Risk Management – Monitor and Review (Operation of SAC)

Results of SAC Assessment

Note: Fill in all appropriate fields, delete or enter N/A for non required fields.

SECTION 1 – GENERAL DETAILS AND SUMMARY OF ASSESSMENT

DETAILS	
Date and Time	August 2010
SAC Title	ANSTO Camperdown 30MeV Cyclotron and Radiopharmaceuticals Production Decommissioning
SAC No.	1859
Location (Building and Room/s)	N/A
SAC Assessor(s)	Tristan Godfrey
Divisional Staff in Attendance (Including Position)	Basil Ellis / Chris Penny / Gary Simms / Alec Kimber / Algis Lencus / Alamgir Kabir / Joy Perera / Francesca Wigney.

SUMMARY OF GENERAL ISSUE ASSESSMENT

General Comments/Observations:

The decommissioning proposal for ANSTO Camperdown (previously the National Medical Cyclotron) is a complex multi-phase project and the documentation associated with the project is correspondingly detailed and exhaustive.

The RPA review was confined to a detailed inspection of the following documents:

- Request for OHSE Approval
- Facility Licence Application
- ANSTO Camperdown Facility Decommissioning Plan
- Decommissioning Safety Assessment of the ANSTO Camperdown Facility
- Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility
- Waste Management Plan

Other documents are considered to have been appropriately reviewed by other SAC assessors

The issues / comments raised against the documents were discussed in a review between myself and the key members of the project team (and are presented in Section 2 of this document). Subsequent to this meeting, I have reviewed and accepted the project team's disposition of comments.

SUMMARY OF HAZARD ASSESSMENT

Ionizing Radiation
Reviewed in Section 2 of this document

Radiation Contamination
Reviewed in Section 2 of this document

Criticality Not considered within the scope of this assessment
Non-Ionizing Radiation Not considered within the scope of this assessment
Chemical Not considered within the scope of this assessment
Biological Not considered within the scope of this assessment
Confined Space Not considered within the scope of this assessment
Fire/Explosion Not considered within the scope of this assessment
High/Low Pressure Not considered within the scope of this assessment
High/Low Temperature Not considered within the scope of this assessment
Dust Not considered within the scope of this assessment
Cryogenics Not considered within the scope of this assessment
Mechanical/Plant Not considered within the scope of this assessment
Manual Handling/Ergonomics Not considered within the scope of this assessment
Electrical Not considered within the scope of this assessment
Noise Not considered within the scope of this assessment
Heights Not considered within the scope of this assessment
Construction Not considered within the scope of this assessment
Environmental Not considered within the scope of this assessment
Other -

SUMMARY OF PROCEDURAL ASSESSMENT
Adequacy and Frequency of Internal Reviews *No formal assessment performed*
Inventory Control of Dangerous Goods *No formal assessment performed*

APPROVAL AND CONDITIONS		
SAC Approved	Yes ☒	No ☐
Insert Conditions Here No conditions		

ASSESSOR NAME	SIGNATURE	DATE
Tristan Godfrey		23rd August 2010

RESPONSIBLE OFFICER ACCEPTANCE		
RESPONSIBLE OFFICER	SIGNATURE	DATE
Basil Ellis	Basil Ellis	26/8/10

SECTION 2 – ASSESSOR COMMENTS AND RESPONSE

SPECIFIC COMMENTS			
SAC Number:	**1859**	**Date of Assessment:**	**Presented to Project Team on 5th August 2010**
Assessors Comments on ANSTO Camperdown 30MeV Cyclotron and Radiopharmaceuticals Production Decommissioning			

Ref #	Assessor	CAT	Comment	RO Response	Assessor's Comments	Supporting Documents Amended/Added
1	Tristan Godfrey	2	General Comment: The submission does not provide sufficient clarity in terms of what work will happen against what documentation – some documents are restricted in scope to 'Phase 1' whereas some are about the full scope. I believe the submission should be clear about what is being asked for overall (full decommissioning described in the licence application and in the decommissioning plan), what will happen in the first stage (with the plans / arrangements / safety assessment being written against stage 1) and a commitment made to provide a second suite (as a modification of the decommissioning licence) of plans / arrangements for the SPECT areas at a later date	To clarify this, a SAC addendum will be prepared which will describe the stages and show the staged nature of the decommissioning work in a simple tabular fashion.	Accepted.	SAC addendum

2	Tristan Godfrey	2	General Comment: The suggested 'early' removal of the Hot Cells in the GMP area is unlikely to present a radiological hazard however from a regulatory perspective, it further confuses a multi-phase project and I am not convinced about the proposed benefits (i.e. allowing staff to concentrate on that task). I believe the case would have been much stronger if ANSTO Camperdown was on a Possess and Control Licence at this time.	The Project is seeking feedback on this and the comment is noted.	Accepted	
3	Tristan Godfrey	3	Request for OHSE Approval (Information on Project): Why is the 'large load' being moved to Lucas Heights at night – does this add or detract from safety?	Movement of large loads along city streets is done at night when the traffic is lower to avoid the considerable traffic disruption which would occur. This is best with respect to safety.	Accepted	
4	Tristan Godfrey	3	Request for OHSE Approval (Information on Project): Are the unloaded items being stored at Hut 36 or is this the unload location only?	The unloaded item will be stored in Hut 36. This is the storage location agreed as suitable with Waste Operations who will manage the storage. The wording will be changed to say unloading and storage.	Accepted	
5	Tristan Godfrey	1	Request for OHSE Approval (Information on Project): I would have said that your first stage would also include a final survey of the decommissioned area.	The first stage will include a final survey of the decommissioned areas. The Decommissioning Plan and the detailed schedule will be amended to explicitly show this.	Accepted.	Revised Decommissioning Plan

6	Tristan Godfrey	1	Request for OHSE Approval (Plant and Equipment): It is clear from the description here that unload and storage (at LHSTC) is part of the submission – other elements of the submission need to reflect this (for instance, there is no consideration within the Radiation Protection Plan)	The unloading at Lucas Heights is part of the Decommissioning licence submission. The Radiation Protection Plan does include dose from the unloading task – see section 10.3 first paragraph. The Decommissioning Plan does refer to the unloading – see section 10.1, third paragraph, last dot point. When unloaded and under the control of Waste Operations, the cyclotron magnetic structure will be under the Waste Operations ARPANSA licence and there will no additional controls under the Decommissioning licence.	Accepted	
7	Tristan Godfrey	1	Request for OHSE Approval (Plant and Equipment): What level of qualification / assurance will be made against the crane used for the specialist lift?	The crane will be as per the requirements of the specialist lift company planning and executing the lifts. When the project is at that stage, the lift will be planned in detail with external specialist and there will be further risk assessment equivalent to detailed SWMS with the involvement of the ANSTO Lifting Equipment Approvals Officer.	Accepted	
8	Tristan Godfrey	3	Request for OHSE Approval (Environmental Assessment): Is the diesel tank bunding an issue for the decommissioning? If not, why include within the request for approval?	The diesel tank is not an issue per se for the decommissioning. However, the SAC submission form requires the input from the Local Environment Coordinator who has listed this matter and it is therefore in the SAC submission. MPDO will remedy this bunding deficiency as part of the future construction activities.	Accepted	

9	Tristan Godfrey	2	Request for OHSE Approval (Environmental Assessment): It is worth stating that in addition to the ventilation / filtration remaining operational during decommissioning, the stack monitoring systems will also be operational.	This is very relevant. The decommissioning plan, section 5 will be amended to reflect this	Accepted.	Revised Decommissioning Plan
10	Tristan Godfrey	3	Facility Licence Application: What are my responsibilities under this as the Radiation Safety Officer?	The Radiation Safety Officer is a role defined by ARPANSA. Within ANSTO the Radiation Protection Advisers fulfil this role. The Manager, RPS is listed on the ARPANSA facility licence application because it is believed that the RPA assigned to support the Camperdown activities will change during the period of the decommissioning licence.	Accepted	
11	Tristan Godfrey	3	Facility Licence Application: Are we sure that the materials in Schedule 3 (Table 2) were actually removed from site before manufacture ceased? I would have thought that residual materials would have been present after manufacturing ceased (although they have of course now decayed to nil). Where does all of the activated material sit within this licence?	It will be clearer to say that the materials were removed from site or have decayed to below exempt levels. The Disposition column in the table in section D will be changed to say this. The activated materials are not listed in these tables. They are subject to the ARPANSA licences which will be in place until the decommissioning is complete. The disposition of these materials will be decay to below exempt levels or transfer to the control of Waste Operations under their ARPANSA licence.	Accepted.	Amended Facility Licence Application
12	Tristan Godfrey	3	Facility Licence Application (description of net benefit): I would emphasise the repatriation of waste to an appropriate (and manned) waste storage area as one of the key benefits of this operation.	This is a benefit and the description of net benefit will be amended to state this.	Accepted.	Amended Facility Licence Application

13	Tristan Godfrey	3	Facility Licence Application (description of net benefit): This section describes the future facility and states 'this will be described in the licence application'…..without actually saying which licence application – this one?	The reference to licence application in this section will be amended to make clear that it relates to the future licence for the future 18 MeV cyclotron.	Accepted.	Amended Facility Licence Application
14	Tristan Godfrey	2	Facility Licence Application (application of international best practice): Are there any other experiences beyond HIFAR (Possess and Control) and MOATA that are applicable to this project?	The recent MOATA and HIFAR decommissioning experiences are relevant and key members of the project team have worked on these projects. There are no other decommissioning projects that team members have worked on from which relevant experience can be gained.	Accepted	
15	Tristan Godfrey	2	Facility Licence Application (application of international best practice): I wasn't really sure what the author was trying to convey when they write 'the options regarding timing are discussed and the authors conclude that immediate dismantling is preferable but note that the phased approach which will be used in this project can also be used' – does this mean we align with best practice? What conclusions are being drawn?	International best practice is not represented by a single best approach relating to timing. The authors referred to here conclude that immediate dismantling is preferable but as noted in your comments in item 16 below, a delay and decay approach can have advantages. Each decommissioning must be planned and assessed and that has been done in this project. This project does align with international best practice.	Accepted	

16	Tristan Godfrey	2	Facility Licence Application (application of international best practice): What conclusion is the author making when they quote 'immediate decommissioning is often optimal because it can make use of the operational staff familiar with the facility'? This is not the case at Camperdown; the operational staff have moved on (are any being used within the decommissioning project?) and, in any case, for plant such as cyclotrons where delay and decay can bring significant benefits, maybe immediate decommissioning is actually suboptimal?	The decommissioning project is using the previous senior cyclotron engineer and other former staff have been engaged on tasks to support the project. The RPS staff (RPA and HPS) supporting the decommissioning project have had experience supporting the previous operations. The detailed planning for some tasks is making use of ANSTO employees who were involved in the original installation, e.g. GMP hot cells. There will be a period of more than one year between the final manufacturing operations and the commencement of the decommissioning activities which has allowed decay of short-lived isotopes. The safety assessments include the preparation of estimates of individual dose and collective dose and these will ensure that the work does not proceed too soon.	Accepted	

17	Tristan Godfrey	2	Facility Licence Application (application of international best practice): The author state that 'regulatory bodies generally recognise that there can be some safety documentation or technical actions not initially completed…..' What conclusion is the author making (is it that we will make a phased submission with the SPECT cells, etc being discussed in detail at a later stage? If so, justification should be made as to why the submission is essentially incomplete)	The Camperdown decommissioning is staged. The licence application is for the complete work but the supporting documentation is only complete for phase 1 which is the removal of the 30 MeV cyclotron, removal of the equipment in the PET beam room and removal of the GMP hot cells. The detailed planning and safety documentation for phase 2, which is the remainder of the work including removal of the other beam rooms and the SPECT cells, will be provided later. The conclusion is that this approach is consistent with the author's statement. The discussion will explain this more fully.	Accepted.	
18	Tristan Godfrey	2	Facility Licence Application (application of international best practice): The author quotes TECDOC-1394 'decommissioning teams should include operational staff' – I was not aware that this will be the case at Camperdown?	As noted in the response in item 16, the decommissioning project is using the previous senior cyclotron engineer and other former staff have been engaged on tasks to support the project. The RPS staff (RPA and HPS) supporting the decommissioning project have had experience supporting the previous operations.	Accepted	
19	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan: General Comment – with the use of photographs in this document, there is the potential for identifiable people to be in a document that is publically available – is this okay?	This is an important concern. The photographs will be checked and amended if necessary.	Accepted	Amended Decommissioning Plan

20	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan: General Comment – There needs to be some commitment within this document and/or elsewhere to appropriately manage the SPECT cells, beamlines etc under a Care and Maintenance protocol.	The SPECT cells, beamlines etc will be managed under a care and maintenance protocol arranged with Facilities Management. The Decommissioning Plan will be amended to reflect the commitment to ensure proper management of the parts of the facility which will be decommissioned at the later stage.	Accepted. .	Amended Decommissioning Plan
21	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan: General Comment – there is no commitment within this document to a final survey (i.e. confirmation of a radiological end point). Furthermore, if areas are going to be reclassified / handed over from the decommissioning team to a 'new build' team – the arrangements for that need to be discussed somewhere.	There will be a final radiation survey of the decommissioned areas and it is an oversight in the documentation that it is not explicitly mentioned. As per the response in item 5, the Decommissioning Plan and schedule will be amended to explicitly show this. The project organisation and key staff are the same for the decommissioning of the old facility and for the new 18 MeV cyclotron construction project. This will minimise the need for handover and the risks associated with this. When the old facility is completely decommissioned, the whole site will be under the control of the operating licence for the new 18 MeV facility.	Accepted. .	Amended Decommissioning Plan

22	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan: General Comment – I fundamentally disagree with the commitment in the decommissioning plan to address the SPECT Beam Rooms and Laboratories by some arbitrary date in the future. If these areas are not required to be redeveloped and can be safely held under care and maintenance, why not maximise decay – conversely, if the areas are required, why introduce an arbitrary delay into the decommissioning project?	The SPECT room areas will not be required for the initial operations of the replacement 18 MeV cyclotron. The funds for this work are not approved as yet and this Project is not making a commitment to address these areas at a specific date. There is discussion of using these areas for training but this is not well defined at this time. While there is benefit in allowing sufficient delay for good decay, the approach of allowing maximum decay is not preferred. It is preferred to decommission these areas when there has been reasonable decay so as to allow closure of the decommissioning process rather than requiring the future operation to manage legacy waste issues.	Accepted	Amended Decommissioning Plan (incorporating a statement relating to significant radioactive decay having occurred already and 'diminishing returns' for future radioactive decay.
23	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan: General Comment – as per previous comment on clarity of documents required for each phase of the work; I would suggest that the Decommissioning Plan would be an ideal location to describe the work phases and the documentation associated with each phase.	This will help clarify the document. A section will be added explaining this.	Accepted.	Amended Decommissioning Plan

24	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan: General Comment – I believe the decommissioning plan should cover the entire decommissioning scope (even though you are only seeking permission for the first phase at this time); please review the 'tasks' sections as they present only phase 1; consider giving tabulated task descriptors for your second phase of work.	This will be done in conjunction with the response to item 23.	Accepted.	Amended Decommissioning Plan
25	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan (Project Overview): Where has the commitment to implement a destructive waste minimisation process within 2 years arise from?	This reference in the Decommissioning Plan is a statement of anticipation and not a commitment. The ultimate disposal of the cyclotron is not yet known and it will be reused if it has value elsewhere. The exposure to staff during this period is minimal. The anticipated timeframe of two years reflects the desire not to leave a legacy waste issue. If the cyclotron does need to be disposed of as waste, this will be a further project which will require a detailed safety assessment and SAC and ARPANSA approvals.	Accepted.	
26	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Project Scope): Why are we identifying that 2 VG Hot Cells are to be delivered to an external Australian Organisation? What is the relevance?	This has no direct relevance to the decommissioning and the reference will be removed.	Accepted	Amended Decommissioning Plan

27	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Project Scope): The document states certain waste materials will be disposed to municipal waste sites (or recycling) – why talk in that level of detail in this section? Just state removal (and use your 'ultimate disposition' section to describe waste disposal routes for all materials)	These changes simplify the understanding and will be made.	Accepted	Amended Decommissioning Plan
28	Tristan Godfrey	3	ANSTO Camperdown Facility Decommissioning Plan (Project Scope): The modifications to the building layout are probably not decommissioning?	These building modifications are not relevant to the ARPANSA licence. They are part of the overall scope of work to be undertaken by the Project. This Decommissioning Plan AC-D-LA-E7A has been prepared as part of the specific documents required for the ARPANSA licence application and the reference to the modifications can be removed. However, this scope task will be left in the detailed project schedule and other project documents to ensure it is coordinated.	Accepted	
29	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan (Project Scope): The decommissioning scope diagram identifies plugging of beam lines as an activity – is this under the decommissioning project? In which case, the project needs to discuss specification, commissioning, etc and include within the previous 'bullet point' list of project scope	Accepted. The plugging of the holes is not a decommissioning activity and reference to the activity will be removed from the documents.	Accepted	Amended Decommissioning Plan

30	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Project Resources): The ANSTO Radiation Protection Advisor primarily reports through QSERP – it might be sensible to highlight this to demonstrate 'independence' from the project team (i.e. they are not unduly influenced by the need to deliver the project outcome)	Of course the RPA reports though the independent division QSERP and this correction will be made in the table.	Accepted.	Amended Decommissioning Plan
31	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Decommissioning Technologies): Will the filters be re-tested prior to commencing the decommissioning activities?	The filters are checked on a regular basis under the current maintenance program to ensure they remain functional and this will continue during the decommissioning.	Accepted	
32	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Decommissioning Technologies): What is a hand-held dosimeter? Additionally, it may be prudent to highlight exit/barrier monitoring for personnel.	The monitors used will be portable dose rate monitors and portable contamination monitors. These are in addition to the EPDs carried by personnel working in the areas. This will be clarified in the report. The exit / barrier monitoring for personnel will be referred to.	Accepted.	Amended Decommissioning Plan
33	Tristan Godfrey	3	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Enabling Work): I do not understand what is practically meant by 'assists with identification for future transfer of significant assets such as gamma spectrometers and gloveboxes'	This refers to the identification of valuable laboratory equipment for recovery and reuse.	Accepted	

34	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Enabling Work): I am unsure, I think there may be conflicting information through the submission, as to what is happening with the installation of 'temporary radiation monitors' in the Vault and Beam room – please clarify what will practically be happening.	Portable radiation monitors specified by the RPA will be used in the vault and beam room for a temporary period during the dismantling tasks.	Accepted	
35	Tristan Godfrey	3	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Enabling Work): What is the reference to the 'bar-coding' system?	This barcoding system for the identification and ongoing management of waste items has been successfully used in the management of waste from the MOATA decommissioning project. This system will be used to manage waste from this decommissioning project.	Accepted	
36	Tristan Godfrey	3	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): Is it really the 'responsibility' of the Radiation Protection Plan to identify the packaging requirements for the Cyclotron transport?	It is the responsibility of the Project to identify these requirements. This was done in the NASDOC RP10-0154 report listed as reference 2 in the Decommissioning Plan. The reference in this Decommissioning Plan to this being the responsibility of the Radiation Protection Plan will be removed. If necessary the Radiation Protection Plan will refer to this Decommissioning Plan.	Accepted	Amended Decommissioning Plan
37	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): To present a balanced view of the minimised dismantling of individual components; the paper should recognise that these larger components may present a manual handling hazard that requires to be addressed.	The Project planning and the hazard identification and risk assessments have recognised that there is a balance. Because the crane is available in the vault and this reduces manual handling risks, the preference is generally to remove the items for later disassembly outside the radiation area.	Accepted	

38	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): The items stored in the basement will be assessed for activity (determining future packaging requirements) but it should be noted that further decay will occur before final repatriation to LHSTC (and hence a potential reduction in packaging requirements)	This further decay is an advantage which will facilitate the simplest packaging. A statement will be added to this section explaining this.	Accepted	Amended Decommissioning Plan
39	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): I have not seen within any of the submission, any discussion on the layout of the basement waste storage area (position, shielding, segregation, etc) , the likely radiological conditions, the Care and Maintenance requirements, the potential ongoing exposures. This is a significant oversight and must be remedied.	The basement will be refurbished and a pallet racking arrangement to be installed, along with an additional shielding barrier to store cyclotron and beam line components (as listed in Table 1 of the Waste Management Plan). Section 5 of that Plan refers to storage of the components. Care and maintenance of the area will be limited to dose surveys, ensuring that the area remains signposted to warn of the radiation hazard and that existing basement systems (lighting, extract ventilation, waste tanks, anti-flooding measures) remain maintained. The vast majority of items are very lightly activated, if at all and will be segregated according to weight, shape, type and size. Quadrupoles, Faraday Assemblies and Cubes will be kept together and any particularly active items will be segregated and shielded. Heavy items such as beam stands will be shelved separately. A draft basement shelving plan is available for review and the pallet racking system will be referred to in the Waste Management Plan.	Accepted.	Amended Waste Management Plan

40	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): In the description of the Cyclotron vault dismantling sequence, there is a statement that dose rates in the vault will be substantially reduced by the removal of items that require the tank to be opened; what level of reduction is anticipated?	Switching magnets and Stripper rod sleeves and associated gimbals and vacuum valves are to be removed. Some of these items have up to approximately 3 microSv/hr dose rate at contact (at concentrated locations), but drops off to less than 100uSv/hr at 1m. The level of reduction cannot be accurately quantified without taking the said components in isolation. The dose levels are not significant considering the expected work time within the vicinity of these activated items.	Accepted	
41	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): Why are the beamlines not removed first if they, as inferred from the text, contribute to an unsafe working space around the cyclotron?	The beam lines will only be removed after the cyclotron tank is closed for the last time. The project does not wish to run the risk that the removal of the beam lines may render the cyclotron hydraulics inoperable.	Accepted	
42	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): There appears to be no confirmatory step that loose radioactive material is not present prior to opening the roof / raising the cyclotron – I do not believe there is a significant risk however it should be a key step in the process. How long will the vault roof be open for?	It is agreed that this does not represent a significant risk. The Project will be advised by the RPA on the confirmatory measures before and during the vault opening to ensure loose contamination (if any) does not escape and there will be a HPS to do checks. The initial estimate of the duration of this work is given in the Toll Project Services report is approximately 24 hours. It is expected that the plugs will be temporarily replaced overnight during this period.	Accepted	

43	Tristan Godfrey	1	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Vault Wall Remediation): As per a previous comment, I am not convinced that plugging of beamlines can be considered part of the decommissioning scope and, if it is, then an appropriate specification, installation and commissioning process needs to occur.	See response to 29.	Accepted	
44	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – SPECT and PET Beam Rooms Dismantling): An arbitrary date of July 2011 is proposed for the earliest decommissioning of the SPECT Beam Rooms, why?	The approximate date is derived from the following two dependencies: i) completion of commissioning of the new cyclotron, and ii) estimated date of approval for the application to clear the SPECT beam rooms. These rooms have activated components. The PET beam room is to be cleared in line with the cyclotron vault. This room has very low dose rates and activity.	Accepted	Amended Decommissioning Plan (incorporating a statement relating to significant radioactive decay having occurred already and 'diminishing returns' for future radioactive decay.
45	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Remove Hot Cells): The Shielded Hot Cell in the Basement appears to be external to the scope of this project, what is the justification for this omission?	The shielded hot cell in the basement is a useful asset to the facility and will not be removed. This will be made clear in the report.	Accepted	Amended Decommissioning Plan

46	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Tasks – Clear Cyclotron Vault): Is it realistic to expect that the SPECT Hot Cells will be radiation/contamination free prior to decommissioning? I would suggest that the decontamination exercise forms part of your second phase decommissioning and needs to be justified in the submission associated with that.	The Project does not expect the SPECT hot cells to be free of radiation or contamination and will have these decontaminated at the next stage of the project. Any waste generated will be managed in that later stage. The project expects for the PET hot cells to be free of radiation and contamination and will, nonetheless, have all components removed to be checked and decontaminated if necessary. The appropriate resources will be made available.	Accepted	
47	Tristan Godfrey	2	ANSTO Camperdown Facility Decommissioning Plan (Storage): What is the justification for storage of the cyclotron in Hut 36? Area designation, potential dose rate impacts, etc all need to be considered within this submission (I do not believe they are at this time).	The justification for Hut 36 is its size, amount of clear space for the large occupancy level, and current blue radiation classification. It is expected that the radiation hazard associated with the cyclotron stored at Hut 36 to be low. It is to be stored such that its edge is a minimum of a 0.5m from any wall (for logistical reasons). With exception to some localised areas, the dose rate is expected to be approximately 20 microSv/hr at 0.5 m from the cyclotron.	Accepted	
48	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): This section should clarify that only part of the Decommissioning Exercise has been considered as part of this assessment.	This clarification will be made.	Accepted	

49	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): Why is it appropriate that a specialist contractor will execute the major lift external to the facility?	ANSTO does not have the expertise or the equipment for such a lift. The only solution is to engage a specialist contractor. The strict procurement processes and engineering involvement will ensure that a reputable specialist is engaged. The executive summary will be changed to reflect that the specialist contractor will have the knowledge and experience.	Accepted	
50	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): This section states that a recommendation has been made that ANSTO managed lifts should be managed under SWMS – I agree with this recommendation but am unclear as to why the same condition is not being extended to the external lift (which is clearly of the highest safety significance)	The external lift has been covered from a preliminary level by a Lift and Transport Plan and a separate Safety Assessment. The actual lift and transport detailed risk assessments will only be conducted after sighting the selected contractor's Safety Management Plan, conducting a Lift Simulation, sighting the maintenance logs of the contractor's key equipment, preparation of a SWMS and development of a Traffic Management Plan. These perform the same function as a SWMS. This is explained in the report.	Accepted	

51	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): This section states that electrical risks will be subject to the 'usual controls' and that this is satisfactory – what are these usual controls? (as justification of a medium risk, this seems a very 'throw away' statement)	The usual controls include; use of Authorised Isolator to conduct isolations, qualified electrician to prove dead circuits and Lock-out / tag-out procedures. These are not expanded here because this is an Executive Summary. The project will go a step further to install a temporary power system and completely disconnect existing power supplies to the vault to eliminate risks associated with working on legacy plant. This will be noted in the report.	Accepted	Revised Safety Assessment Report
52	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): This section states that there were no scenarios with potential major consequences (and hence no need for formal assessment of frequency or consequence) – this is inaccurate, reviewing the risk assessment reveals some 34 scenarios with a consequence of 'major' or 'severe'.	This is not stated correctly in the report. There were scenarios identified which had major or severe consequences but the low likelihoods of these scenarios meant that the overall risk was medium or lower. These scenarios include electrical work and risks from working at heights. It is not necessary to do formal quantitative risk assessments for these cases. The executive summary will be revised to remove this confusion.	Accepted	Revised Safety Assessment Report
53	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Executive Summary): This section suggests that a paper detailing the disposition of recommendations made within the safety assessment should be produced by the project team. Has this occurred? Where is it?	There will be a disposition of the recommendation at the appropriate time in the project life. This has not occurred at this stage.	Accepted	

54	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Scope): The assessment does not assess the risks associated with movement into the Basement (it focuses instead on the transfer of items to LHSTC) nor does it consider storage issues.	This will be assessed.	Accepted.	Revised Safety Assessment Report
55	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Scope): It should be made clear within the document that a separate safety assessment shall be required for other anticipated decommissioning tasks within this project.	This has been further clarified in the Scope of the document.	Accepted	Revised Safety Assessment Report
56	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Facility Description): The figure associated with this section is misleading – it would be preferable to have a more complete picture / plan of the facility and highlight those areas that are to be decommissioned within this phase of the project.	This figure is not necessary for the report because layout information is given in other documents. It will be taken out of this report.	Accepted	Revised Safety Assessment Report
57	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Radioactive Waste): It would clarify the situation if the author stated that the 'radioactive wastes generated from this phase of the decommissioning operations are low level waste'. Stating this would focus the reader on the scope of this Safety Assessment.	Agreed. This change will be made.	Accepted	Revised Safety Assessment Report

58	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Radioactive Waste): I thought that, at least to begin with, certain components of the Cyclotron were not considered to be waste (as inferred within this section) – more that there may be assets within this equipment that could be sold? This could be clarified within the document.	Both the items for possible reuse and the items for disposal will be managed in the same way but this clarification is worthwhile and will be made.	Accepted	Revised Safety Assessment Report
59	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Basement): This section states items requiring long term decay will be stored in a shielded area within the basement. The specification / location of such an area is missing from this submission.	The basement will be refurbished to include a pallet racking system and additional shielding. The vast majority of components have a dose rate well under 100 microSv/h at contact. Components that emit higher dose rates will be segregated and appropriately shielded. The specification of an exact location was not considered necessary given the low activation components and amount of space, provision of shielding and level of occupancy in the basement. This is described elsewhere in the application documentation and the Safety Assessment will be changed to say this.	Accepted.	Revised Safety Assessment Report
60	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Radiochemical Production Area): This section proposes that proper care and maintenance will be implemented across the redundant production cells – there is no description of these activities anywhere. What are the activities? Who will perform them? Why is it sufficient/safe to delay decommissioning of these cells?	These areas will be locked off from unintended access through the swipe card access system. The ventilation associated with these cells will be checked by facility staff. The area will be visually inspected. The risk associated with the static nature of these cells is low and this level of maintenance is commensurate. The care and maintenance is discussed in the Decommissioning Plan.	Accepted	

61	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Hazard Identification): It would give me more confidence as a SAC reviewer to know what areas were considered in which review. There was no radiological input on the 9th/16th June Workshops – are we confident that there were no radiological considerations in the work discussed at those workshops?	The RPA was present at the 9th June workshop and it was a typo for not showing a tick on 9th against her name. On 16th, most of the issues discussed were relevant to OHS and industrial type hazards. The workshop teams were appropriate for each session.	Accepted	
62	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Radiation Risks): Collective doses should be expressed in person mSv (or man mSv).	This change will be made.	Accepted	Revised Safety Assessment Report
63	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Lift Accidents): The Hot Cell Dismantling section has a statement that 'these require careful planning and Recommendation addresses this'…… I assume you mean Recommendation 1 addresses this.	This correction will be made.	Accepted	Revised Safety Assessment Report

64	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Lift Accidents): What is the justification for stating that a dropped load is 'extremely unlikely'? This is a very low frequency (1 in 10,000 yrs or lower) and should be supported with a reasonable justification or some data.	The risk assessment was based on the likelihood of a lift accident resulting in a severe consequence – which was estimated as 'extremely unlikely' with a central estimate of once every 100,000 years. In this case the likelihood estimation for a lift accident (dropped load) was based on the number of lifts to be carried out and there will be a limited number of lifts. The estimation of the risk of a lift accident is on SSR files. The operation will be carried out by specialist contractors using the proper SWMES process. The controls are listed below in item 66. A preliminary risk assessment has already been made with the participation of the contractor, project staff and SSR. Crane failure base data (10^{-4} to 10^{-6} failure rate per lift) was sourced from the existing HIFAR safety case	Accepted.	
65	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Lift Accidents): How are we assured that the specialists lifting plan will be equivalent to the ANSTO SWMS? What is the process by which we as, intelligent customers, satisfy ourselves of the appropriateness of their systems and their equipment.	This matter is also discussed in item 50. ANSTO satisfies itself of the competence of contractors through the formal Procurement process. The specific measures are; review of their maintenance logs, checking of their references and past projects for similar, more complex, more difficult or heavier lifts, review of their lift plans and safety assessments and involvement of the ANSTO Lifting Equipment Approvals Officer and crane-experienced staff involvement	Accepted	

66	Tristan Godfrey	1	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Lift Accidents): The justification for stating that a likelihood of a fatality to a member of the public is incredible needs to be more robust. This is a significant claim (a 1 in 10^{-6} probability) and should be substantiated.	The likelihood is minimised with the following controls: • Manned barriers to construction zone • Very slow lift and movement of the crane • Small external work area for the crane (covering approximately 25m x 50m) • Communication between dogmen and crane driver • Reliability of lifting equipment and lifting arrangements • Suitably rated lifting equipment • Appropriately qualified and experienced staff • Comprehensive planning associated with the lift The figure quoted is a likelihood (frequency), not a probability. The likelihood of a crane dropped load is discussed in item 64. For a fatality to occur, the load drop would have to occur while a member of the public was in the area affected by a fall which is unlikely given the controls. The estimation of the risk of a lift accident is on SSR files.	Accepted	

67	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Working at Heights): As written, the recommendation is poorly imposed – I would think that the intent is that ladders are not used as working platforms. Would it be appropriate for the OHS advisor to be approached every time someone needs to climb a ladder to access an area?	Working at heights was identified in the Safety Assessment as a medium level risk for which there should be further scrutiny. It is the intent of this recommendation that the OHSE Adviser be consulted whenever workers want to use a ladder. They will jointly consult with the Works Coordinator to see if an elevated work platform or other safer alternative is feasible. This level of safety is appropriate for these decommissioning tasks, given the hazards involved including the weights of items being worked on. This conclusion is for the decommissioning and should not be applied generally to other situations where workers may use ladders. The recommendation wording will be changed slightly to "working from ladders".	Accepted	Revised Safety Assessment Report
68	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Working at Heights): Is there any commitment to fence off / restrict access to the void created by removal of the Cyclotron roof plug?	The crane dogmen will have access to the roof area via a knuckle boom lift (EWP). The roof is inaccessible except through the ANSTO swipe card system. A barrier will be installed around the roof plug prior to removal of the first roof plug if deemed appropriate by OHS staff.	Accepted	
69	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Transport Risks): What are the likely dose rates around the perimeter of the packaged cyclotron / vehicle? Currently the document says they shall be ‘low’.	The dose rate is expected to be approximately 20 microSv/hr or less. No-one except staff involved with the lift and transport will be in close proximity to the cyclotron / vehicle.	Accepted	

70	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Transport Risks): It states within the document that sheeting will be applied to ensure contamination does not escape from the Cyclotron – is it likely that there would be any contamination present?	It is unlikely that there is any loose contamination. None was found from the previous survey when the cyclotron tank was opened. Nevertheless, to meet transport requirements, the cyclotron will be packaged such that it will prevent the dispersal of any potential contamination. The wording will be checked to see that it reflects this.	Accepted	
71	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Transport Risks): What arrangements have been made to ensure a HPS is available / willing to cover the night transfer of the Cyclotron to LHSTC. I was unaware of any approach or request for such a service.	This was discussed as appropriate at a hazard / risk workshop session. The request for this particular coverage has not yet been made.	Accepted	
72	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Transport Risks): Whose dosimetry will the Transport Driver be wearing – Their own? Ours? Electronic or TLD?	These arrangements have not been finalised. It is anticipated that the ANSTO RPA will require the use of ANSTO dosimetry so that the contractor doses can be monitored and recorded and the job collective dose accumulated.	Agreed and Accepted.	
73	Tristan Godfrey	3	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Transport Risks): Do we have the remit to start barriering the highway in the event of a vehicle breakdown?	These emergency arrangements are managed by the transport company driver who will have the appropriate training. The journey will be approved and there will be contact with the Police. The ANSTO HPS travelling with the escort crew will provide HPS knowledge and support regarding distances etc.	Accepted	

74	Tristan Godfrey	2	Decommissioning Safety Assessment of the ANSTO Camperdown Facility (Other Risks): I am unsure as to how the project team will satisfy the requirements of recommendation 3 (as a recommendation, it seems quite generic / open). As per previous observation, it would be useful to see the disposition of these recommendations.	Disposition of the recommendations is also raised in item 53. The disposition of the each recommendation will be at the appropriate time in the project life.	Accepted	
75	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (General Comment): It would be useful within this document to see the radiological survey data that justifies the Dose Estimates made within the document.	The dose estimation data has been summarised in a spreadsheet and the supporting surveys and data are on file. It is considered unnecessary to include this level of detail in the plan. Reference to the dose estimation/surveys data will be included in the RPP.	Accepted	Revised RPP
76	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (General Comment): I think this report should explicitly state what the dose constraint for the project shall be. Currently the report discusses dose estimates only (as far as I could observe) without taking that information and imposing a dose constraint for the project (although it states such a constraint exists).	Agreed. This will be discussed with the RPA and included in the plan.	Accepted.	Revised RPP
77	Tristan Godfrey	3	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Purpose and Scope): As a general comment, there appear to be some odd paragraph numbers within this section – I suggest deleting these.	These will be deleted.	Accepted	Revised RPP

78	Tristan Godfrey	3	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Purpose and Scope): The first paragraph calls the old NMC, the 'Cyclotron, Camperdown Facility' – I haven't seen this nomenclature elsewhere within the submission and I suggest consistent terminology is utilised/imposed.	Agreed. This will be changed for consistency in all the package documents.	Accepted	Revised RPP
79	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Purpose and Scope): This radiation protection plan fails to review / assess the radiological implications of storage (at LHSTC or at Camperdown), this is an omission and requires rectification.	RPP plan amended to reflect radiological implications of storage.	Accepted	Revised RPP
80	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Purpose and Scope): I am unsure as to the appropriateness of revising the RPP for the next phase of the decommissioning (i.e. the SPECT Cells / beamlines). I would have thought it would be more appropriate (i.e. less confusing) for an entirely new suite of plans and arrangements to be produced for the next phase of work. This view is further reinforced by the belief that the next phase of decommissioning will be performed in a facility that contains operational plant and equipment (rather than the current 'dormant' state of the facility).	This reference to a revision recognises that there will need to be a later radiological safety assessment including individual dose estimates, a collective dose estimate and a job dose constraint. The form of the safety assessment which presents this information will be proposed by QSERP RPS staff and it will need to be approved by SAC and ARPANSA. This plan will be amended to take out the specific reference to plan revisions and give the explanation above.	Accepted	Revised RPP

81	Tristan Godfrey	3	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiation Protection Advisor): The RPA is NOT the leader of a group of HPS (the HPS report directly to the leader, HPS) – more, the RPA is supported by a HPS (or group of HPS) who have been accredited…etc etc	The wording will be changed.	Accepted	Revised RPP
82	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Optimisation): This section states that the doses for storage have been considered and assessed. I disagree as I have seen no assessment of the ongoing doses due to storage.	This matter is covered in item 79.	Accepted	
83	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Optimisation): The SPECT Beam Cells / Beam Rooms are out of scope of this assessment – by stating within this assessment that we are implementing decay/delay, you are raising the question of 'how much' decay is required. I don't know that we have a sensible answer to this question and I would suggest removing reference to this package of work.	Agreed. The comment will be taken out.	Accepted	Revised RPP

84	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Optimisation): As previously stated, I believe the proposed structure of a revised RPP for the next phase somewhat undersells the purpose of an RPP (merely adding a second appendix with some more dose assessment is inadequate). I strongly recommend a new RPP is produced for the second phase of the decommissioning project.	See response in item 80.	Accepted	
85	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiological Hazards): As per my comment against the Decommissioning Plan, I am unsure as to the purpose / appropriateness of discussing packaging types within the RPP.	The packaging will be discussed in the Decommissioning Plan and will be briefly referred to in this Radiation Protection Plan.	Accepted	Revised RPP
86	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiological Hazards): The radiological hazards of the SPECT Cells, etc are discussed in this plan. I would suggest this is removed from the document as this equipment is beyond the scope of this phase of the decommissioning project.	Agreed. These comments will be taken out.	Accepted	Revised RPP

87	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiological Classification of Areas): The review of the classification of areas is an important activity to be undertaken throughout the project (especially as the project approaches handover to the 'new build'). I would suggest that this document highlights the need to review access routes as part of the 'reclassification / declassification' of areas such that there is no risk of cross contamination (some areas within Camperdown will clearly remain Blue contamination areas and, as such, require a change area, etc)	Agreed. The plan will be amended to describe the need for reclassification.	Accepted	Revised RPP
88	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiological Classification of Areas): This section should discuss the Access/Egress arrangements / route into radiologically classified areas (and, generically, the PPE requirements)	A description of the barrier procedures will aid understanding of this section and will be added.	Accepted.	Amended RPP and decommissioning plan
89	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Radiation Monitoring Equipment): Rather than say there are inoperable gamma monitors in the area (which raises questions about deficient systems), restrict the discussion to what will be provided (and why this is appropriate).	The gamma monitors referred to only had use when the cyclotron was operating and are not of the correct type or in the best location for the decommissioning tasks. This plan should focus on the controls in place for the decommissioning and the current reference to gamma monitors will be taken out.	Accepted	Revised RPP

90	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Review and Audit): The RPP identifies that when doses reach 75% of the applied dose constraint, the project team will perform a review. Is this against the collective exposure or against individual exposures? Explicitly state the level of exposure at which an investigation will occur.	The dose constraints and the investigation levels for the collective dose and the individual doses will be made explicit.	Accepted.	Revised RPP
91	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Review and Audit): The statement that 'an indicator of effectiveness….maybe the number of investigations and actions…..' is inadequate. I suggest more robust parameters are imposed (dosimetry results, survey results, contamination events, etc)	See item 90 which refers to investigation levels making use of the dosimetry results. There will also be routine surveys which will prompt investigation if abnormalities are found and investigations of contamination events. The wording will be changed to properly reflect this.	Accepted.	Revised RPP
92	Tristan Godfrey	3	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Vault Dismantling, Associated Beamlines and PET Beam room): The term dismantling is not used elsewhere within the submission – I suggest the title of this section be changed to '…….Vault Decommissioning…….'.	Dismantling refers to the taking apart or disassembly of items for removal. It is one part of the overall decommissioning of some items. The term is used in Decommissioning Plan. Decommissioning is the correct meaning in this plan and the title will be changed.	Accepted	Revised RPP

93	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Vault Dismantling, Associated Beamlines and PET Beam room): How conservative is the assessment that 20 working days will be sufficient to perform the decommissioning activities? Is there scope for an extension in the duration of these activities and, if so, what are the dose implications?	The reference to 20days was incorrect and has been removed from the RPP and the dose calculations have been revised and a dose constraint accordingly applied	Accepted	Revised RPP
94	Tristan Godfrey	3	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Vault Dismantling, Associated Beamlines and PET Beam room): I strongly recommend that identification of dates when work be performed be removed from the majority of the documentation. I do not believe it adds any value and presents a potential document quality issue in the event of project slippage.	Agreed. The precise dates are not relevant with respect to safety and are subject to approvals and project progress. Dates have generally been given in the package of documents and will be removed here.	Accepted	Revised RPP
95	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Vault Dismantling, Associated Beamlines and PET Beam room): There is a statement that 'Personal Protection (clothing) is totally effective and hence no internal exposures are anticipated'. I disagree with this statement, it is the low contamination levels expected during the work and the working practices (monitoring and decontamination), in conjunction with the use of PPE/personal monitoring that ensures exposure to contamination is minimised (and that the risk of ingestion/inhalation is trivial).	The Personal Protection (clothing) cannot be totally effective. The statement in your comment gives a much clearer discussion of contamination and risks of internal exposures and will be used in this report.	Accepted	

96	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Vault Dismantling, Associated Beamlines and PET Beam room): This section identifies the term ‘action doses' - what are these?	This matter is discussed in item 91. The term ‘action dose’ has been removed.	Accepted.	Revised RPP
97	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Loading and Transfer): The section fails to identify/assess the radiological exposure to the specialist lifting staff and the transport staff.	With exception to some localised areas, the dose rate is expected to be approximately 20 microSv/hr at 0.5 m from the cyclotron. For the driver, there will be no need to be in close proximity to the package and the drive time is approximately an hour so the dose will be very low. This will be clarified in the report and dose appendix.	Accepted	Revised RPP
98	Tristan Godfrey	2	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Dose Estimates…..Loading and Transfer): What is the impact on operator dose if it is determined that waste shall be stored in the SPECT Beam Rooms rather than the Basement?	Only a small quantity of components with relatively high levels of activity would be stored in the SPECT beam rooms. These rooms have thick shielding walls and the traffic into these rooms is less than into the basement area which is the alternative storage area. The impact to staff dose would be minimal. This will be mentioned in the report.	Accepted	Revised RPP

99	Tristan Godfrey	1	Radiation Protection Plan for the Decommissioning of the ANSTO Camperdown Facility (Summary of Dose Estimates): The summary should identify the non-uniform exposures (extremity) associated with the decommissioning activities. I would be satisfied with a statement that a ratio of no more than 10:1 between extremity and whole body is expected (with a justification as to why) and then state that this equates to 20 man mSv (extremity) with a highest individual exposure of whatever.	Agreed. The nature of the decommissioning tasks is such that workers hands will be in proximity to slightly activated equipment. This will be discussed further in the report.	Accepted.	Revised RPP
100	Tristan Godfrey	2	Waste Management Plan: It isn't totally clear what the scope of this rad waste plan is - It might help clarity if, near the start of the document, some reference was made as to whether the SPECT Beamlines and Cells are within or external to the scope (I think they are beyond scope). Such a scoping statement could also clarify that work packages such as rendering the Cyclotron as Waste (within 2 years) is also beyond the scope of the document.	These things will be made clear in the scope of this Waste Management Plan and the other documents.	Accepted	Revised Waste Management Plan
101	Tristan Godfrey	2	Waste Management Plan: As previously identified within my comments, the justification of a 2 year storage prior to disposal needs to be made (especially in the context of an unknown radiological burden of such an activity)	This is discussed in item 25. The reference to timeframes in this Waste Management Plan will be changed consistent with that discussion.	Accepted	Revised Waste Management Plan

102	Tristan Godfrey	2	Waste Management Plan: I note that storage of non-waste items such as the Cyclotron and Hot Cell (I assume this means the GMP Hot Cells) would be outside of Waste Operations activities. Are there any licensing issues with such an activity? (can it be considered as part of the activities for which Waste Operations are licensed?).	It is expected that the GMP hot cells will be cleared as exempt after decommissioning and will not require management under a licence. The cyclotron which may possibly be reused will require management under a licence. Waste Operations are appropriate to manage the cyclotron magnetic structure because the selected location at LHSTC in Hut 36 which is under their control and they have the expertise, experience and staffing to store contaminated items. The justification for Hut 36 is discussed in item 47. The Major Projects Delivery Office managing this Camperdown decommissioning work in close cooperation Waste Operations on this type of work e.g. the MOATA reactor decommissioning.	Accepted	
103	Tristan Godfrey	2	Waste Management Plan: There is discussion in the Waste Management of Operational Waste having been subject to a decay period - How long has the decay period been / Is it ALARA? Furthermore, the way in which the text is presented suggests that this is an activity that is already complete - why present it here?	The removal of normal operational waste is under that licence. It is not a decommissioning task and to avoid confusion, it will not be listed in this report.	Accepted	Revised Waste Management Plan
104	Tristan Godfrey	2	Waste Management Plan: The Plan only identifies the Camperdown basement as the non-LHSTC waste storage area. Other documents within the submission make reference to the SPECT Beam Room as a potential storage area. Clarify.	This point is discussed in item 98. This Waste Management Plan will be amended to make this clear.	Accepted	Revised Waste Management Plan

105	Tristan Godfrey	2	Waste Management Plan: Why is there any discussion on the return of Zinc / Thallium to LHSTC? I understood that these materials are not considered as waste (more that they are recoverable materials for potential re-use by ANSTO Health).	These are useful materials from the operational phase and the references in this waste plan will be removed.	Accepted	Revised Waste Management Plan
106	Tristan Godfrey	2	Waste Management Plan: The discussion on ILW is irrelevant to this document. The targets are to be repatriated at LHSTC under a separate approval (assuming, as per discussions at SAC, this can be done in a manner that is radiologically acceptable with 'fresher' targets - this will not be fully understood until the target handling operations are commenced).	Agreed. The reference to ILW will be removed and the management and repatriation of targets will be clarified in this plan.	Accepted	Revised Waste Management Plan
107	Tristan Godfrey	3	Waste Management Plan: SCO objects should be SCO-I, SCO-II and SCO-III (not SCO-1, SCO-11 and SCO-111 as written) In addition: In section 6, the appropriate past tense of 'undergo' is 'undergone' (not underwent).	These corrections will be made.	Accepted	Revised Waste Management Plan
108	Tristan Godfrey	2	Waste Management Plan: Is any size reduction required on SCO items such as ductwork that will be transported in 200l drums.	The items will be shear cut so as not to produce airborne dusts and packaged in 200 L drums. The radiological and conventional hazards associated with size reduction will be managed through SWMS	Accepted	Revised Waste Management Plan
109	Tristan Godfrey	2	Waste Management Plan: The identification of 'detailed plans and arrangements' for the SPECT Cells / Beamlines (in Section 4) should clarify that it is a separate plan / arrangement being referred to (i.e. outside of scope of this document).	This is discussed elsewhere and will be clarified here in this report.	Accepted	Revised Waste Management Plan

110	Tristan Godfrey	2	Waste Management Plan: The identification / recognition that the eventual waste minimisation of the Cyclotron after 2 years storage is a separate project should also state it would be a separate safety / regulatory approval.	The anticipated timeframe is discussed in item 101 and elsewhere. The point about requiring separate safety / regulatory approval has also been noted and will be mentioned here.	Accepted	Revised Waste Management Plan
111	Tristan Godfrey	2	Waste Management Plan: The storage of materials awaiting repatriation / waste sentencing to LHSTC at Camperdown is to be undertaken by ECP - is this appropriate, do they have the competencies for such an activity? Will they have ownership of this section of the facility for the next 2 years?	ECP do have the competencies to manage these activities and, subsequent to the cessation of 30 MeV cyclotron operation and radiopharmaceuticals manufacture, ARPANSA have approved the transfer of control to the G/M, ECP as the Nominee.	Accepted	

Note that Recommendations have been categorised in significance according to the following characteristics:

Category 1 Item with potentially significant safety significance requiring disposition prior to approval – i.e would have been a SAC condition under the previous system

Category 2 Issue requiring clarification / substantiation to support the submission;

Category 3 Minor comment which would improve the safety case e.g typographical error or incorrect name