Australian Government

Australian Radiation Protection and Nuclear Safety Agency

FACILITY LICENCE APPLICATION
Nuclear Installation

This form is for use by Commonwealth entities or Commonwealth contractors to apply for a facility licence for a nuclear installation under section 32 of the *Australian Radiation Protection and Nuclear Safety Act 1998*. Applicants should refer to *Regulatory Guide: Applying for a Facility Licence for a Nuclear Installation* when completing this form.

SECTION A – GENERAL INFORMATION

NAME OF DEPARTMENT OR COMMONWEALTH BODY:	**Australian Nuclear Science and Technology Organisation (ANSTO)**

NAME OF PERSON MAKING THE APPLICATION:

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RADIATION SAFETY OFFICER OR CONTACT PERSON:

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DECLARATION (To be signed by the applicant or authorised person)

I hereby declare that the information provided on this form and in support of this application is, to the best of my knowledge, complete and true in every particular.

_____ Date: 8.9.2010

SECTION B – KIND OF NUCLEAR INSTALLATION AND TYPE OF AUTHORISATION

Please indicate the kind of nuclear installation and type of authorisation for which you are applying.

The authorisation sought in this application is to decommission the equipment and facilities previously used at the ANSTO Camperdown site for the manufacture of radiopharmaceuticals. This equipment and facilities is licensed as the following parts of the ARPANSA licence titled F0044-5A, 5B, 5C issued on 24/12/2002.

The parts of the licence for which authority to decommission are sought are described in Schedule 1 (Table 1) as follows:

Type of Facility	Name of Facility	Facility Details
Nuclear Installation	Camperdown Facility (Application 5Ad)	9 TBq of various radioisotopes as detailed in Schedule 2 (Table 2)
Prescribed Radiation Facility	National Medical Cyclotron (Application 5B)	IBA 'Cyclone 30' Cyclotron

ITEM	KIND OF NUCLEAR INSTALLATION AND TYPE OF AUTHORISATION REQUIRED	CHECK
1	Preparing a site for a controlled facility, being a nuclear reactor that is designed: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) to have maximum thermal power of less than 1 megawatt	☐
2	Constructing a controlled facility, being a nuclear reactor that is designed: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) to have maximum thermal power of less than 1 megawatt	☐
3	Possessing or controlling a controlled facility, being a nuclear reactor: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) with maximum thermal power of less than 1 megawatt	☐
4	Operating a controlled facility, being a nuclear reactor: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) with maximum thermal power of less than 1 megawatt	☐

ITEM	KIND OF NUCLEAR INSTALLATION AND TYPE OF AUTHORISATION REQUIRED	CHECK
5	De-commissioning, disposing of or abandoning a controlled facility, being a nuclear reactor that: (a) was used for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) had maximum thermal power of less than 1 megawatt	☐
6	Preparing a site for a controlled facility, being a nuclear reactor that is designed: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) to have maximum thermal power of 1 megawatt or more	☐
7	Constructing a controlled facility, being a nuclear reactor that is designed: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) to have maximum thermal power of 1 megawatt or more	☐
8	Possessing or controlling a controlled facility, being a nuclear reactor: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) with maximum thermal power of 1 megawatt or more	☐
9	Operating a controlled facility, being a nuclear reactor: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) with maximum thermal power of 1 megawatt or more	☐
10	De-commissioning, disposing of or abandoning a controlled facility, being a nuclear reactor that: (a) was used for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) had maximum thermal power of 1 megawatt or more	☐
11	Preparing a site for a controlled facility, being a plant for preparing or storing fuel for use in a nuclear reactor of a kind mentioned in any of items 1 to 9	☐
12	Constructing a controlled facility, being a plant for preparing or storing fuel for use in a nuclear reactor of a kind mentioned in any of items 1 to 9	☐
13	Possessing or controlling a controlled facility, being a plant for preparing or storing fuel for use in a nuclear reactor of a kind mentioned in any of items 1 to 9	☐
14	Operating a controlled facility, being a plant for preparing or storing fuel for use in a nuclear reactor of a kind mentioned in any of items 1 to 9	☐
15	De-commissioning, disposing of or abandoning a controlled facility, being a plant that was used for preparing or storing fuel for use in a nuclear reactor of a kind mentioned in any of items 1 to 9	☐

ITEM	KIND OF NUCLEAR INSTALLATION AND TYPE OF AUTHORISATION REQUIRED	CHECK
16	Preparing a site for a controlled facility, being: (a) a nuclear waste storage facility that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 7; or (b) a nuclear waste disposal facility that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 8	☐
17	Constructing a controlled facility, being: (a) a nuclear waste storage facility that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 7; or (b) a nuclear waste disposal facility that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 8	☐
18	Possessing or controlling a controlled facility, being: (a) a nuclear waste storage facility that contains controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 7; or (b) a nuclear waste disposal facility that contains controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 8	☐
19	Operating a controlled facility, being: (a) a nuclear waste storage facility that contains controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 7; or (b) a nuclear waste disposal facility that contains controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 8	☐
20	De-commissioning, disposing of or abandoning a controlled facility, being: (a) a nuclear waste storage facility that formerly contained controlled materials with an activity that was greater than the applicable activity level prescribed by regulation 7; or (b) a nuclear waste disposal facility that formerly contained controlled materials with an activity that was greater than the applicable activity level prescribed by regulation 8	☐
21	Preparing a site for a controlled facility, being a facility to produce radioisotopes, that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 11	☐
22	Constructing a controlled facility, being a facility to produce radioisotopes, that is designed to contain controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 11	☐
23	Possessing or controlling a controlled facility, being a facility producing radioisotopes and containing controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 11	☐

ITEM	KIND OF NUCLEAR INSTALLATION AND TYPE OF AUTHORISATION REQUIRED	CHECK
24	Operating a controlled facility, being a facility producing radioisotopes and containing controlled materials with an activity that is greater than the applicable activity level prescribed by regulation 11	☐
25	De-commissioning, disposing of, or abandoning a controlled facility, being a facility that formerly produced radioisotopes and contained controlled materials with an activity that was greater than the applicable activity level prescribed by regulation 11	☒

ITEM	KIND OF PRESCRIBED RADIATION FACILITY	Check
1	Particle accelerator with a beam energy of more than 1 MeV	☒

SECTION C – KIND OF CONTROLLED MATERIAL AND/OR CONTROLLED APPARATUS

Please indicate the kind of controlled material and/or controlled apparatus to be dealt with under the facility licence for the nuclear installation.

The Controlled Materials associated with the facility being decommissioned are itemised as parts of the tables in Schedules 2 and 3 of the ARPANSA licence titled F0044-5A, 5B, 5C issued on 24/12/2002. There are no Controlled Apparatus associated with the facility

The table below itemises the Controlled Materials:

Licence F0044-5A, 5B, 5C Schedule (Table) Type of Controlled Material	Controlled Material	Location / premises
Schedule 2 (Table 2) Controlled Material (Unsealed Sources)	C-11 50 GBq N-13 50 GBq O-15 50 GBq F-18 150 GBq Cu-64 50 GBq Ga-67 4 TBq I-123 500 GBq Tl-201, Pb-201 4TBq	Camperdown Facility
Schedule 3 (Table 1) Controlled Material (Sealed Sources)	Ra-226 100 MBq (Solid item 795)	Camperdown Facility
Schedule 3 (Table 2) Controlled Material (Unsealed Sources)	N-13 40 GBq F-18 150 GBq Ga-67 4 TBq I-123 800 GBq Tl-201 4TBq	PET Beam Room, Cyclotron Vault, NMC PET Beam Room, Cyclotron Vault, NMC SPECT Beam Room 1&2, Cyclotron Vault, NMC SPECT Beam Room 1, Cyclotron Vault, NMC SPECT Beam Room 1&2, Cyclotron Vault, NMC

GROUP	ITEM	TYPE OF CONTROLLED MATERIAL OR CONTROLLED APPARATUS	Check
1	1	Sealed source for calibration purposes of activity of 40 MBq or less	☐
	2	Sealed source in a fully enclosed analytical device	☐
	3	Sealed source with activity of 400 MBq or less in a fixed gauge	☐
	4	Sealed source in a blood irradiator	☐
	5	Sealed source in a bone densitometer	☐
	6	Sealed source that:(a) is in storage and awaiting disposal; and (b) has a nuclide with a maximum activity of not more than 10^9 times the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide	☐

GROUP	ITEM	TYPE OF CONTROLLED MATERIAL OR CONTROLLED APPARATUS	Check
	7	Unsealed source, or sources, in a laboratory or premises, having nuclides amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide	☐
	8	Unsealed source, or sources, in a laboratory or premises, having nuclides such that when the maximum activity of each nuclide in the source, or sources, is divided by the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide, the total of the results for all nuclides in the source, or sources, is not more than 100	☐
	9	Mammographic x-ray unit	☐
	10	Conventional dental x-ray unit	☐
	11	X-ray unit used for bone densitometry	☐
	12	X-ray unit used for veterinary radiography	☐
	13	Fully enclosed x-ray analysis unit	☐
	14	Baggage inspection x-ray unit	☐
	15	Mobile or portable medical x-ray unit	☐
	16	Magnetic field non-destructive testing device	☐
	17	Induction heater or induction furnace	☐
	18	Industrial radiofrequency heater or welder	☐
	19	Radiofrequency plasma tube	☐
	20	Microwave or radiofrequency diathermy equipment	☐
	21	Industrial microwave or radiofrequency processing system	☐
	22	Optical source, other than a laser product, emitting ultraviolet radiation, infra-red or visible light.	☐
	23	A laser product with an accessible emission level more than the accessible emission limit of a Class 3R laser product as set out AS/NZS 2211.1:2004 *Safety of Laser Products – Equipment Classification, Requirements and User's Guide*	☐
	24	An optical fibre communication system exceeding Hazard Level 3R as defined by AS/NZS 2211.2:2006 *Safety of Laser Products – Safety of Optical Fibre Communications Systems (OFCS)*	☐

GROUP	ITEM	TYPE OF CONTROLLED MATERIAL OR CONTROLLED APPARATUS	Check
2	25	Sealed source for calibration purposes of activity of more than 40 MBq	☐
	26	Sealed source in a partially enclosed analytical device	☐
	27	Sealed source of activity of more than 400 MBq in a fixed gauge	☐
	28	Sealed source in a mobile gauge	☐
	29	Sealed source for medical or veterinary diagnostic nuclear medicine use	☐
	30	Unsealed source, or sources, in a laboratory or premises, having nuclides of 1 kind only with a maximum activity of more than 100, but not more than 10 000, times the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide	☐
	31	Unsealed source, or sources, in a laboratory or premises, having nuclides such that when the maximum activity of each nuclide in the source, or sources, is divided by the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide, the total of the results for all nuclides in the source, or sources, is more than 100 but not more than 10 000	☐
	32	Unsealed sources used for tracer studies	☐
	33	Industrial radiography x-ray unit	☐
	34	Fixed medical x-ray unit, including a unit used for fluoroscopy, tomography and chiropractic radiography	☐
	35	Partially enclosed x-ray analysis unit	☐
	36	Medical therapy simulator	☐
	37	CT scanner	☐
3	38	Sealed source for industrial radiography	☐
	39	Sealed source for medical and veterinary radiotherapy	☐
	40	Sealed source in a bore hole logger	☐
	41	Sealed source of controlled material not mentioned in another item of Schedule 3C of the ARPANS Regulations 1999	☐
	42	Unsealed source, or sources, in a laboratory or premises, having nuclides of 1 kind only with a maximum activity of more than 10 000, but not more than 1 000 000, times the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide	☐
	43	Unsealed source, or sources, in a laboratory or premises, having nuclides such that when the maximum activity of each nuclide in the source, or sources, is divided by the amount mentioned in column 4 of Part 2 of Schedule 2 for that kind of nuclide, the total of the results for all nuclides in the source, or sources, is more than 10 000 but not more than 1 000 000	☐
	44	Veterinary or medical radiotherapy unit	☐
	45	Controlled apparatus that produces ionising radiation not mentioned in another item of Schedule 3C of the ARPANS Regulations 1999	☐

SECTION D – SOURCE DETAILS

Note: Section D is the Source Inventory Workbook which is a spreadsheet that can be downloaded from
http://www.arpansa.gov.au/pubs/regulatory/applications/SourceInventoryWorkbook.xls

The details of all controlled apparatus and controlled material to be dealt with under the licence must be provided in the Source Inventory Workbook. An explanation of terms and required information is given in the first worksheet. **The completed Source Inventory Workbook must be submitted on CD-ROM with the application.**

The disposition of the Controlled Materials included in the licence and itemised in the previous Section C of this application is as follows:

Schedule (Table) Type of Controlled Material	Controlled Material - Half Life		Disposition
Schedule 2 (Table 2) Controlled Material (Unsealed Sources)	C-11 N-13 O-15 F-18 Cu-64 Ga-67 I-123 Tl-201, Pb-201	20.39 minutes 9.965 minutes 122 seconds 109.77 minutes 12.70 hours 3.261 days 13.27 hours 72.91 hours 9.33 hours	C-11 and O-15 were never manufactured. The remaining Controlled Materials were removed from the site and any residuals have decayed to below exempt levels.
Schedule 3 (Table 1) Controlled Material (Sealed Sources)	Ra-226	100 MBq (Solid item 795)	Controlled on Lucas heights site in B23 S/N 37879-01
Schedule 3 (Table 2) Controlled Material (Unsealed Sources)	N-13 F-18 Ga-67 I-123 Tl-201	9.965 minutes 109.77 minutes 3.261 days 13.27 hours 72.91 hours	These Controlled Materials were removed from the site and any residuals have decayed to below exempt levels.

SECTION E – FURTHER INFORMATION

This licence application is a package of documents which will be reviewed by the ANSTO Safety Assessment Committee (SAC) prior to submission to ARPANSA. The full set of documents collectively make up the updated safety case for the decommissioning phase of the facility life. The documents are as follows:

A/ Documents prescribed by the ARPANSA licence application form:

- This Facility Licence Application form.
- The supporting plans referred to in sections E6a to E6f below i.e. the Effective Control Plan AC-D-LA-E6a, Safety Management Plan AC-D-LA-E6b, Radiation Protection Plan AC-D-LA-E6c, Radioactive Waste Management Plan AC-D-LA-E6d, Security Plan AC-D-LA-E6e and the Emergency Plan AC-D-LA-E6f.
- The supporting information referred to in section 7 below for decommissioning i.e. the Decommissioning Plan AC-D-LA-E7a. The schedule is included with the plan.

B/ Other documents:

- An ANSTO OHSE Categorisation AF 2322 and a submission to the SAC AF 2321.
- A Safety Assessment ANSTO/T/TN/2010-9 prepared to support this application and the submission to ANSTO's internal Safety Assessment Committee (SAC).

- A Lifting and Transport Plan.
- A source term evaluation for the cyclotron NASDOC RP10-0154 A
- Further supporting safety assessments: preliminary SWMS for the vault / control room work and for the GMP hot cells work and a hazard identification risk assessment for the large crane lifts.

Further documents will be prepared during the work planning as needed to support the safety assessment e.g. Final Safe Work Method Statements (SWMS) for major tasks e.g. the removal of the hot cells.

1. Provide a detailed description of the purpose of the nuclear installation.

The purpose of the original Nuclear Installation and IBA 'Cyclone 30' cyclotron was to irradiate and process targets for the production of radiopharmaceuticals for medicine. The facility commenced operation in 1991 and over the next few years production a suite of PET and SPECT radioisotopes was developed. Since 2005 only the SPECT radioisotopes I-123, Tl-201 and Ga-67 have been manufactured. In recent years the ability to meet the demand of isotope production deteriorated. In October 2009 a decision was made to cease operation of the 30 MeV cyclotron and associated radiopharmaceutical production.

The purpose of decommissioning the original facility is to allow reuse of the building and services to house a new 18 MeV cyclotron to irradiate targets and to process these targets for the production of radioisotopes for research.

2. Provide a detailed description of the nuclear installation and the site for that facility

The Nuclear Installation and IBA Cyclone 30 cyclotron and associated Controlled Materials are defined in the ARPANSA licence titled F0044-5A, 5B, 5C issued on 24/12/2002. These are itemised in Section B and Section C of this licence application. A detailed description of the equipment and the site is given in the Safety Analysis Report[1] for the overall facility. Descriptions and images of the key equipment important to the decommissioning are given in the Decommissioning Plan AC-D-LA-E7a.

This licence application is to decommission the facility and the details of these activities are given in the attached Decommissioning Plan AC-D-LA-E7a.

3. Describe the net benefit derived from the proposed conduct with the nuclear installation and any proposed dealings with controlled apparatus and/or controlled material.

The benefit of decommissioning the original facility is that it will allow reuse of the building and services to produce radioisotopes for research. A new research partnership has been established consisting of ANSTO, Sydney University and the National Imaging Facility (NIF) which brings together Australia's radiopharmaceutical research knowledge into the new facility. This will give ANSTO access to certain research which has not been possible so far. This future research and facility will be described in the licence application documents for the future facility.

The risks and exposures from the decommissioning activities will be controlled and limited as described in the other parts of this application including the Safety Management Plan AC-D-LA-E6b and the Radiation Protection Plan AC-D-LA-E6c. The decommissioned items and waste will be properly managed under these plans and this will provide closure to the previous operations. Overall there is a net benefit in performing the decommissioning to allow the future research facility to proceed.

[1] ANSTO, Safety Analysis Report, Radiochemicals / Radiopharmaceuticals Production - Camperdown, December 2003.

4. Describe how international best practice in radiation protection and nuclear safety is applied to the nuclear installation and when dealing with controlled apparatus and/or controlled material.

There is considerable experience in the decommissioning of small nuclear facilities including cyclotrons. The IAEA provides good guidance and advice, in particular a safety guide WS-G-2.2[2] and a technical report TRS-414[3]. More generally they have reviewed the experience from a large number of decommissioning activities and summarised the lessons learned in TECDOC-1394[4]. Also there is a safety guide WS-G-5.2[5] on preparing the safety assessment for decommissioning of facilities using radioactive materials.

ANSTO has good recent experience with decommissioning facilities using radioactive materials. Staff from Engineering and Capital Programs (ECP) have performed tasks required for the HIFAR reactor under the Possess or Control licence. The Major Projects Delivery Office (MPDO) within ECP is managing the decommissioning of the MOATA reactor which is nearing successful completion[6]. Staff from other ANSTO groups, particularly Radiation Protection Services and Waste Operations, have been involved in both to those projects. The same ANSTO work groups are performing this ANSTO Camperdown decommissioning.

IAEA safety guide WS-G-2.2 provides guidance for decommissioning this type of facility. The authors note that, subject to regulatory requirements, some facilities may be considered decommissioned if they are incorporated into a new facility under regulatory control. In part this will occur for the ANSTO Camperdown decommissioning because the vault and some services e.g. ventilation will be reused for the future 18 MeV research cyclotron. The options regarding timing are discussed. The authors note that phased decommissioning, which will be used in this project, can be employed to allow for decay and to suit allocation of resources, providing it is supported by good decommissioning planning and compliance with safety requirements..

WS-G-2.2 lists five critical tasks in decommissioning; characterisation of the facility, source removal, decontamination, dismantling and a final radiation survey. All of these critical tasks are planned in the ANSTO Camperdown decommissioning project. An example of the contents of a decommissioning plan is given as an annexe to WS-G-2.2. For this ANSTO Camperdown project, the Decommissioning Plan AC-D-LA-E7a together with the other plans and documents in the licence application package cover the same issues, with the exception of detailed cost estimates which are in ANSTO project files not included with the application.

IAEA technical report TRS-414 discusses the strategies for decommissioning and, similarly to WS-G-2.2, the authors conclude that it is beneficial to make use of operational staff familiar with the facility. This project is making good use of former staff. The previous senior cyclotron engineer is engaged full-time on the project and other operational staff have been engaged in tasks to support the project. The detailed planning of some tasks is making use of ANSTO employees who were involved in the original installation e.g. GMP hot cells.

In a discussion of the technical aspects, the authors conclude that the dismantling of small facilities doesn't present significant technical aspects, particularly if experienced staff are used in accordance with an established plan. This is being done for the ANSTO Camperdown decommissioning.

[2] IAEA WS-G-2.2, *Decommissioning of Medical, Industrial and Research Facilities,* 1999
[3] IAEA TRS 414, *Decommissioning of Small Medical, Industrial and Research Facilities,* 2003.
[4] IAEA TECDOC-1394, *Planning, managing and organising the decommissioning of nuclear facilities: lessons learned,* 2004.
[5] IAEA WS-G-5.2, *Safety Assessment for the Decommissioning of Facilities Using Radioactive Materials,* 2008.
[6] Engineers Australia, *Gentle Fire Goes Out - Dismantling of the MOATA Nuclear Reactor at Lucas Heights,* April 2010 pp 26-31

IAEA TECDOC-1394 reviews a large number of decommissioning activities and discusses the lessons that can be drawn. The authors report a general lack of experience in decommissioning, particularly in planning and management. They find that it is extremely important to appoint decommissioning manager and develop an adequate decommissioning plan which is being done for this project. The report finds that hardly any of the problems reported for the decommissioning activities were of a serious technical nature and none have been found in this project.

In reporting on the experience of project managers, the authors note that regulatory bodies generally recognise that there can be some safety documentation or technical actions that are not initially completed and that a practical solution which allows the project to continue is an agreed action plan. The staged timetable of the ANSTO Camperdown decommissioning follows this approach. Detailed planning has already been done for the first stage work which has allowed estimation of dose estimates and other detailed safety assessments. The same detailed planning and safety assessments will be done when needed before the second stage work.

Other lessons reported in TECDOC-1394 are that decommissioning teams should include operational staff and that all waste streams and routes for storing, disposing and transport of wastes are identified before decommissioning commences. For the ANSTO Camperdown decommissioning project, these issues are covered in the Decommissioning Plan AC-D-LA-E7a and in the supporting information particularly the Transport Plan. Further lessons discussed in TECDOC-1394 are that all disciplines including craft (trades people), health physics and safety should be involved in the planning of the work and that there should be detailed pre-job and work-in-progress briefings. ANSTO routinely adopts these measures through the use of Safe Work Method Statements (SWMS) prepared with the involvement of working staff and by regular toolbox talk briefings to work crews.

Guidelines for the safety assessment of the decommissioning of facilities using radioactive material are given in IAEA safety guide WS-G-5.2. ANSTO has an established method of performing safety assessments for significant activities including this ANSTO Camperdown decommissioning. It involves a hazard identification and risk assessment with a team led by a Systems Safety and Reliability (SSR) specialist and comprising appropriate project, operations and safety staff including radiation specialists. The study in this decommissioning followed the ANSTO OHSE management system processes which are described in the Decommissioning Safety Management Plan AC-D-LA-E6b. The hazard prompts used were agreed by the hazard identification team considering the example checklist in WS-G-5.2 and the report generally follows this guide. The study report Decommissioning Safety Assessment ANSTO/T/TN/2010-9 is included with this licence application.

5. Provide information to show that the magnitude of individual doses, the number of people exposed, and the likelihood that exposure will happen, are as low as reasonably achievable, having regard to economic and social factors.

The information on radiation doses and the measures to ensure these are as low as reasonably achievable during the decommissioning are given in the Radiation Protection Plan AC-D-LA-E6c included in this application.

6. Provide information on the following plans and arrangements for managing the nuclear installation, controlled material and/or controlled apparatus to ensure the health and safety of people and the protection of the environment:

   a) the arrangements for maintaining effective control of the nuclear installation, controlled material and/or controlled apparatus;

The arrangements for maintaining effective control during the decommissioning are given in the Effective Control Plan AC-D-LA-E6a included in this application.

b) the safety management plan for the nuclear installation, controlled material and/or controlled apparatus;

The arrangements for maintaining safety during the decommissioning are given in the Safety Management Plan AC-D-LA-E6b included in this application.

c) the radiation protection plan for the nuclear installation, controlled material and/or controlled apparatus;

The radiation protection arrangements during the decommissioning are given in the Radiation Protection Plan AC-D-LA-E6c included with this application.

d) the radioactive waste management plan for the nuclear installation, controlled material and/or controlled apparatus;

The arrangements for managing radioactive waste during the decommissioning are given in the Waste Management Plan AC-D-LA-E6d included in this application.

e) the security plan for the nuclear installation, controlled material and/or controlled apparatus;

The security arrangements during the decommissioning are given in the Security Plan AC-D-LA-E6e included in this application.

f) the emergency plan for the nuclear installation, controlled material and/or controlled apparatus;

The emergency arrangements during the decommissioning are given in the Emergency Plan AC-D-LA-E6f included in this application.

7. For each type of authorisation required, provide the following information and/or a reference to where this information may be found within the accompanying documentation.

See the section below which references the plans supporting this decommissioning licence application.

Authorisation for preparing a site for a controlled facility

a) A detailed site evaluation establishing the suitability of the site.

b) The characteristics of the site, including the extent to which the site may be affected by natural and man-made events.

c) Any environmental impact statement requested or required by a government agency, and the outcome of the environmental assessment.

Authorisation to construct a controlled facility

a) The design of the controlled facility, including ways in which the design deals with the physical and environmental characteristics of the site.

b) Any fundamental difficulties that will need to be resolved before any future authorisation is given.

c) The construction plan and schedule.

d) A preliminary safety analysis report that demonstrates the adequacy of the design of the facility and identifies structure, components and systems that are safety related items.

e) The arrangements for testing and commissioning safety related items.

Authorisation to possess or control a controlled facility

a) A safety analysis report that demonstrates the adequacy of the design of the controlled facility.

b) The arrangements for safe storage of controlled material and maintaining the controlled facility.

Authorisation to operate a controlled facility

a) A description of the structures, components, systems and equipment of the controlled facility as they have been constructed.

b) A final safety analysis report that demonstrates the adequacy of the design of the controlled facility, and includes the results of commissioning tests.

c) The operational limits and conditions of the controlled facility.

d) The arrangements for commissioning the controlled facility.

e) The arrangements for operating the controlled facility.

Authorisation for decommissioning a controlled facility

a) The decommissioning plan for the controlled facility.

The Decommissioning Plan AC-D-LA-E7a is included in this application.

b) The schedule for decommissioning the controlled facility.

The decommissioning schedule is included in the Decommissioning Plan.

Authorisation for abandoning a controlled facility

a) The results of decommissioning activities at the controlled facility.

b) Details of any environmental monitoring program proposed for the site.

CHECKLIST
FACILITY LICENCE APPLICATION (NI)

ITEM	Check	N/A
1. Completed and signed Section A	☒	☐
2. Instrument of authorisation for authorised person (if relevant)	☐	☒
3. Organisational chart showing nominee (if relevant)	☒	☐
4. Completed Section B	☒	☐
5. Documents to support the authorisation for which you are applying	☒	☐
6. Completed Section C	☒	☐
7. Completed Section D on **CD-ROM** (see item 10)	☐	☒
8. A copy of any Sealed Source or Special Form Certificates	☐	☒
9. Completed Section E	☒	☐
10. Documents to support Section E	☒	☐
11. CD-ROM of entire application including Section D (SIW) and all supporting documentation	☒	☐
12. CD-ROM of application suitable for public review	☒	☐
13. The appropriate application fee	☒	☐

This application form, all accompanying documentation and application fee should be sent to:

The Director
Regulatory & Policy Branch
ARPANSA
PO Box 655
MIRANDA NSW 1490