



Your reference: SSD 13\_6180  
Our reference: EF13/9342  
Contact: J Goodwin 9995 6838

Megan Fu  
Department of Planning and Infrastructure  
GPO BOX 39  
SYDNEY 2001

Dear Ms Fu

**SSD 13\_6180 – PROPOSED STAGE 2 EIS - NCCC AND AATC AT PRINCE OF WALES HOSPITAL**

I am writing to you in reply to your invitation to the EPA to comment on the EIS for the above mentioned centres proposed at Prince of Wales Hospital.

The EPA has been an independent statutory authority since February 2012. It administers the Protection of the Environment Operations Act 1997 and thereunder regulates all public authorities, including NSW Health and Health Infrastructure. The EPA also administers the Radiation Control Act 1990.

However, the EIS authors do not appear to have consulted the EPA in the course of preparing the EIS with section 4.0 *Consultation* mute on any such consultation. EIS section 6.11.1 *Radiation, Chemical and Biological Hazards* appears to demonstrate some confusion about the EPA's status as an independent statutory authority.

The EPA understands from the EIS that the project includes demolition of the existing 'radiation and oncology' building which opened in 1966 and was extended in 1977 and 1982 (Appendix K, section 10.4 and 10.5). However, the EPA has been given to understand that there is both a "Medical Oncology [MO]" – Building 2 & "Radiation Oncology [RO]" – Building 3. The *Preliminary Hazardous Assessment Report* (Appendix O) and *Radiation Shielding Assessment* (Appendix N) appear to focus on the operational phase of the project. The March 2012 Douglas Partners *Phase 1 Contamination Investigation with Limited Sampling* report (project 72505.1) prepared in conjunction with Stage 1 does not appear to have assessed potential contamination associated with nuclear medicine undertaken in the building or part building to be demolished during stage 2.

Accordingly, the EPA considers it prudent to clearly establish the risk for any contamination related to use of the existing buildings over many years and in particular -

- (a) whether demolition waste is likely to contain radioactive material at levels of concern, and
- (b) whether 'regulated material' (within the meaning of the Radiation Control Act 1990) requires disposal.

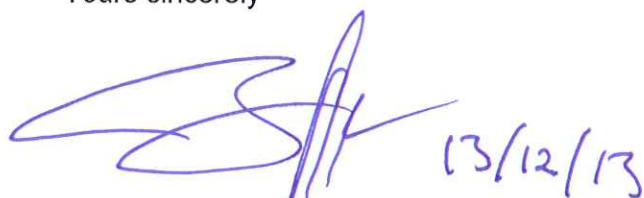
The EPA has identified the following additional site specific concerns based on the information in the EIS.:

- (a) a detailed assessment of potential site contamination;
- (b) handling, transport and disposal of any asbestos waste (see Appendix P, section 3.1);
- (c) operational assessment, storage, handling, transport and disposal of 'clinical and related wastes';
- (d) construction-related noise and vibration impacts (including recommended standard construction hours and intra-day respite periods for highly intrusive noise generating work);
- (e) demolition, site preparation and construction phase dust control and management,
- (f) demolition, site preparation and construction phase erosion and sediment control and management;
- (g) operational noise and vibration impacts on noise sensitive receivers (especially surrounding residences, aged care, child care and educational establishments) arising from operational activities such as waste collection, loading dock activities, mechanical services (especially air conditioning plant) and standby generator testing and operation;
- (h) feasible and reasonable operational noise mitigation and management measures to minimise impacts on surrounding residences, aged care and child care facilities, and educational establishments; and
- (i) obligation to vary the existing the hospital's radiation management licence under the Radiation Control Act and Regulation.

The EPA expands on its concerns in Attachment A to this letter.

Should you require clarification of any of the above please contact John Goodwin on 9995 6838.

Yours sincerely



**FRANK GAROFALOW**  
**Manager, Metropolitan Infrastructure**  
**NSW Environment Protection Authority**  
encl. Attachment A



## ATTACHMENT A

### - ENVIRONMENT PROTECTION AUTHORITY COMMENTS –

#### PRINCE OF WALES HOSPITAL RE-DEVELOPMENT STAGE 2

#### (COMPREHENSIVE CANCER AND BLOOD DISORDER AND AUSTRALIAN ADVANCED TREATMENT CENTRES)

### 1. General

The EPA considers that the project comprises two distinct phases (construction and operational) and has set out its comments on that basis.

The EPA has not found any draft statement of commitments for the project.

The EPA understands that Stage 1 occupies half of the 4000 square metre development site and has been undertaken in preparation for demolition of the existing radiation and oncology building and subsequent construction of multi-storey accommodation for the above mentioned centres; stage 2.

The EPA notes the proximity of residences, schools and child care facilities surrounding the hospital and anticipates aged care facilities may also be located nearby.

### 2. Construction phase

The construction phase is proposed to follow completion of stage 1 works and is predicted to take about 90 weeks. The EPA anticipates a range of environmental impacts during the construction phase of the development.

The EPA anticipates that construction and construction-related activities will be undertaken in an environmentally responsible manner with particular emphasis on –

- detailed site contamination investigation and remediation, including a detailed radiation and contamination investigation,
- compliance with recommended standard construction hours,
- waste management consistent with the hierarchy of re-use, recycle and then disposal as the last resort,
- 'special waste' management (i.e. asbestos),
- feasible and reasonable noise and vibration minimisation and mitigation,
- intra-day respite periods from high noise generating construction activities (including jack hammering, rock breaking, pile boring or driving, saw cutting and vibratory rolling),
- effective dust control and management, and
- effective erosion and sediment control.

#### 2.1 Site investigation and remediation

The EPA understands from the EIS that a Phase 1 contamination assessment was undertaken and is the subject of Douglas Partners Project Report 72505.1 dated March 2012 and Status of Contamination Assessment Works letter (project 72505.03) dated January 2013.

The EIS concludes (Appendix P, p.4) that the "... site of the Stage 2 works is also a low risk site from a contamination perspective." and goes on to recommend more comprehensive assessment following demolition of the existing buildings.

The EPA is concerned that the scope of the site investigations conducted to date are insufficient to adequately characterise the general contamination status of the site, noting at the same time that additional investigation is recommended.

The EPA further understands from consultation with the hospital's radiation safety officer that –

- (a) no diagnostic nuclear medicine procedures have taken place recently or historically,
- (b) the radioactive material store and 'hot lab' will be de-commissioned but that those current facilities are not within that part of the existing 3 storey radiotherapy oncology building that will be demolished,
- (c) one brachy-therapy device that contains a sealed source will shift to the NCCC, and
- (d) given the linear accelerators are not rated above 10 megavolts, there is only a small chance that reinforcing steel may have been activated during their use.

#### **Recommendation**

The proponent should commit to consulting with Workcover NSW concerning the removal and handling of any asbestos waste on the premises.

#### **Recommendation**

The proponent should commit to satisfying the requirements of the Protection of the Environment Operations ('Waste Regulation) 2005 with particular reference to 'special wastes' (clause 42). The EPA provides additional guidance material at its web-site

<http://www.environment.nsw.gov.au/waste/asbestos/index.htm>.

#### **Recommendation**

The proponent should commit to a more detailed investigation of site contamination prior to and throughout the demolition and site preparation phases.

#### **Recommendation**

The proponent should commit to a detailed radiation/contamination survey of –

- (a) areas previously occupied by the radioactive materials store and 'hot lab' to ensure no sources are left behind and no sealed-source leakage has occurred,
- (b) the brachy-therapy suite before demolition to ensure no residual radioactive material remains, and
- (c) areas of the building housing the linear accelerators to ensure pre-demolition that no activation of the building fabric has occurred.

#### **2.2 Waste control and management (general)**

The proponent should manage waste in accordance with the waste management hierarchy. The waste hierarchy, established under the [Waste Avoidance and Resource Recovery Act 2001](#), is one that ensures that resource management options are considered against the following priorities:

**Avoidance** including action to reduce the amount of waste generated by households, industry and all levels of government



**Resource recovery** including reuse, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources

**Disposal** including management of all disposal options in the most environmentally responsible manner.

All wastes generated during the project must be properly assessed, classified and managed in accordance with the EPA's guidelines to ensure proper treatment, transport and disposal at a landfill legally able to accept those wastes.

The EPA further anticipates that, without proper site controls and management, mud and waste may be tracked off the site during the course of the project.

### **Recommendation**

The proponent should commit to ensuring that :

- (1) all waste generated during the project is assessed, classified and managed in accordance with the "*Waste Classification Guidelines Part 1: Classifying Waste*" (Department of Environment Climate Change and Water, December 2009);
- (2) the body of any vehicle or trailer, used to transport waste or excavation spoil from the premises, is covered before leaving the premises to prevent any spill or escape of any dust, waste, or spoil from the vehicle or trailer; and
- (3) mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorised plant leaving the site, is removed before the vehicle, trailer or motorised plant leaves the premises.

### **2.4 Dust control and management**

The EPA considers dust control and management to be an important air quality issue during site clearance and preparation, and subsequent construction. Bulk earthworks inevitably generate dust as a result of –

- (a) the excavation, processing and handling of excavation spoil,
- (b) wind action on spoil stock piles, and
- (c) wind action on and plant movement across areas bare of vegetation or other cover.

### **Recommendation**

The proponent should commit to:

- (a) minimising dust emissions on the site, and
- (b) preventing dust emissions from the site.

### **2.5 Erosion and sediment control**

The Managing Urban Stormwater Soils and Construction, 4<sup>th</sup> Edition published by Landcom (the so-called 'Blue Book') provides guidance material for achieving effective erosion and sediment control on construction sites.

The EPA emphasises the importance of –

- (a) not commencing earthmoving or vegetation removal until appropriate erosion and sediment controls are in place, and
- (b) daily inspection of erosion and sediment controls which is fundamental to ensuring timely maintenance and repair of those controls.

## 2.6 noise and vibration

The EPA considers that the project is likely to generate significant noise and vibration impacts on surrounding residences and other noise sensitive land uses during demolition and construction (including site preparation). The EPA provides guidance material available on its web site, including downloadable copies of –

- the Interim Construction Noise Guideline (2009), and
- Assessing Vibration: a technical guideline (2006).

### **Recommendation**

The proponent be required to –

- (a) identify surrounding noise sensitive land uses, and
- (b) undertake a comprehensive noise and vibration impact assessment of construction activities, especially any such activities -
  - (i) likely to generate noise with annoying or intrusive characteristics, or
  - (ii) proposed to be undertaken outside the recommended standard hours discussed in Table 1 to the *Interim Construction Noise Guideline*.

#### 2.6.1 *construction hours (including respite periods)*

Section 3.6 of the 'DA Noise Impact Assessment' prepared by Acoustic Logic suggests construction hours inconsistent with the recommended standard hours of construction in Table 1 to the *Interim Construction Noise Guideline* (ICNG). And, in particular suggests construction will be undertaken after 1.00 pm on Saturdays. The EPA is unaware of any justification for regular work outside the recommended standard hours.

Whilst ICNG recommended standard hours for construction (outside of which long experience shows increasing levels of community concern about construction noise impacts) the EPA accepts that certain emergency work may need to be undertaken urgently (other than during the standard recommended hours) in order to avoid –

- loss of life,
- damage to property, or
- environmental harm.

ICNG section 4.5 specifies construction activities proven to be particularly annoying and intrusive to nearby residents and occupants of other noise sensitive receivers (including the hospital, child care centres and the local school).. The EPA anticipates that those activities generating noise with particularly annoying or intrusive characteristics would be subject to a regime of intra-day respite periods where –



- (a) they are only undertaken over continuous periods not exceeding 3 hours with at least a 1 hour respite every three hours, and.
- (b) 'continuous' means any period during which there is less than an uninterrupted 60 minute respite between temporarily halting and recommencing any of the work referred to in ICNG section 4.5

### **Recommendation**

The proponent should be required to :

- (a) comply with the standard construction hours as recommended in Table 1 Chapter 2 of the Interim Construction Noise Guideline, July 2009; and
- (b) schedule intra-day 'respite periods' for construction activities identified in the Interim Construction Noise Guideline as being particularly annoying to surrounding residents and other noise sensitive receivers.

#### **2.6.2 reversing and movement alarms**

The EPA has identified the noise from 'beeper' type plant movement alarms to be particularly intrusive and is aware of feasible and reasonable alternatives. Transport for NSW (nee Transport Construction Authority), Barangaroo Delivery Authority/Lend Lease and Leighton Contractors (M2 Upgrade project) have undertaken safety risk assessments of alternatives to the traditional 'beeper' alarms. Each determined that adoption of 'quacker' type movement/reversing alarms instead of traditional beepers on all plant and vehicles would not only maintain a safe workplace but also deliver improved outcomes of reduced noise impacts on surrounding residents.

Interim Construction Noise Guideline Appendix C provides additional background material on this issue.

### **Recommendation**

The proponent should commit to undertaking a safety risk assessment of construction activities to determine whether it is practicable to use audible movement alarms of a type that would minimise the noise impact on surrounding noise sensitive receivers, without compromising safety.

#### **2.6.3 vibration assessment**

The EPA understands from section 3.4 of the 'DA Noise Impact Assessment' prepared by Acoustic Logic that the EPA's *Assessing Vibration: a technical guideline (2006)* was not used to assess vibration impact assessment..

The EPA is particularly concerned that predicted vibration impacts on human comfort have not been explicitly reported against the relevant criteria in the above mentioned technical guideline.

### **3. Operational phase**

The Hospital re-development represents a significant (\$73 million) long-term infrastructure investment with concomitantly long-term environmental impacts.

The EPA considers that environmental impacts that arise once the new hospital facilities commence operation can largely be averted by responsible environmental management practices, particularly with regard to:

- (a) feasible and reasonable noise avoidance and minimisation.

- (b) proper assessment, storage, handling, transport and disposal of clinical and related wastes, including cytotoxic waste in accordance with clause 43 Protection of the Environment Operations (Waste) Regulation 2005;
- (c) management and use of regulated material under the Radiation Control Act 1990; and
- (d) energy and water conservation; ..."

### 3.1 Noise and vibration

The Amended Director General's Requirements require:

- "Identify ... any noise sources during operation, including the new generator and ventilations [sic] system and accumulative [sic] impact of all plant and equipment operating simultaneously"; and
- "Identify residential effected [sic] residential premises and outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land."

The Amended DGRs also refer to the long defunct Environmental Noise Control Manual but do not refer to the EPA's Assessing Vibration: a technical guideline (2006).

Section 4 of EIS Appendix L ('DA Noise Impact Assessment' prepared by Acoustic Logic) addresses operational noise impacts of Stage 2. The EPA considers that Appendix L does not provide sufficient information concerning the operational noise impacts of the proposal for it to make any meaningful comments about those impacts. And, in particular the EIS does not:

1. offer evidence that existing background or ambient noise levels were measured at receiver locations (per the 'long method' outlined in the Industrial Noise Policy) in the vicinity of the project,
2. derive Project Specific Noise Levels in accordance with the New South Wales Industrial Noise Policy; and
3. make any quantitative predictions of operational noise impacts on sensitive receivers.

Accordingly, feasible and reasonable noise mitigation and management measures required to minimise or mitigate operational noise impacts are not able to be adequately determined.

The EPA is prepared to assist the Department in progressing this aspect of the environmental impact assessment of the project.

### 3.2 Clinical and related waste

EIS sections 3.8.2, 6.15.1, 6.16 and Appendix O briefly discuss operational waste management but offer little detail and no reference to the Protection of the Environment Operations (Waste) Regulation 2005.

The EIS anticipates that the proposed facilities will generate 'clinical and related waste' which are defined under the Protection of the Environment Operations Act 1997. Clinical and related waste includes clinical waste; cytotoxic waste; pharmaceutical, drug or medicine waste; and sharps waste.

Clinical and related waste has been pre-classified as a 'special waste'. This allows the EPA to set more stringent and specific requirements for the transport and management of the waste to minimise the risk to the environment and human health. Clause 43 to the Protection of the Environment Operations (Waste) Regulation 2005 prescribes requirements for managing certain clinical and related waste.



Waste managers/operators who transport, store, treat or dispose of clinical and related waste should check the details of the Protection of the Environment Operations Act and the Protection of the Environment Operations (Waste) Regulation 2005 for licensing and generic requirements in relation to clinical waste.

### **Recommendation**

The proponent be required to undertake proper assessment, handling, storage, transport, treatment and disposal of clinical and related waste arising from operation of the new facilities to ensure compliance with Protection of the Environment Operations Act 1997 and the Protection of the Environment Operations (Waste) Regulation 2005.

### **3.3 Radiation Control Act and Regulation**

The EPA administers the Radiation Control Act 1990 (and Radiation Control Regulation 2013) and anticipates that 'regulated material' will be stored and possessed on the hospital campus. 'Regulated material' means -

- (a) radioactive substances,
- (b) ionising radiation apparatus,
- (c) non-ionising radiation apparatus of a kind prescribed by the regulations, and
- (d) sealed source devices.

A 'person responsible' within the meaning of section 6 of the Radiation Control Act 1990 is obliged to hold an appropriate 'radiation management licence' in respect of regulated material at the hospital campus. The licence holder is obligated to comply with all relevant conditions of their Management licence and all other relevant requirements of the Radiation Control Act and Regulations.

A natural person who uses regulated material at the hospital campus must hold a 'radiation user licence' and must comply with any conditions to which the licence is subject.

Frequently asked questions about radiation management licences is available via the following link

<http://www.epa.nsw.gov.au/radiation/management/faq.htm>

Waste containing radioactive material whether natural or artificial must be classified in accordance with the guidance material provided *Waste Classification Guidelines Part 3: Waste Containing Radioactive Material* (Department of Environment Climate Change, October 2008) available via the following link

<http://www.epa.nsw.gov.au/resources/waste/08560radioactivewaste.pdf>

### **Recommendation**

The proponent be required to consult with the Environment Protection Authority in regard to a 'radiation management licence' in respect of regulated material on the hospital campus and the management and handling of waste containing radioactive material.

### **Notes:**

The Management Licence holder has the obligation to comply with relevant conditions of their management licence and all other relevant requirements of the Radiation Control Act and Regulations.

A natural person who uses regulated material must hold a radiation user licence and must comply with any conditions to which the licence is subject

### **3.4 Energy and Water Conservation**

The EPA acknowledges that EIS Section 3.6, 6.3 and 6.18 discusses Ecologically Sustainable Development including energy and water conservation and efficiency.

The EPA considers energy and water conservation are essential components of ecologically sustainable development particularly pursuant to the principle of inter-generational equity.

Hospitals are typically heavy users of electricity which in NSW is for the most part generated by burning non-renewable fossil fuel resources.

Hospitals are also typically heavy consumers of potable water which is expensive and energy intensive to deliver on demand at quality consistent with NHMRC Drinking Water Quality Guidelines.

The EPA considers the design stage of the project to be the optimum time to integrate measures to achieve

- energy efficiency (with resultant running cost savings),
- water conservation through stormwater collection, treatment and re-use for non-potable purposes such as grounds maintenance, and
- water efficiency

### **Recommendation**

The proponent be required to clearly identify, evaluate and implement practical measures to minimise energy and water use and to integrate those measures into the design of the hospital re-development and its supporting infrastructure..

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