Australian Government

ANSTO

NATIONAL RESEARCH CYCLOTRON FACILITY DECOMMISSIONING

PRELIMINARY DOCUMENTATION FOR NRCF DECOMMISSIONING – EPBC RESPONSE

1. Purpose of this Document

In December 2024, the Australian Nuclear Science and Technology Organisation (**ANSTO**) submitted a referral to the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) for the decommissioning of the National Research Cyclotron Facility (**NRCF**), located at 81 Missenden Road, in Camperdown, NSW, Australia (the **Site**). On 19 February 2025, DCCEEW decided the proposed decommissioning is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act)** as it is due to 'likely significant impacts on the environment as it is a Commonwealth action (Section 28)'.

DCCEEW determined that the proposed action will be assessed by preliminary documentation, stating stated the following within their referral decision:

> *Further information is required to assess the relevant impacts of the proposed action on the environment. Namely, the potential for existing soil and groundwater contamination (associated with historic land uses) and associated impacts during demolition on people and communities, and natural and physical resources.*

This Preliminary Documentation provides the requested information and outlines how ANSTO has addressed the requirements of the preliminary documentation request. The primary document to support the further information request is a Preliminary Site Investigation (**PSI**) report completed by Jacobs Group (Australia) Pty Ltd (**Jacobs**) and provided in Appendix A. The EPBC Referral 2024/10072 is provided in Appendix B and is publicly available online (EPBC Referral). The request for further information by DCCEEW is provided in Appendix C.

2. Executive Summary

This Preliminary Documentation has been prepared to support assessment of the proposed decommissioning of the NRCF at the Site under the EPBC Act. The assessment addresses environmental, social, and economic considerations in accordance with requirements issued by DCCEEW.

The PSI determined that there is no unacceptable risk from soil contamination for the proposed green space, which Sydney Local Health District **(SLHD)** intends to establish as a natural or semi-natural area within the hospital campus. A Detailed Site Investigation (**DSI**) will be undertaken beneath the building footprint once demolition commences to assess soil quality and confirm the Site's suitability for future use (Jacobs PSI Report, Section 9, page 33).

Groundwater was not encountered during the depth of investigation. As demolition activities will not require excavation deeper than the levels investigated, it is unlikely that groundwater will be intersected during demolition, with contamination (if present) considered unlikely to present an unacceptable risk (Jacobs PSI, Section 9, page 33).

Demolition of the NRCF will be managed under a Construction Environmental Management Plan (**CEMP**), which will incorporate an 'unexpected finds' protocol to address any unexpected contamination (Jacobs PSI, Section 9, page 33). With these controls in place, potential impacts are expected to be minor, temporary, and effectively managed.

ANSTO will be required to obtain a licence from the Australian Radiation Protection and Nuclear Safety Agency (**ARPANSA**) for the decommissioning of the NRCF. This licensing process ensures that all radiological decommissioning activities comply with national safety standards and regulatory requirements, including the safe handling, packaging, transport, and disposal of any radiological materials

The project will deliver long-term positive outcomes by removing redundant infrastructure, enabling SLHD's master planning for the broader Royal Prince Alfred (RPA) Hospital campus redevelopment.

For the purposes of this report, *green space* refers to a natural or semi-natural area within the hospital campus, after the land is handed back to SLHD. *Open space* is defined in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (**ASC NEPM**), Volume 2, Section 2.2: Health Investigation Levels (**HIL**) C, as: public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools, and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves), which should instead be subject to site-specific assessment where appropriate.

3. Compliance with DCCEEW Requirements

The following table summarises how this Preliminary Documentation addresses the requirements outlined by DCCEEW in relation to soil and groundwater contamination, environmental management, and economic and social matters. Each requirement is mapped to the relevant section of this document.

Table 1: Compliance with DCCEEW requirements

No	DCCEEW Requirement	How this is addressed	Where is this addressed
1	Further investigations on soil and groundwater contamination, conducted in accordance with the requirements set out in Schedules A and B of the **ASC NEPM** (2013 Revision) and the National Water Quality Management Strategy, are required and should include a PSI report that includes a detailed site history, conceptual site model (**CSM**), and: a) If required, a Sampling Analysis and Quality Plan (**SAQP**) and DSI that includes a refined CSM and an appropriate risk assessment. b) If required and prior to demolition, a site-specific risk assessment and a Remediation Action Plan (**RAP**).	Addressed through Jacobs PSI report, which included site history, CSM, and recommendations for SAQP and DSI post demolition.	Sections 5; Appendix A
2	Site contamination assessment objectives should be designed to ensure that the entire site is suitable for all future uses following the decommissioning and demolition.	The PSI assessment of the site's suitability for use as green space was based on the ASC NEPM guideline values for public open space and identified no unacceptable risks. Future development will require further assessment.	Section 5.1; Appendix A
3	A NSW Environment Protection Authority (**EPA**) accredited site auditor should be engaged during these activities.	Auditor's review included in Jacobs PSI report.	Section 5.2; Appendix A
4	The preliminary documentation should include details of the measures to be implemented by the proponent to avoid and reduce any potential soil and groundwater contamination impacts at the site and on the broader environment, including people and communities.	Mitigation measures based on Jacobs PSI recommendations, including unexpected finds protocol, DSI planning, and fill management.	Section 5.3
5	The preliminary documentation must provide information about the expected long- and short-term economic and social impacts of the proposed action, both positive and negative. This must include, but not necessarily be limited to, the points outlined below:	Consideration of the economic and social matters impacts of the proposed action included.	Section 6

No	DCCEEW Requirement	How this is addressed	Where is this addressed
	• Consideration of negative impacts (e.g. disruption to traffic, disturbance of hazardous materials etc.) • Consideration of positive impacts (e.g. employment opportunities, community benefit, site development opportunities etc.). • Estimated capital value and ongoing economic value, using specific dollar or other numerical values where relevant. • Details of any stakeholder consultation since the referral of the proposed action and in the preparation of the preliminary documentation.		

4. Background

4.1. Summary of the proposed action

The proposed action is for the full decommissioning of the NRCF, operated by ANSTO located at 81 Missenden Road, Camperdown NSW, Australia. The NRCF is located near the Royal Prince Alfred (**RPA**) Hospital within the grounds of the SLHD. The NRCF operated for ~10 years until 2021 when the site moved to a permanent state of shutdown. The project area is 0.35 hectares and the disturbance footprint (which is the building footprint to be demolished) is 0.17 hectares.

Central to NRCF is an 18 Megaelectron Volt (**MeV**) proton cyclotron, a small machine which acts as a particle accelerator to produce a small number of niche radioisotopes, such as Carbon-11 and Fluorine-18, used primarily for research purposes and in radiopharmaceuticals. This cyclotron was commissioned in 2012. Research into new radiopharmaceuticals and the production of nuclear medicines is now wholly carried out at ANSTO's Lucas Heights campus in southern Sydney.

Prior to the commissioning of the 18MeV cyclotron, a larger 30 MeV cyclotron (known as the National Medical Cyclotron) operated in the building from 1990 until decommissioning in 2011. While this cyclotron was removed, most of the supporting infrastructure remained in situ for operation with the 18 MeV cyclotron. The decommissioning of the 30 MeV cyclotron was referred to the Minister for the Environment in 2010 - see EPBC referral 2010/5645.

ANSTO is a lease holder of the Site which houses the cyclotron facility. As part of its lease obligations with SLHD, ANSTO is required to decommission the NRCF and demolish the building. The site will then be returned to SLHD, with the future use of the site to be incorporated into SLHD's master planning for the RPA Hospital campus.

The overwhelming majority of building waste from the demolition of the two-storey building will be classified as general waste and sent to a recycling facility.

Only a small portion of the building waste will contain radioactive materials, such as concrete walls and flooring in the vault areas housing the cyclotron. Measurements of these areas show that the radioactivity level of this small amount of waste is below those set by NSW EPA guidelines for disposal of this waste type. This waste will be classified as Restricted Solid Waste and its removal from the NRCF will be subject to approval by ARPANSA.

ANSTO will be required to seek a licence to decommission the NRCF from ARPANSA.

4.2. Surrounding land use

The Site is situated within the RPA Hospital campus, which extends across both sides of Missenden Road. The University of Sydney campus is located to the east, northeast, and southeast, while the suburbs of Camperdown and Newtown, with a mix of residential and commercial areas, are located to the west and south of the RPA Hospital campus, respectively. The site and surrounding area are primarily used for health services, including hospital facilities and related activities. Further details on surrounding land uses within 1 km radius of the Site are provided in the Jacobs PSI report (Jacobs PSI Report, Section 2.3, Table 2-2, page 7).

4.3. Location map of the NRCF

Figure 1: The site and its immediate vicinity

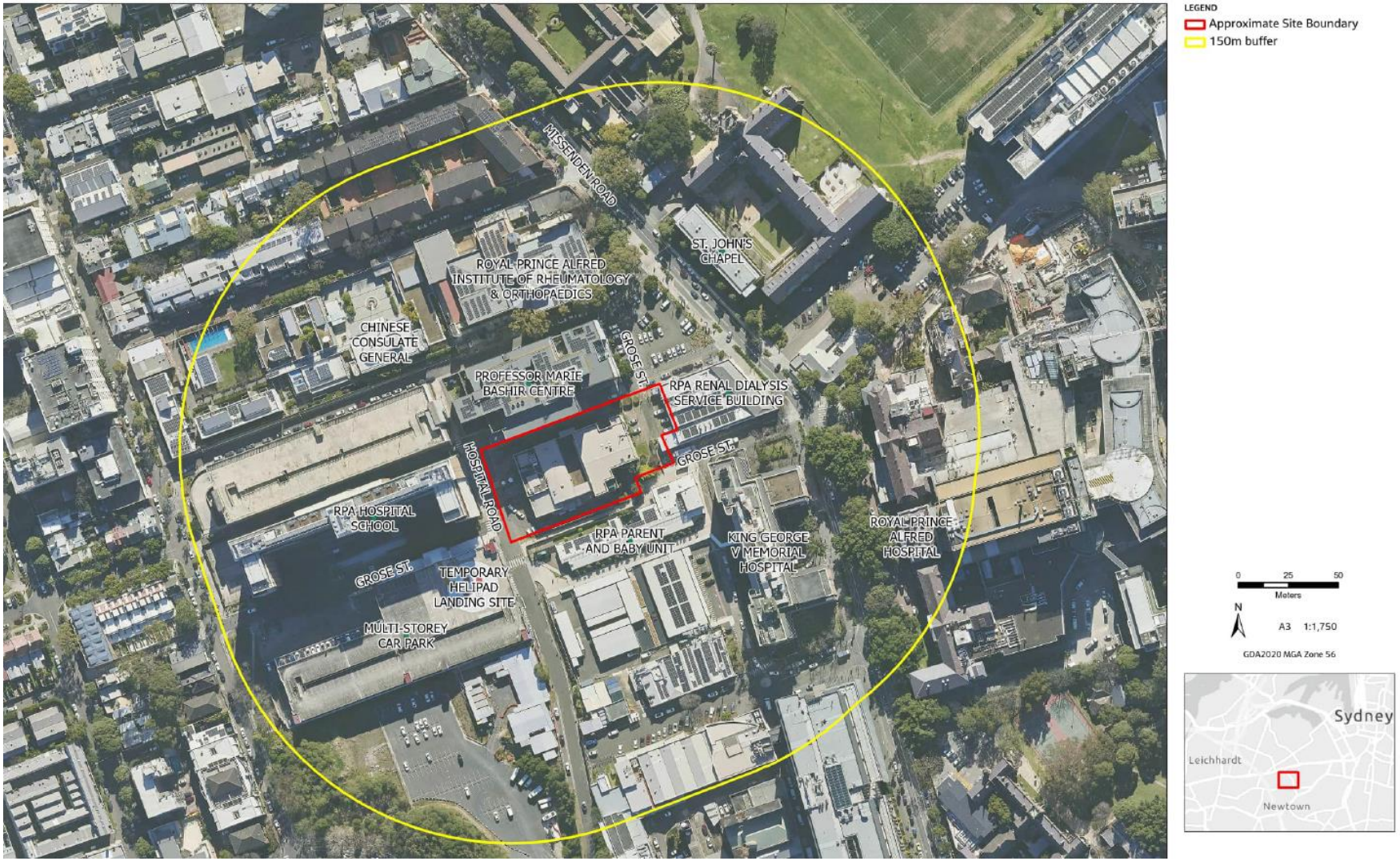


Figure 2: Site Boundary

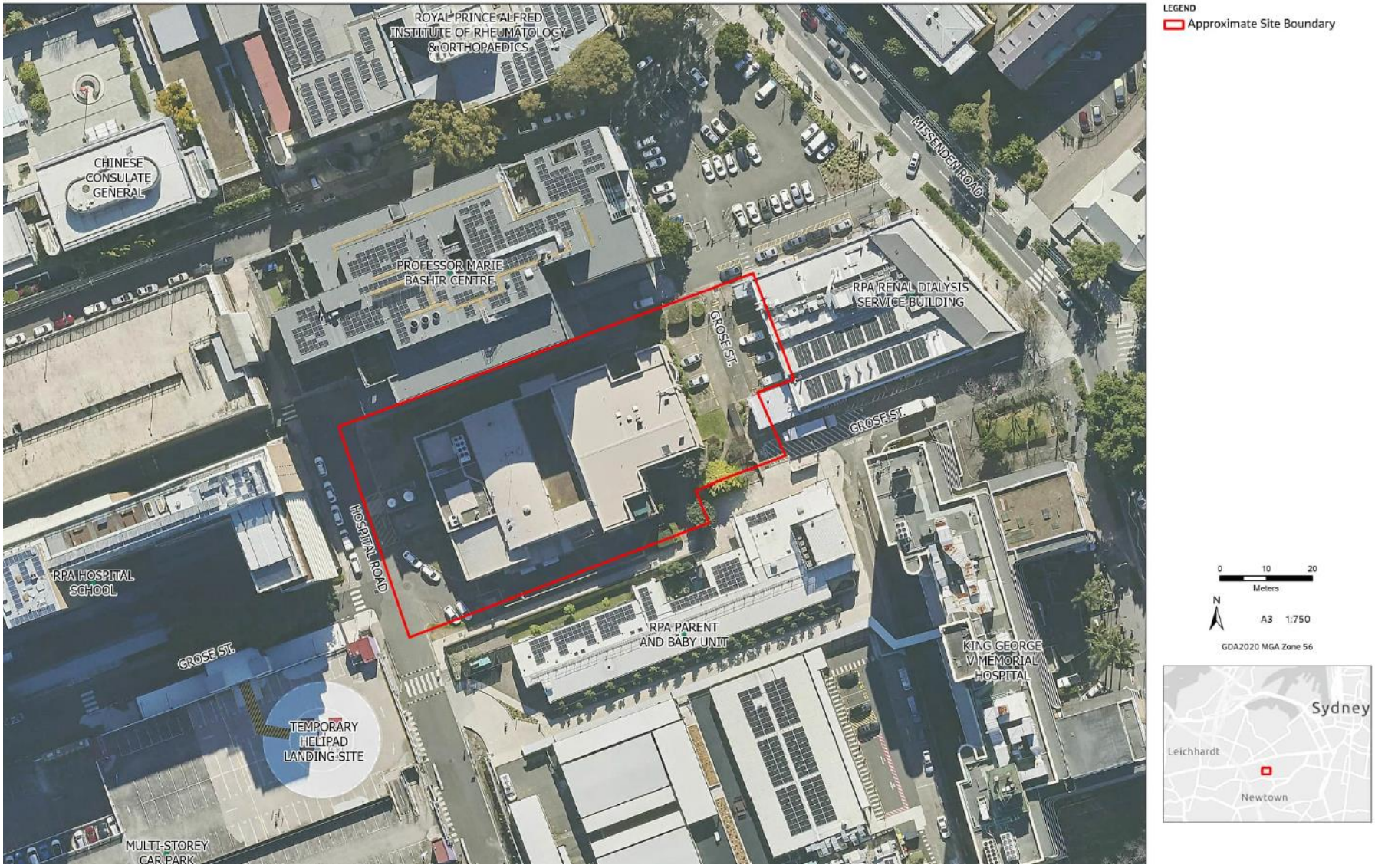
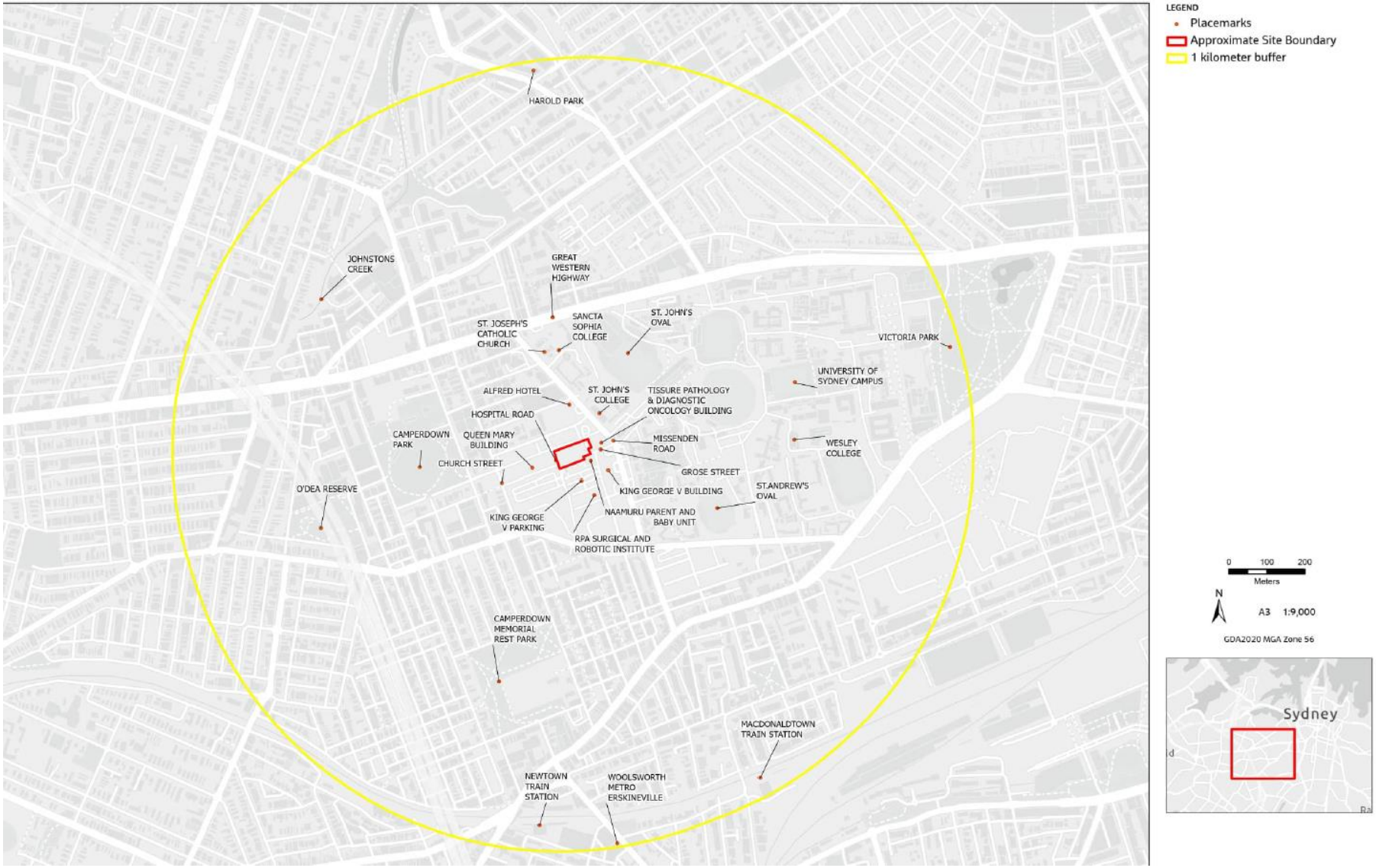


Figure 3: Surrounding land uses and locality map of Camperdown, Sydney NSW



4.4. Key Activities

The key activities involved with the decommissioning of the NRCF are:

- Obtaining a decommissioning licence from ARPANSA
- Removal of the 18MeV cyclotron and transport to the Lucas Heights Campus or an approved storage location.
- Removal and disposal of the liquid waste tanks in the basement.
- Removal of all laboratory equipment and furniture.
- Removal and disposal of all plant and ancillary equipment (e.g. active ventilation, stack etc.)
- Standard demolition works for the building structures determined by characterisation to be radiologically exempt and free from radiological contamination.
- Transporting of radiological contamination-free waste to a recycling facility.
- Demolition of the concrete vaults.
- Packaging of radioactive waste, transport to an authorized facility in accordance with the decommissioning licence from ARPANSA.
- Final radiation surveys necessary to meet the requirements for release from regulatory control.
- The land is reinstated with clean soil to a level grade with the surrounding land, and the surface of the land is compacted to a 97% road base standard.
- Handover of the Site to the SLHD.

5. Preliminary Site Investigation (PSI)

In accordance with DCCEEW's requirements, ANSTO engaged Jacobs to conduct a PSI to:

- Assess the potential for existing soil and groundwater contamination associated with historic land uses (including ANSTO activities).
- Develop an initial CSM describing potential contaminants, transport and exposure mechanisms and receptors.
- Provide input for ANSTO to determine if a DSI or other further investigations of contamination at the Site are needed.
- Help inform ANSTO's planning and execution of the demolition of the Site including the management of contamination risks (if any), disposal of waste material and handback of the Site to SLHD.

The following recommendations from the PSI were presented:

1. The Construction Environmental Management Plan for the decommissioning and demolition work should include an Unexpected Finds Protocol in case asbestos materials or other indications of soil contamination are encountered. Assessment of the conditions by a suitably qualified occupational hygienist (for asbestos) or environmental consultant (for contamination) should be part of this protocol.
2. Once decommissioning and demolition design progresses and the scope and extent of ground disturbance works are defined, a SAQP should be prepared to guide a DSI. The purpose of the investigation is to assess fill material and soil quality under the building. The DSI should including testing and assessment of the soil under the building for non-radionuclide contaminants. The SAQP should consider analysis for metals, hydrocarbons (total recoverable hydrocarbons (**TRH**), benzene/toluene/ethylbenzene/xylene (**BTEX**), polyaromatic hydrocarbons (**PAH**)), solvents (volatile organic compounds (**VOC**), semi-volatile organic compounds (**SVOC**)), cyanide, asbestos, polychlorinated biphenyls (**PCB**) and Per- and Polyfluoroalkyl Substances (**PFAS**).
3. Based on the results of the DSI and a risk assessment, soil that presents an unacceptable risk based on the future use of the Site for public open space may need to be remediated or managed appropriately.
4. Fill material and soil to be excavated and removed from the Site will need to be tested and classified in accordance with NSW EPA guidelines prior to disposal off-site to a licensed facility.
5. Fill material imported to the Site as part of the restoration should be certified as Virgin Excavated Natural Material (**VENM**) in accordance with Schedule 1 of the *Protection of the Environment Operations Act 1997* (NSW) or meet the requirements of the Excavated Natural Material Order 2014.

The full PSI report is provided in Appendix A:

5.1. Site Contamination Assessment and Future Use

DCCEEW has noted that *"site contamination assessment objectives should be designed to ensure that the entire site is suitable for all future uses following the decommissioning and demolition."*

Existing site investigations did not identify any soil contamination that may present a risk for ongoing commercial or industrial use of the Site.. Groundwater was not encountered to the depth of investigation and is unlikely to be intersected during demolition, with contamination (if present) considered unlikely to present an unacceptable risk (Jacobs PSI, Section 9, page 33).

The assessment was based on SLHD's proposed short-term use of the site as green space which was based on the ASC NEPM guideline values for public open space and identified no unacceptable risks. To confirm suitability, Jacobs recommended a targeted DSI beneath the building footprint after demolition, guided by the SAQP. If contamination is identified that poses an unacceptable risk for public open space, appropriate remediation or management actions will need to be implemented by SLHD.

5.2. Independent Review by NSW EPA Accredited Site Auditor

A NSW EPA Accredited Site Auditor was engaged to provide independent oversight of the PSI. The auditor's review supports the conclusion that the Site poses a low risk for its intended future use. The auditor's letter is included in the PSI report (Jacobs PSI Report, Appendix E, Page 41).

5.3. Environmental Management Measures

In line with DCCEEW's requirements, ANSTO will implement the following measures to protect people, the community, and the environment, and to minimise potential soil and groundwater contamination during decommissioning and demolition, as recommended in the Jacobs PSI:

- **Unexpected Finds Protocol:** An Unexpected Finds Protocol will be included in the CEMP to manage any asbestos or indications of soil contamination encountered. Assessment of the conditions by a suitably qualified occupational hygienist (for asbestos) or environmental consultant (for contamination) will be part of this protocol.
- **Soil and Fill Material Classification and Disposal:** Excavated fill material and soil will be tested and classified according to NSW EPA guidelines prior to disposal at licensed facilities. Fill material imported to site as part of the restoration will be certified as Virgin Excavated Natural Material in accordance with applicable regulations.
- **DSI and SAQP:** After demolition, an SAQP will guide a DSI under the building footprint to assess fill material and soil for hazardous materials.

6. Economic and Social Matters

6.1. Consideration of negative impacts

ANSTO has conducted assessments to identify potential adverse environmental and local community effects and proposed suitable mitigation measures as follows:

- **Visual Effects**

  The demolition of the building will cause a temporary visual disruption due to its location and public visibility. To minimise this impact, the perimeter of the building will be secured with a construction hoarding and signage. This will enhance safety and security for the public and also assist with containing dust and debris within the demolition site, reducing the overall impact on the surrounding area.

- **Noise Effects**

  Demolition works will generate noise, with noise levels varying depending on the activity and equipment used. To minimise noise disruptions, a Noise Monitoring and Management Plan will be developed and implemented. This plan will address monitoring expectations and mitigation measures to reduce the noise. All works will be carried out in accordance with Australian Standard AS 2436–2010: Guide to Noise Control on Construction, Maintenance and Demolition Sites, which provides guidance on acceptable noise levels and control methods for demolition related activities.

- **Traffic, Transportation and Road Effects**

  During decommissioning and demolition works, there will be an increase in the number of large vehicles entering and exiting the site for material removal. The effects of this increase on the internal and external road networks will be mitigated through the development and implementation of a Traffic Management Plan. This plan will outline designated haul routes, signage, and traffic control measures to ensure safe and efficient movement of vehicles. Additionally, deliveries and material removal will be scheduled to avoid peak traffic times.

6.2. Consideration of positive impacts

The SLHD is one of the most densely populated Local Health Districts in NSW with more than 740,000 people living within the area. By ANSTO returning the Site, SLHD will have the opportunity to redevelop the Site and deliver social and economic benefits for the community.

In the short term, the Site will be used by SLHD for the construction of a green space to provide a natural or semi-natural area within the hospital campus. In the longer term, ANSTO understands the Site will be incorporated into SLHD's master planning for the broader RPA Hospital campus redevelopment.

The demolition and Site remediation works will also generate short term employment opportunities through the engagement of contractors, consultants, and service providers.

6.3. Estimated capital value and ongoing economic value

The estimated cost of this project is $17 million, excluding GST. This cost estimate includes regulatory approvals, decommissioning and removal of major equipment, building demolition costs, management and design fees, contingencies, and an escalation allowance.

While the project will not directly deliver revenue-generating assets or produce revenue itself, it lays essential groundwork by preparing a prime site for SLHD's future healthcare infrastructure development.

6.4. Stakeholder consultation

ANSTO has proactively consulted with SLHD, the primary stakeholder impacted by the project. These consultations have involved formal discussions and notifications to ensure SLHD is fully informed of the project scope, timing, and potential impacts. Feedback from SLHD has been considered in the development of project documentation, particularly regarding site redevelopment opportunity.

ANSTO and SLHD have established a joint communications working group to support the project. This group has completed stakeholder mapping for targeted engagement. Consultations with SLHD will continue, with regular update meetings scheduled throughout the project's duration to ensure consistent collaboration and alignment.

SLHD will take the lead in managing relationships with broader hospital stakeholders. Their involvement leverages extensive experience gained through the current $940 million redevelopment of the Royal Prince Alfred Hospital precinct.

To support governance and strategic oversight, a joint Project Control Group has been formed. This group facilitates stakeholder engagement at both the project and executive levels. Membership includes SLHD's Chief Executive Officer and ANSTO's Group Executive for Infrastructure and Engineering Services, ensuring high-level representation.

ANSTO has also engaged with the University of Sydney, given its proximity and the presence of student accommodations and residential colleges. This engagement ensures that the University is aware of the project and any potential impact on its community. ANSTO will provide project updates to local community representatives to ensure awareness of project timing and potential impacts.

7. Changes to the proposed action following EPBC referral submission

There have been no material changes to the proposed action since the submission of the EPBC referral. All key activities, timelines, and environmental management measures remain as described in this document and in the supporting Jacobs PSI Report (Appendix A).

8. Definitions

Term	Definition
ANSTO	Australian Nuclear Science and Technology Organisation
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CEMP	Construction Environmental Management Plan
CSM	Conceptual Site Model
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DSI	Detailed Site Investigation
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
Green Space	A natural or semi-natural area within the RPA Hospital campus, following handback of the site to SLHD.
HIL	Health Investigation Level
MeV	Megaelectron volt
NRCF	National Research Cyclotron Facility
Open Space	As defined in the ASC NEPM (1999, Vol. 2, Section 2.2: HIL C): public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools, and footpaths. Excludes undeveloped public open space (such as urban bushland and reserves), which should be subject to a site-specific assessment where appropriate.
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated biphenyls
PFAS	Per- and Polyfluoroalkyl Substances
PSI	Preliminary Site Investigation
RAP	Remediation Action Plan
RPA	Royal Prince Alfred (Hospital)
SAQP	Sampling and Analysis Quality Plan
SLHD	Sydney Local Health District
SVOC	Semi-volatile organic compounds
TRH	Total recoverable hydrocarbons
VENM	Virgin Excavated Natural Material - natural material (such as clay, gravel, sand, soil and rock) that has not been processed or contaminated, as defined under the Protection of the Environment Operations Act 1997 (NSW)
VOC	Volatile organic compounds

9. References

1. Jacobs Group (Australia) Pty Ltd - Preliminary Site (Contamination) Investigation - National Research Cyclotron Facility (Appendix A)
2. EPBC Referral: Link to public portal (Appendix B)
3. DCCEEW's request for further information (Appendix C)

10. Revision Details

Rev	Description of Revision	Reviewed	Approved
0	Preliminary documentation prepared for DCCEEW submission	Michael Luu	Michael Baker

Appendix A: Jacobs PSI Report

Provided as a separate attachment to this submission.

Appendix B: EPBC Referral 2024/10072

Provided as a separate attachment to this submission. The full referral is also publicly accessible via the following link: Link to public portal

Appendix C: Request for Further information

Provided as a separate attachment to this submission.

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