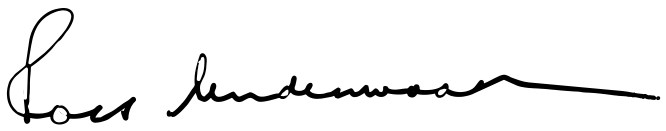
Further, the proposed facilities for the storage, handling and use of dangerous goods and hazardous substances, will be designed and constructed in compliance with all relevant legislative requirements.

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 Wagga Wagga Base Hospital Acute Hospital 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 Acute Hospital (WWBH)

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Acute Hospital Precinct					
Ground Floor – Yard Precinct Bulk cryogenic oxygen supply (a shared facility) reticulated throughout Acute Hospital	2.2/5.1	-	Liquefied nitrogen	15,000 L	• Above ground tank in a compound supplying WWBH campus including Acute Hospital – installation in accordance with AS 1894-1997 – all pipework to be installed in accordance with AS 2896-2011 *Medical gas systems – Installation and testing of non-flammable gas pipeline systems*
Ground Floor					
Pharmacy Store (Room 3513)	3	II	Ethanol solutions	60 L	• Approved flammable liquid cabinet to AS 1940-2004
	6.1	II	Cytotoxic drugs	< 1 kg (active)	• Cytotoxic drugs of PG II - UN 2811 Toxic Solid, Organic (Cytotoxic Drug) & UN 2810 Toxic Liquid, Organic (Cytotoxic Drug)
Dirty Utility Room (Room 8379)	6.2	II	Clinical waste	240 L	•
Dirty Utility Room (Room 8348)	6.2	II	Clinical waste	240 L	•
Dirty Utility Room (Room 8639)	6.2	II	Clinical waste	240 L	•
Cleaners Room (Room 8358)	8	III	Corrosives (acids/alkalis)	8 L	• 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

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Dirty Utility Room (Room 2739)	6.2	II	Clinical waste	240 L	•
Cleaners Room (Room 2740)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
First Floor					
Cleaners Room – Procedures Centre – Operating Suite (Room 8483)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
Dirty Utility Room – Procedures Centre – Operating Suite (Room 8512)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Procedures Centre – Perioperative Unit (Room 8610)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
Dirty Utility Room – Procedures Centre – Perioperative Unit (Room 8607)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Sterile Services Unit (Room 8637)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
Dirty Utility Room – Angiography (Room 8639)	6.2	II	Clinical waste	240 L	•

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Cleaners Room - Angiography (Room 2533)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
2nd Floor					
Dirty Utility Room – IPU - Surgical (Room 1023)	6.2	II	Clinical waste	240 L	•
Cleaners Room - IPU - Surgical (Room 1038)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
Dirty Utility Room – Critical Care Unit (Room 1146)	6.2	II	Clinical waste	240 L	•
Dirty Utility Room – Critical Care Unit (Room 1023)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Critical Care Unit (Room 1038)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
3rd Floor					
Dirty Utility Room – Critical Care Unit (Room 2045)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Critical Care Unit (Room 2055)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Dirty Utility Room – Women's Health & New Born Care Unit (Room 1345)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Women's Health & New Born Care Unit (Room 1359)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
4th Floor					
Dirty Utility Room – Medical Assessment & Stroke IPU (Room 1064)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Staff Amenities (Room 1359)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
Cleaners Room – Medical IPU (Room 1070)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores
5th Floor					
Dirty Utility Room – Orthopaedic/Surgical (Room 4065)	6.2	II	Clinical waste	240 L	•
Cleaners Room – Orthopaedic/Surgical (Room 1070)	8	III	Corrosives (acids/alkalis)	8 L	• Assumption as for other Cleaners Stores

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Dirty Utility Room – Surgical (Room 3067)	6.2	II	Clinical waste	240 L	•

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)*

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 Pyrmont 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.

Health
Murrumbidgee
Local Health District

14 December 2012

The Manager
Safety Engineering & Technical Services Pty Ltd
PO Box 845
CONCORD NSW 2137

Attention: Mr Ross Underwood

Dear Sir

re: Planning Report Matters – Confirming the Clinical Waste Management Concept to be Adopted for the Proposed Acute Hospital at the Wagga Wagga Base Hospital Campus

We confirm that as a matter of policy, the Murrumbidgee Area Health Service will manage the accumulation, storage and transport of clinical wastes at the proposed Acute Hospital at the Wagga Wagga Base Hospital so that no more than 500 kg of clinical wastes will be on-site.

This restriction will be achieved through measures such as actively promoting schemes to reduce the quantities of non-clinical wastes being added to the clinical waste collection system, and if necessary the schedule of waste pick-ups.

Could you please incorporate this reduced maximum quantity limit for clinical waste into the report on wastes you are preparing in response to the Director General's Requirements for the planning submission in respect of the Acute Hospital.

Yours faithfully,

Jill Ludford
Director Operations
Murrumbidgee Local Health District

Murrumbidgee Local Health District
ABN 71 172 428 618

Locked Bag 10, Wagga Wagga NSW 2650
Tel 02 6933 9100 Fax 02 6933 9188
Website www.health.nsw.gov.au/mlhn/