Safety Engineering & Technical Services Pty Ltd

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

ABN: 90 003 112 945

5 June 2017

The Manager
Donald Cant Watts Corke
Level 1, Martin Place
SYDNEY NSW 2000

Attention: Mr Mick O'Driscoll

Dear Sir,

re: Hazardous Chemicals & Planning Matters –Opinion on the Applicability of SEPP 33 in Support of a Development Consent Application for the Proposed Private Hospital, St Leonards Project (SSD 7543)

This letter of advice has been prepared pursuant to your request to prepare a risk screening report that provides opinion as to whether State Environmental Planning Policy 33 (SEPP33) applies to the proposed Private Hospital, St Leonards ("PHStL") to be built in the general precinct of North Shore Private Hospital.

EXECUTIVE SUMMARY

This advice has been prepared based on a review of the drawings listed in Appendix C of this report. Some remarks have been offered in relation to the compliance of the design with prescribed requirements for keeping hazardous chemicals, that are intended to supplement information provided in other components of the development application.

As a pre-requisite step in the risk screening process, this advice quantifies operating waste streams that have been the subject of other qualitative submissions addressing *Item 14. Waste* in the Secretary's Environmental Assessment Requirements (including *Appendix 6 - ESD Report* and *Appendix 12 – Waste Management Report*).

This advice then considers the Risk Screening requirements of the DUAP document *Applying SEPP* 33, and concludes that the proposed development does not trigger any of the thresholds for SEPP 33 to apply.

A DESCRIPTION OF THE FACILITIES RELEVANT TO THIS REPORT

The Private Hospital, St Leonards is a proposed new building to be located at the intersection of Reserve Road and Westbourne Street within the heart of the Lower North Shore medical precinct, which includes the existing North Shore Private Hospital, the Kolling Institute of Medical Research Building (adjacent), and Royal North Shore Hospital.

The site on which it is to be constructed has a substantial cross-site level change, approximately 20 m from the high point at the street level of Reserve Road and Westbourne Street, to a low point at its North-Eastern corner.

The proposed building will be a new standalone structure, and will be provided with a dedicated connection to the existing North Shore Private Hospital building via an overhead link bridge across Reserve Road. The building is divided into three major components, stacked one above the other, being:

- Basement levels below the level of the Westbourne Street/Reserve Road intersection level, which comprise Back of House and Engineering Facilities, Loading Dock, and Carpark;
- Podium levels, i.e. Ground floor and Level 1, mainly comprising Administration & Reception, Retail, Urgent Care facility, warm and cold shell Medical Suites, as well as Operating Theatres and Procedure Rooms; and
- Tower levels, comprising mainly Inpatient Units and Roof Plant Area.

The new Private Hospital, St Leonards building will house the following key elements:

- 128 inpatient beds (single bed rooms)
- Operating/Procedure Rooms
- Bay for up to 4 ambulances (including Non-Ambulance Transfer Service)
- Support services including:
- Medical Records
- Administration
- Central Stores
- Linen Services
- Waste Management
- Housekeeping

- Radiology Diagnostic Imaging centre
- Urgent Care
- Specialist medical consulting suites, and
- Retail tenancies such as coffee shop, florist, and retail pharmacy

The proposed PHStL has been designed with 7 levels above ground (Ground to Level 6 plantroom inclusive) and 3 levels of lower ground carparking. The usage of each level will be as follows:

Ground Floor

- Public Lift Lobby (3 lifts)
- Services Lift Lobby (2 lifts)
- Hospital Reception and Admission
- Security Office
- Urgent Care Facility
- Ambulance/Patient Transport Bays
- Medical Imaging
- Medical Suite Tenancy
- Retail tenancies
- Public Amenities

Level 1 (designed as the Hot Floor of the new private hospital building)

- Operating and Procedure Rooms
- 6 Medical Suite Tenancies
- Allied Health Service Offices
- Education and Conference facilities
- Public Amenities

Levels 2 - 5

The tower floors of the new proposed hospital contain the Inpatient Units (IPUs). Each IPU is split into 2 separate wings of the same floor, the West Wing facing Reserve Road, the South Wing facing Westbourne Street. Each wing equally contains 16 single bed rooms, making each IPU a total of 32 patient beds capacity. Each IPU contains its own Clean Utility and Dirty Utility, as well as store room, beverage room, accessible toilet, and patient lounge room.

Level 6

Level 6 is the building's roof plantroom, containing important building services plantrooms and lift motor room

Lower Ground LG1, LG2, LG3

Lower Ground floors accommodate underground paid-parking facility with 220 car parking spaces including 7 accessible parking bays. Entry to the building car park is located on LG1. The entry and exit point is connected to the internal ring road of the new hospital - upon leaving the drop-off area on Ground Floor, vehicles have the choice to exit the premises via Westbourne Street, or use the parking facility underneath the hospital via this LG1 entrance. Once past the ticketed boom gates, vehicles can continue driving down to the carparks on LG2 and LG3. To cater for cyclists, a secure bicycle store and end-of-trip staff amenities are also provided on LG1, with both lift and stairway access.

Most of the back of house services (including waste collection and the loading dock) are located on LG2. The Loading Dock entry and exit point is directly connected to Westbourne Street. A Substation chamber is located next to Westbourne Street with direct off-street access. The generator chamber, reserve fuel storage, and main electrical switch-room are co-located nearby.

When the original concept plans were being developed, it was envisioned that the activities of the Private Hospital, St Leonards facility would be closely integrated with the existing North Shore Private Hospital, and some common services (such as an integrated oxygen reticulation system), could be shared.

It has been decided that Private Hospital St Leonards may not share a common commercial relationship with neighbouring facilities. For this reason, it is proposed that allowance should be made for the installation of a bulk liquid oxygen tank, to be located under the floor slab against the open-sided under-croft space below Level LG3.

MANDATED PLANNING REQUIREMENTS REQUIRING PROPONENTS TO DEMONSTRATE HAZARDOUS CHEMICAL SAFETY

By addressing the items specified in the SEARs, the proponent is required to properly consider 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.

As an integral component of this, a process is mandated for ensuring that all the implications of the intended usage of hazardous chemicals are fully described and properly considered 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.

QUANTIFICATION OF OPERATING WASTES STREAMS

There has been a requirement to quantify waste streams that have the subject of other qualitative submissions as required by *Item 14. Waste* in the Secretary's Environmental Assessment Requirements in order to determine the applicability of SEPP 33 to the project. This section of my advice is to be read in conjunction with *Appendix 6 - ESD Report* and *Appendix 12 – Waste Management Report,* of the proponent's application documentation.

At the time this advice was prepared, the proponent was a property developer and not a potential operator. The proponent was therefore not able to provide any information in relation to the proposed activities to be conducted at the hospital.

In order to provide meaningful and reliable information on waste stream quantities, an estimate of the various streams for the Private Hospital, St Leonards has been based on information obtained for a 'like' facility (in this case, Calvary Bruce Private Hospital, Belconnen Way, Bruce in the ACT), from data collected by engineering consultants for that new-build project.

In order to demonstrate the validity of this comparison, Calvary Bruce Private Hospital has the following facilities:

- 78 private beds
- an operating floor with:
    - a perioperative unit
    - 8 Operating Theatres including Endoscopy and a Hybrid Cath lab/theatre

  - a three stage recovery area
- Coronary Care Unit
- postnatal Maternity Unit
- Medical Imaging, and
- a Chapel.

Scaling factors have been used to adjust quantities (upwards on the ratio of respective bed spaces – 1.7:1). Waste streams such as anatomical wastes (where there is a reasonable case for equivalence based on operating theatre throughput and where the PHStL theatre capability is less than Calvary Bruce), have also been 'factored up' as a conservative measure notwithstanding that this may overstate quantities.

The data for clinical wastes for Calvary Bruce Private Hospital is a single consolidated figure. In order to develop a breakdown estimate of the various categories of clinical wastes, the waste stream figures for a different Hospital (Sutherland Hospital) have been used to develop pro-rated figures for 'sharps', 'anatomical wastes', 'cytotoxic wastes', and 'other clinical wastes', for Private Hospital, St Leonards. These exemplar figures were derived prior to the 2015-2016 expansion/refurbishment of Sutherland Hospital and formed part of the development consent application for that project.

I am advised that:

- no nuclear waste streams are to be generated by, or emanate from the Private Hospital, St Leonards facilities or its operations
- no chemical waste will be generated in (or by) the facilities to be provided by the proposed project works

The tabulation on the following pages describes the nature and quantity of each of these waste streams.

Four **Clinical Waste** sub-streams will be generated:

- **Anatomical Waste** (human tissue) double–bagged and collected in a 240 L bin – these wastes are to be picked up by an approved waste transport contractor and incinerated (in a high temperature furnace)

- **Clinical Wastes** (referred to in this report as Clinical Wastes - Other) are collected in 120 L & 240 L bins picked up, for autoclaving before being buried in landfill
- **Sharps** collected in yellow purpose designed containers – the proposed arrangement is to enter into a contractual arrangement for re-usable bins on an exchange basis – the contractor to be a licensed transporter and waste disposal facility – sharps are to be autoclaved and then disposed of to landfill
- **Cytotoxic Wastes** – in 240 L bins - the current practice is to put all collected cytotoxic sharps containers into these bins for disposal – to be picked up under contract and incinerated

Waste type	Description	Average Qt'y/week CBPH	Scale factor	Proposed PHStL Qty/week	Comment
General Waste	General waste from the Hospital facility collected from specific departments daily by PHStL cleaning services.	5.0 m^3 per week	1.7	8.5 m^3	• General waste is to be compacted in the Loading Dock, for pick up by a licensed waste transport contractor 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	5.28 m^3 per week	1.7	9.0 m^3	• PHStL will promote recycling of all waste by public and staff where possible throughout the facility. Appropriately colour coded bins are located in departments – comingled recyclable glass, paper and plastic is collected by cleaners, will be conveyed to the loading dock storage area for collection by a licensed contractor for transfer to an approved waste treatment activity, where it will be processed in a waste stream sortation plant
	Printer cartridges	0.48 m3 per week	1.0	0.5 m3	• To be collected in a 60 L Otto bin for pick up by a licensed recycler
Confidential waste	Lockable bins of confidential records and patient information	1.1 m^3 per week	1.7	1.8 m^3	• Security shredding 240 L bins located at each photocopier station generating confidential waste - as bins are filled they are conveyed to the Loading Dock, the licensed contractor shreds, bales, and on-sells the paper for recycling into paper.

Table 1 Summary Details of The Private Hospital St Leonards Waste Streams

Waste type	Description	Average Qt'y/week CBPH	Scale factor	Proposed PHStL Qty/week	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	Break down by sub-category not available	1.7	6.9 kg	• All anatomical wastes are to be incinerated at high temperature at a licensed waste disposal facility • Break down by sub-category based on the figures for Sutherland Hospital as per the Table in Appendix B (by pro-rata of total clinical waste figure)
	Clinical waste in 120 L & 240 L bins (may include sharps containers – yellow that are placed in clinical waste bins for disposal)			358.1 kg	• Assume at worst all wastes classified as Class 6.2 infectious waste • These clinical wastes are autoclaved and disposed of at a licensed land-fill activity
	Cytotoxic Waste materials including sharps contaminated with a cytotoxic drug			4.6 kg	• Cytotoxic waste is be collected in colour coded bins. - these will be collected daily and stored in a separate enclosure at the loading dock for collection - waste is then collected by a contracted company for incineration • Maximum stored inventory based on 7 days accumulation is < 5 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
Chemical Waste	Wastes generated by laboratory activities	None	Not assessed	Nil	• There is no requirement for disposal of chemical wastes from the Hospital.
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	• PHStL will discharge trade waste and sewage to a Sydney Water asset sewerage pipeline – the operator of PHStL will need to enter into a trade waste agreement Sydney Water in respect of TSH

Waste type	Description	Average Qt'y/week CBPH	Scale factor	Proposed PHStL Qty/week	Comment
Trade Waste Plumbing and Drainage (continued)					In order to comply with likely discharge conditions: • grease waste discharges will be treated on site to the meet requirements of Sydney Water. • high temperature discharges, if any, may be treated on site to limit temperature discharge to the sewer main to maximum 38 degrees Celsius, to meet requirements of Sydney Water - 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 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 – PHStL 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

Table 1 (continued)

Sewage discharge quality

The Private Hospital, St Leonards will discharge sewage to the Sydney Water system. Clinical activities such as those to be conducted are known to result in the discharge of e-coli and other pathogens present in any human excrement, but at potentially higher levels than domestic sewage.

I am advised that Sydney Water do not call for the treatment of pathogens in sewage effluent from hospitals since 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 are units on standby at Westmead Hospital and Prince of Wales 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 not proposed to conduct Iodine 131 treatment at PHStL.

4) Laboratories – There are no laboratory facilities or activities being proposed as part of the development process.

5) Laundry Waste - No laundry of linen will occur at Private Hospital, St Leonards – all soiled linen is collected and despatched for off-site processing.

It is considered likely that Sydney Water will require a nuclear activity film badge to be placed in the trade waste discharge pit that is regularly removed and tested by Sydney Water as part of an on-going effluent quality monitoring program.

A grease trap will be provided downstream of any kitchen and catering outlet.

THE APPLICABILITY OF STATE ENVIRONMENTAL PLANNING POLICY 33 (SEPP 33) TO THE PROPOSED PRIVATE HOSPITAL, ST LEONARDS PROJECT

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

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 Private Hospital, St Leonards, 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.

Nature and quantities of dangerous goods being stored and handled at Private Hospital, St Leonards

A manifest of dangerous goods present at the premises in above placard quantities (as prescribed in Schedule 11 of the NSW *Work Health and Safety Regulation 2011)* has been developed (see Appendix A)

The dangerous goods described in Appendix A include:

- cryogenic liquefied oxygen
- small quantities of compressed oxygen in cylinders in either portable ready use units or G size back-up cylinders, nitrous oxide and other cylinders of compressed non-flammable and oxidizing gases
- flammable liquids (for the proposed development works these will be in small quantities only — 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 less than 5 kg/ week, and
- Class 6.2 infectious substances – the maximum quantity of clinical waste to be kept at the Hospital at any one time is about 460 kg (presuming a single weekly pickup in the worst instance).

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	**SEPP 33 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 for Class 2.2 gases	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	No flammable liquids above minor storage quantities as defined in Table 2.1 of AS 1940-2004 are to be kept in the Hospital – this is well below threshold quantities – 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	No Class 6.1 (toxic substances) are to be kept in the Hospital –-- 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	PHStL will keep only very small quantities of cleaning chemicals (< 4 L per location) - 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 – in the worst case assuming only a single waste pick up in any week, the maximum quantity of clinical waste kept at any one time would not exceed 460 kg - i.e. no more than 500 kg is ever present

Table 2 – Applicability of SEPP 33 for potentially hazardous industry

SEPP 33 applies if	SEPP 33 Threshold	Actual
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 vehicles above 1 tonne capacity are the bulk liquid oxygen supply tanker (twice per month), and the gas cylinder delivery truck ~ (once per week)

***Table 2 – Applicability of SEPP 33 for potentially hazardous industry** (cont'd)*

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 proposed hospital is not potentially offensive development in accordance with the screening method for the application of SEPP 33.

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 proposed Private Hospital, St Leonards project.

SOME FURTHER COMMERNTS ON THE 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 activities of the Private Hospital, St Leonards, 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 – Managing risks of hazardous chemicals in the workplace – July 2014* – WorkCover NSW.

Radiation hazards

Diagnostic and clinical treatment radiation equipment will be present and used in Private Hospital, St Leonards.

A radiation consultant is to be engaged by the proponent in conjunction with the proposed Hospital OPerator 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, then PHStL 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 Private Hospital, St Leonards will be in accordance with best-practice achievable for a bio-medical clinical facility, and will secure an acceptable level of safety.

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 Private Hospital, St Leonards development proposal.

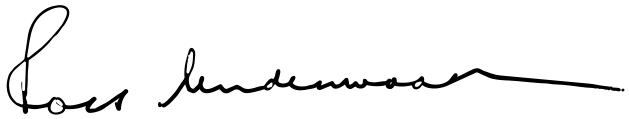
Further, the proposed facilities for the storage, handling and use of hazardous chemicals, will be designed and constructed in compliance with all relevant legislative requirements.

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 to 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 proposed redeveloped facilities to be provided at Private Hospital, St Leonards 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 (above WHS Regulation 2011 placard quantities) at the proposed Private Hospital. St Leonards**

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Bulk cryogenic oxygen supply in the open-sided void space below Level LG 3	2.2/5.1	-	Liquefied oxygen	3,000 L	• The need for this vessel is contingent on the inability to arrange a cross supply from the existing bulk tank at the North Shore Private Hospital facility via the building link bridge – the preferred option if it can be established as being commercially feasible through negotiation involving the operators of the two private hospitals • The bulk tank installation and tank filling facility will be installed in full compliance with the requirements of AS 1894-1997 *The storage and handling of non-flammable cryogenic and refrigerated liquids*
Roofed gas cylinder store – compressed non-flammable and oxidising gases on LG2	2.2 & 2.2/5.1	-	Cylinders of air (Class 2.2) and nitrous oxide & oxygen (both Class 2, Division 5.1)	< 1,200 L water capacity of which < 1,000 L would be Class 2.2, Division 5.1	• Back up supply of oxygen, primary supply of nitrous oxide used as an anaesthetic gas – also tool air for operating theatre use • The quantities of gases are such that they may be kept under the minor storage provisions of Australian Standard AS 4332-2004 – *The storage and handling of gases in cylinders*
Flammable liquid storage cabinets – Depot 03 – Store Room on Level LG2	3	II/III	Flammable liquids (hand gel sanitiser)	450 L	• 2 cabinets containing ethanol based hand sanitising gel and wipes to be kept in accordance with ASS 1940-2004 – Section 4

Room Name/Facility	DG Class	PG	Hazardous contents	Q'ty	Comments
Waste Disposal Room on Level LG2	6.2	II	Clinical wastes (UN 3291)-– Waste Sharps	93 kg per week	• Pick up frequency will be at least once per week by a licensed transport contractor – sharps will be autoclaved and buried in an approved land-fill
		II	Clinical wastes (UN 3291) – Anatomical Waste	6.9 kg per week	• The usual practice in major hospitals is for anatomical waste collected daily and conveyed to the Loading Dock for daily pick up 5 days per week by a licensed waste transport contractor – disposal is by incineration at an approved facility
		II	Clinical wastes (UN 3291)– Cytotoxic -	4.6 kg per week	• Pick up frequency will be at least once per week by a licensed transport contractor – disposal is by incineration at an approved facility
		III	Clinical wastes (UN 3291) – Other	353.5 kg per week	• The usual practice in major hospitals is for clinical waste to be collected daily and conveyed to the Loading Dock for daily to be pick up 5 days per week by a licensed waste transport contractor – disposal is by incineration at an approved facility – this practice will be followed by PHStL
Emergency Generator Fuel Tank	C1 Flammable liquid Category 4 (GHS)	-	Diesel fuel – reserve fuel supply for the emergency generator	2,000 L	• an above-ground tank in a fire-rated tank chamber as specified in AS 1940-2004 – Section 5

NOTES:

Note 1. Definitions: 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)*

NCADG Not classified as dangerous goods

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 activities*).*

Note 2. Waste Quantities (assumptions) – based on the tabulation provided in Appendix B

(a) Clinical wastes a 240 L bin has contents having an average mass of 15 kg – being established by measurement at the Sutherland Hospital (TSH) for the development consent application lodged in 2015

(b) Estimate of mass of waste generated per week

Total clinical wastes reported for Calvary Private Hospital were 4.5 m3 per week on average (using the volume to mass conversion of 60 kg/m3 – the total wastes for a week's activity for Calvary Private Hospital is 270 kg – scaling up for Private Hospital, St Leonards on the ratio of clinical beds provided by each facility (1.7:1), the weekly generated quantity of clinical waste for PHStL is 459 kg

(c) Proportion The volume of wastes for each clinical waste stream for PHStL on a weekly basis has been pro-rated In accordance with the breakdown by mass as reported for TSH, the proportions being:

Sharps	20.4 %
Anatomical wastes	1.5 %
Cytotoxic wastes	1.0 %
Other Clinical wastes	77.1 %

APPENDIX B Data on Typical Waste Quantities Generated by The Sutherland Hospital

(4 Month Period Ending Jan 2015 for Clinical Waste: 3 Months Ending February 2015 - Other)

Month	Sharps (includes container) (kg)	Anatomical Waste (kg)	Cytotoxic (kg)	Clinical			Total Clinical (kg)	Co-mingled (kg)	Security Paper (kg)	Other Paper (kg)	Cardboard	Compacted General (m^3)
				120 L	240 L	660 L						
October 2014	1,100	66.5	128.0	86.0	132.5	4,261.5	5,774.5					120
November 2014	997	35.5	39.5	99.0	161.5	3,666.5	4,999.0					96
December 2014	1,100	124.5	37.0	64.0	282.5	3,976.5	5,584.5	1,458	1,540	1,690	1,320	120
January 2015	1,100	74.5	43	65.0	433.5	2,971	4,687.0	891	1,400	1,222	1,800	96
February 2015								1,512	1,750	1,378	2,160	96
Average/ month	**1,074**	**75.25**	**43.5**				**5,267.7**	**1,287**	**1,563**	**1,430**	**1,760**	**108**
Average per day	**34.93**	**2.45**	**1.77**				**171.1**	**42.9**	**52.8**	**47.7**	**58.7**	**3.51**

Notes:

1. Data provided was from different periods – there was no reason the particular months reported above were chosen
2. Estimated weights for co-mingled, security paper, and other paper were based on bin numbers x an estimated weight/bin from a single sample measurement for a bin of each stream (the measured weights being:- co-mingled – 27 kg; security (confidential) paper – 70 kg; other (general) paper – 26 kg)

APPENDIX C Schedule of drawings for Private Hospital, St Leonards reviewed in order to prepare this report

Drawing #	Issue/Rev	Title	Date
A-E-E	3	Elevation East	9/2/2016
A-E-N	3	Elevation North	9/2/2016
A-E-S	3	Elevation South	9/2/2016
A-E-ST	3	Elevation Street	9/3/2017
A-E-W	3	Elevation West	9/2/2016
A-P-1	4	Level 1 Floor Plan	9/2/2016
A-P-2	4	Level 2 Floor Plan	9/2/2016
A-P-3	4	Levels 3 - 5 Floor Plan	9/2/2016
A-P-6	3	Level 6 Floor Plan	9/2/2016
A-P-G	4	Ground Floor Plan	9/2/2016
A-P-LG1	3	Lower Ground LG1 Floor Plan	9/2/2016
A-P-LG2	3	Lower Ground LG2 Floor Plan	9/2/2016
A-P-LG13	3	Lower Ground LG3 Floor Plan	9/2/2016
A-P-R	3	Roof Plan	9/2/2016
A-P-SITE	3	Site Plan	9/2/2016
A-SA-1	3	Site Analysis	6/5/2016
A-SE-1	3	Section 1	9/2/2016
A-SE-2	3	Section 2	9/2/2016

APPENDIX D Who prepared 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 47 years of experience in industrial practice in high hazard environments.

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, classification of hazardous areas; 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, the Risk & Liability Management short course convened by Engineering Education Australia, classification of hazardous areas course convened by Illawarra TAFE.