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Safe Work Method and Environmental Statement

AF-2315

Refer to [AG-2397 Explanatory Notes to Safe Work Method & Environmental Statement \(SWMES\)](#) before proceeding.

SWMES file No.:	DC_Tours2Dec2025	WO No:		Jobsite specific induction required?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Location/ Building/ Area:	B65 Discovery Centre and site tour locations across site			SAC Reference for Project or Work Area:	<input type="checkbox"/> Yes <input type="checkbox"/> No SAC Reference No:
Planned Start Date:	Ongoing			Potential ionising radiation exposure:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Activity Description:	ANSTO visitor tours for School, Community and VIP visitor groups, groups of general public			Radiation survey performed:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
Responsible Officer:	Rod Dowler			Radiation dose review level specified:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
ANSTO Personnel:	ANSTO Education Officers			Recommended dosimetry:	<input checked="" type="checkbox"/> EPD <input checked="" type="checkbox"/> TLD <input type="checkbox"/> Extremity
Company Performing work:	ANSTO			Radiation Protection Advisor:	
Contractors Personnel:	N/A			Work Health & Safety Advisor:	

Licences/ Qualification/ Tickets/ Training (National/ state legislated operational licence):	Chemicals/ Substances/ Materials (SDS, storage, spill control, transport):
Senior First Aid Qualifications Working with Children Security Check (NSW Child Protection Prohibited Employment Act 1998) License to drive ANSTO bus (20 seats)	<i>Cleaning Chemicals</i> <i>Hand Sanitiser</i> <i>Antibacterial hand sanitiser and antibacterial surface wipes</i>
Permits required (SWP, isolation, excavation/penetration, confined space etc):	Plant/ Equipment (Service certificates, registers, maintenance logs, pre-operational checks):
N/A	ANSTO Tour bus – 20 seat. Within registration, regular servicing conducted by motor pool and daily checks by staff Radiation Monitors – within calibration. Personal EPD and TLD. Mobile Phone.

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	Low level radioactive samples for demonstration purposes only															
Legacy Issues (Asbestos, Beryllium, Cadmium, Uranium, Electrical) Hazards Register <u>N/A</u>	References (ANSTO standards/ practices, legislation, codes, standards): ABMS Documents for vehicle management Guidelines for motor vehicle management and use Motor vehicle safe driving guidelines Guidelines in case of accident breakdown or theft of vehicle Car pool faults checklist ANSTO OHSE Management System Documents Safety and security arrangements at ANSTO (guide) AG 2382 Information for visitors (guide) AG 2384 Working alone (guide) AG 2523 First aid and emergency medical care (guide) AG 2487 Personal dosimetry (guide) AG 2521															
Planning (notifying all affected staff, involving a planning committee, risk assessment, rescue, emergency, subject matter experts, health & safety, radiation protection, required isolations): Process reviewed with Team Leader, Discovery Centre, Education Officer and Work Health & Safety	Consultation (Toolbox talks, review by subject matter experts, health & safety, radiation protection etc) <i>Ensure all building managers/area supervisors of locations visited are consulted onsite regarding planned tours and control measures. Where possible, visitors will not interact physically with any ANSTO-identified critical staff e.g. nuclear precinct staff</i>															
Notes <i>In case of emergency contact the Site Control Centre on ANSTO extension 888 or from mobile 9717 3333</i> Ensure those who visit are made aware that any person who visits ANSTO and subsequently tests positive for COVID-19, becomes symptomatic of COVID-19, or has been in close contact with a person who has tested positive or become symptomatic will inform ANSTO of this as soon as they become aware of this happening.																
Identification of Safety Hazards If the process identified in this SWMES has any potential safety hazards listed below, please check the appropriate box and complete the appropriate risk assessment in the space below if the hazard is not previously addressed. Please note that this is not a comprehensive list and ALL hazards must be noted on your SWMES.																
<table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Chemical Hazards</td> <td><input type="checkbox"/> Fall From Height</td> <td><input type="checkbox"/> Noise & Vibration</td> </tr> <tr> <td><input type="checkbox"/> Confined Spaces</td> <td><input type="checkbox"/> Falling Objects</td> <td><input type="checkbox"/> Non Ionising Radiation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Consultation</td> <td><input type="checkbox"/> Fissile Materials/Criticality</td> <td><input type="checkbox"/> Plant & Equipment</td> </tr> <tr> <td><input type="checkbox"/> Construction Work</td> <td><input type="checkbox"/> Hazardous Manual Tasks</td> <td><input type="checkbox"/> Pressure/ Vacuum Equipment</td> </tr> <tr> <td><input type="checkbox"/> Demolition Hazards</td> <td><input type="checkbox"/> Heat Stress or Cold Environments</td> <td><input type="checkbox"/> Radiation Contamination</td> </tr> </table>		<input checked="" type="checkbox"/> Chemical Hazards	<input type="checkbox"/> Fall From Height	<input type="checkbox"/> Noise & Vibration	<input type="checkbox"/> Confined Spaces	<input type="checkbox"/> Falling Objects	<input type="checkbox"/> Non Ionising Radiation	<input checked="" type="checkbox"/> Consultation	<input type="checkbox"/> Fissile Materials/Criticality	<input type="checkbox"/> Plant & Equipment	<input type="checkbox"/> Construction Work	<input type="checkbox"/> Hazardous Manual Tasks	<input type="checkbox"/> Pressure/ Vacuum Equipment	<input type="checkbox"/> Demolition Hazards	<input type="checkbox"/> Heat Stress or Cold Environments	<input type="checkbox"/> Radiation Contamination
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- | | | |
|---|--|---|
| <input type="checkbox"/> Diving | <input type="checkbox"/> Isolations | <input type="checkbox"/> Radiation Dose |
| <input type="checkbox"/> Electrical Hazards | <input type="checkbox"/> Lifting Loads | <input type="checkbox"/> Vehicles or Mobile Plant |
| <input type="checkbox"/> Excavations & Penetrations | <input type="checkbox"/> Needlestick | <input type="checkbox"/> Working Alone or Out of Normal Hours |

Identification of Environmental Hazards (If the process identified in this SWMES has any potential environmental hazards listed below, please check the appropriate box and complete the appropriate risk assessment in the space below if the hazard is not previously addressed.

Where potential environmental hazards are identified, the responsible officer in consultation with the relevant [Local Environmental Coordinator \(LEC\)](#) shall submit an [Environmental Aspects Identification Form AF 2092](#) to the ANSTO EMS Manager/Coordinator for entry to the ANSTO Environmental Aspects Register. If the operations are for proposed for a definite time-scale, this must be included within the Environmental Aspect Identification submission.

- | | | |
|--|--|---|
| <input type="checkbox"/> Pollutant entering drains | <input type="checkbox"/> Potential for groundwater contamination | <input type="checkbox"/> Abnormal excessive noise or vibration |
| <input type="checkbox"/> Dust generation - crushing, grinding | <input type="checkbox"/> Airborne emissions - radiological or non- | <input type="checkbox"/> Cryogenics - particularly helium and specialties |
| <input type="checkbox"/> Use of ozone depleting substances/synthetic GHG | <input type="checkbox"/> Use of chemicals with hazard code H400 - H420 | <input type="checkbox"/> Abnormal electricity use |
| <input type="checkbox"/> Excessive lighting requirement at night | <input type="checkbox"/> Abnormal potable water use | <input checked="" type="checkbox"/> Excessive paper/packaging use |
| <input type="checkbox"/> Risk of sediment displacement | <input type="checkbox"/> Risk to flora/fauna | <input type="checkbox"/> Significant alteration to stormwater flows |

Activity Detailed steps of the job/ task being undertaken	Hazard What hazards are present from work and location at each step of the process?	Risk Rating Use AG-2395	Controls Implemented safety controls to reduce the risk associated with each hazard. Use AG-2407	Risk Rating With control	Responsible Person(s) responsible for implementing control measure(s)
Preparation					
Tour booking received and booked into weekly schedule.	N/A				
Tour group representative advised of site Security and Safety requirements.	Visitors to site not prepared for site safety and security requirements: <ul style="list-style-type: none"> <input type="checkbox"/> Without sun protection <input type="checkbox"/> Without adequate footwear <input type="checkbox"/> With COVID-19 symptoms <input type="checkbox"/> Without identification <input type="checkbox"/> With prohibited items. 	Min x L (2E) LOW	Information available on website. Information pack delivered (electronically or mailed) to tour group representative detailing conditions of entry. Requirements verbally advised at time of booking. Group tours to provide name listing and identification details (required for adults) of participants. Staff to refuse entry for visitors with COVID symptoms.	Min x U (2D) VERY LOW	Discovery Centre staff

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Travel on-site by bus and conduct on-site tour	Risk of injury from tour participant or bus driver	Mod x L (3E) MEDIUM	Bus driver to hold appropriate class of drivers licence for bus. Notification forms to ASOC and Security. EO to use mobile phone at all times to maintain communication. EO to notify AFP main gate of their arrival at the Discovery Centre and the tour plans for the morning. EO to contact AFP and security in case of threatening or violent behaviour.	Min x VU (2C) VERY LOW	Discovery Centre staff
Bus collected from overnight storage area adjacent to B7. Informal daily check and cleaning completed.	Damage to vehicle. Vehicle incident.	Maj x U (4D) MEDIUM	Informal daily check for damage. Damage reported to motor pool manager. All drivers of bus to be appropriately licensed. Follow NSW Road Rules and ANSTO Safe Driving Guidelines	Maj x HU (4B) LOW	Driver of vehicle
Prepare DC theatrette for group presentation. Chairs and tables arranged for group size and physical distancing.	Manual Handling	Mod x VL (3F) MEDIUM	Tour booking received and booked into weekly schedule. Keep the room prepared for typical size group tours to minimise necessity to move furniture. Use a trolley where available. 2 person task. Remind all participants of the current manual handling guidelines	Mod x VU (3C) LOW	Education Officer

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Prepare displays and samples. Radiological items.	Dose to staff Dose to tour participants	Neg x VU (1C) VERY LOW	Prepare displays and samples. Radiological items. Only low dose rate material handled by participants. Radiation monitor within calibration (also used for demonstration) Education officer to wear TLD & EPD	Neg x VU (1C) VERY LOW	Education Officer
	Security of radioactive displays and samples	Neg x VU (1C) VERY LOW	Only low dose rate material. Radiation sources kept in appropriate containers and stored securely. Radioactive materials audited annually.	Neg x VU (1C) VERY LOW	Education Officer
Implementation					
Visitors arrive at ANSTO, park in Café car park or staff car park opposite Discovery Centre.	Vehicles and pedestrians using same area. Vehicle incident	Maj x U (4D) MEDIUM	NSW road rules apply. Shared zone signposted. Speed limited to 10km/h No parking in shared area outside Discovery Centre other than ANSTO tour vehicles. Different road surface to differentiate zones. Bumper stoppers installed to prevent damage to B65. Alternate parking in overflow carpark. Marked pedestrian crossings available between overflow carpark and visitors centre.	Mod x U (3D) LOW	Tour group driver. Facilities Maintenance.

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Visitors walk to B65 Discovery Centre	Vehicles and pedestrians using same area	Maj x U (4D) MEDIUM	NSW road rules apply. Shared zone signposted. Speed limited to 10km/h No parking in shared area outside Discovery Centre other than ANSTO tour vehicles. Different road surface to differentiate zones.	Mod x U (3D) LOW	Facilities Maintenance Building Manager
	Slips, Trips and Falls	Mod x VL (3F) MEDIUM	Paving in good condition. Regular housekeeping inspections by B65 staff. Covered entrance Discovery Centre. Bumper stoppers highlighted in black and yellow stripes	Mod x U (3D) LOW	Facilities Maintenance Building Manager
Visitors enter Discovery Centre and walk through	Slips/ Trips & Falls	Mod x VL (3F) MEDIUM	Regular housekeeping inspection of building and fittings and equipment. All walkways clear and in good condition.	Mod x U (3D) LOW	Education Officers & Building Manager
Education Officer behaviour through entire tour.	Visitors wearing inappropriate clothing or inadvertently copying the incorrect actions of EO. (particularly children)	Mod x L (3E) MEDIUM	Education Officers always be mindful that they are setting an example for children and visitors. Every activity undertaken, whether crossing a road, operating a piece of equipment or entering a building or area is closely observed by visitors. What EOs do, how they act, what they wear and say all sends a clear message to all visitors that this behaviour is acceptable. EOs must therefore ensure they are setting a good example. EOs must always be appropriately dressed, with fully enclosed proper footwear, always cross the road using marked	Mod x U (3D) LOW	Education Officers.

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			pedestrian crossings where they are available, always ensure the areas entered and equipment demonstrated is safe for others to touch. EOs must provide clear and concise warnings and explanations to all tour participants.		
Safety of children during the tour	Child protection issues	Maj x U (4D) MEDIUM	All children under 16 to be supervised by their teacher, parent or carer during the tour. All EOs have current Working with Children Checks Supervision at all times to ensure that at no time an ANSTO representative is alone with an individual child in our care. ANSTO Gym toilets are not to be used at any time. Encourage children to use the Discovery Centre toilets during defined periods of time (at the start and end of each break). Children who are sick or injured who may need to be escorted offsite must do so in the company of their parent/carer/teacher.	Neg x VU (1C) VERY LOW	Discovery Centre Staff
Information session given at Discovery Centre, B65.	Ionising Radiation – dose to staff and participants.	Neg x VU (1C) VERY LOW	Low dose rate materials only. Radiation sources stored in appropriate containers and secured properly. EO to wear TLD and EPD	Neg x VU (1C) VERY LOW	Education Officer
	Accidental Breaking of low dose display items (Uranium Glass and Fiestaware)	Min x L (2E) LOW	Materials to remain in their storage containers Use of materials to be supervised by Discovery Centre staff while in use. Specific Discovery Centre procedure for scenarios where there is a break.	Neg x VU (1C) VERY LOW	Education Officer

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	Voice strain	Min x VL (2F) LOW	Microphone headset	Neg x VU (1C) VERY LOW	Team Leader Discovery Centre to reintroduce use of microphone headset.
	B65 Emergency access and egress	S x L (5E) HIGH	Exits to be kept clear at all times. Exits marked with emergency lighting. Automatic fire detection equipment linked to SCC Trained Building Wardens Annual evacuation drills and inspections. Regular housekeeping inspections.	Mod x U (3D) LOW	Designated Building Wardens Education Officers
Transport participants onto site via main Security Gate. Driving around site	ANSTO Bus using shared pedestrian zone Tour supplied bus using shared pedestrian zone Vehicle incident. Heavy vehicle congestion at main gate (particularly around main store area)	Maj x U (4D) MEDIUM	NSW road rules apply. Shared zone signposted. Speed limited to 10km/h No parking in shared area outside Discovery Centre other than ANSTO tour vehicles. Different road surface to differentiate zones. Bumper stoppers installed to prevent damage to B65. ANSTO bus is fitted with seatbelts, reversing camera, reversing beeper and mirrors. Tour supplied bus – ANSTO Education Officer can act as eyes to assist bus driver. Licensed bus driver. Follow all NSW & ANSTO site road rules, including speed limits and no mobile phone use. Give way to heavy vehicles as appropriate. Marked pedestrian crossings.	Mod x U (3D) LOW	Bus Driver/ EO

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			Education Officer to safely pull vehicle over if talking about or indicating an area of site (ie – don't talk and drive at the same time where concentration may be compromised).		
	Voice strain	Min x VL (2F) LOW	Recommend a microphone head set for vehicle.	Neg x VU (1C) VERY LOW	Team Leader Discovery Centre to reintroduce use of microphone headset.
	Security unaware of tour group coming through gate.	Neg x VU (1C) VERY LOW	Discovery Centre Staff ring ahead to main gate. AFP enter the bus and give a quick Security talk re photos and prohibited items onsite. ANSTO EO has name list of all tour participants with tour paperwork.	Neg x VU (1C) VERY LOW	Education Officer AFP
	Security incident with a tour participant	Mod x U (3D) LOW	Ensure all tour participants, including the bus driver, stays with the EO during the tour EOs carry a mobile phone to be able to contact security or AFP if required	Min x U (2D) VERY LOW	Education Officer
Disembark passengers at car park for each stop and walk participants to location. Participants to be accompanied by EO at all times.	Pedestrian/ vehicle incident	Maj x U (4D) MEDIUM	Ensure safe parking of bus – at a designated stop where provided. ANSTO EO to lead participants using footpaths and pedestrian crossings.	Maj x HU (4B) LOW	Bus Driver/ EO
	Slips/ Trips or Falls	Mod x L (3E) MEDIUM	ANSTO bus steps have nonslip surfaces and are marked with safety markings. Additional step provided for	Mod x U (3D) LOW	Education Officers

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			elderly or mobility impaired persons. Hand rails available. Use provided walkways and pedestrian crossings.		
	Weather/ Sun exposure	Min x L (2E) LOW	Minimise time spent in exposed locations. EO to choose areas where protection from sun and weather is provided by awnings or inside. Participants advised to bring own sunscreen/ hat with initial info	Neg x VU (1C) VERY LOW	Education Officers
Respond to site emergency or medical emergency	Evacuate Building – missing persons First aid required – assistance required	S x L (5E) HIGH	EO to follow instructions advised by site PA system in case of an emergency. EOs to be aware of Muster Point A and Muster Point B locations of all visited areas (local induction may be required) EO carries name listing of all tour participants allowing head count of persons present at evacuation point. All EOs to have First Aid training. Contact Site Control Centre on 888 or 9717 3333 . All EOs are supplied with ANSTO mobile phone, the number is recorded at Discovery Centre prior to leaving B65. ANSTO bus is fitted with first aid kit and fire extinguisher. EOs carry a hard copy of the ANSTO Event Report Form to record details of any incident.	Mod x U (3D) LOW	Education Officers ASOC Site Nurse Site Control Centre Building Wardens

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Ascending and descending stairs	Trips and Falls	Mod x VL (3F) MEDIUM	Avoid stairs where possible. Slip resistant material on steps. Use handrails where available. ANSTO EO to warn participants about stairs. Elderly or mobility impaired persons may choose to avoid staircases.	Mod x U (3D) LOW	Education Officer
Enter OPAL Displays and ACNS viewing area	Slips, Trips and Falls Walkways may be wet in rainy weather Display stands for feature presentations	Mod x VL (3F) MEDIUM	Cross roads at marked pedestrian crossings and use provided footpaths. Visitors to have appropriate footwear as advised in info packs. EO to caution visitors about wet and possibly slippery walkways. Ramp access is available to OPAL Displays.	Mod x U (3D) LOW	Education Officer
	Ionising Radiation	Neg x VU (1C) VERY LOW	OPAL reactor floor can be remotely observed using RC camera in OPAL visitors centre. ACNS to advise safe for visitors in viewing area (TV monitors advise status) No unauthorised access to tour participants to radiation classified areas. EO to wear EPD & TLD All visitors to disinfect their hands at before entering OPAL Display areas and ACNS viewing area.	Neg x VU (1C) VERY LOW	ACNS Operations Manager Education Officer
Access to B53 ANTARES Accelerator Facility	Safe parking at B53	Maj x U (4D) MEDIUM	Bus bay is provided with access pathways to B53 entry. Signage or "rope off" may be of assistance to keep this bus bay clear for bus parking (if considering this option, account for trip hazards)	Maj x HU (4B) LOW	Facilities Management

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	Trip hazards – metal plates on floor	Mod x VL (3F) MEDIUM	Metal plates are flush with floor. Regular housekeeping inspections by IER EO to warn participants of trip hazard on floor	Mod x U (3D) LOW	IER safety committee/ Area Supervisor Education Officer
	Overhead hazards – ANTARES beam line equipment	Mod x AC (3G) HIGH	Foam padding and black and yellow highlighting caution markings on beam line apparatus. EO to warn participants	Min x U (2D) VERY LOW	Area Supervisor Education Officer
	Operational Hazards Ionising Radiation/ Works in progress/ low oxygen	Maj x U (4D) MEDIUM	TV monitors advise current status. Restricted access to areas of ANTARES during operations. TV monitors to advise EOs of areas safe to enter. Signage and fenced off areas are present for restricted areas. Building is fitted with low oxygen alarm connected to the SCC. In some cases as advised by Accelerator Operations staff, access will not be possible. Alternate with visit to B22 STAR Accelerator.	Neg x VU (1C) VERY LOW	Education Officer Accelerator Operations Staff
B53 ANTARES hands-on displays	Magnetic equipment may interfere with pace makers or similar devices	TBC	Signage is present on actual displays EO to advise of hazard and those people that may be at risk prior to entering the area.	TBC	Education Officer Accelerator Operations Staff

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B22 STAR Accelerator Facility	Slips, trips and falls Staircase Walkways and carparks	Mod x VL (3F) MEDIUM	Avoid stairs where possible – Alternate ramp access is available to the mezzanine viewing area of B22 adjacent to the main entry of B55. Slip resistant material on steps. Use handrails where available. ANSTO EO to warn participants about stairs. Elderly or mobility impaired persons may choose to avoid staircases. Use marked walkways and pedestrian crossings where provided. ANSTO EO to escort tour Participants	Mod x U (3D) LOW	Education Officers
	Operational Hazards - Ionising Radiation/ Works in progress/ low oxygen	Maj x U (4D) MEDIUM	Restricted access to areas of B22 STAR during operations. Accelerator Operations to advise EOs of areas safe to enter. Signage and fenced off areas are present for restricted areas. Building is fitted with low oxygen alarm connected to the SCC	Neg x VU (1C) VERY LOW	Education Officer Accelerator Operations Staff
B23D - GATRI	Ionising Radiation above background levels	Neg x VU (1C) VERY LOW	Additional EPDs issued GATRI will shutdown operation for the duration of the tour Radiation sweep prior to participant entry to GATRI	Neg x VU (1C) VERY LOW	Education Officer Justin Davis

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Enter B21 – Institute for Environmental Research	Safe bus parking and access	Maj x U (4D) MEDIUM	The bus bay adjacent to B53 is the safest and easiest place to park the bus for B21. Use marked pathways and pedestrian crossings where provided.	Maj x HU (4B) LOW	Bus Driver/ EO
	Slips, Trips and Falls	Mod x VL (3F) MEDIUM	EO to escort tour participants via pedestrian crossings and provided walkways. Clear walkways. Regular housekeeping inspections by IER safety committee.	Mod x U (3D) LOW	Education Officer Building Manager
Enter B3 – Institute of Materials Engineering including electron microscope area	Safe bus parking and access No safe parking available on Thomson Avenue at front doors of B3 - Vehicle incident. Alternate parking at bus bay between B1 and B3 tour participants walk through carpark – vehicle/ pedestrian incident. Drop off tour participants – either participants or bus driver are unaccompanied whilst parking vehicle.	Maj x L (4E) HIGH	Recommend a designated and barricaded walkway (that is also suitable for mobility impaired persons) between existing bus bay between B1 and B3 or Recommend a new bus bay be installed into the roadway outside B3 (may be limited by existing space) Education Officer to escort tour participants. Use walkways and pedestrian crossings where available.	Mod x U (3D) LOW	Facilities Management/ Infrastructure Planning Education Officer Assistance with recommendations from S Levy HSS
	Slips, Trips and Falls	Mod x VL (3F) MEDIUM	EO to escort tour participants via pedestrian crossings and provided walkways. Clear walkways. Regular housekeeping inspections by IME safety committee.	Mod x U (3D) LOW	Education Officer

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Walk around Waste Management areas	Safe bus parking and access	Maj x U (4D) MEDIUM	Bus parking for a vehicle the size of the ANSTO tour bus is available although manoeuvrability is difficult between B20A and B20B. Full size buses or coaches will not be able to negotiate this area. Education Officer to escort tour participants at all times. Use designated walkways	Maj x HU (4B) LOW	Education Officer/ bus driver
	Slips, Trips and Falls	Mod x VL (3F) MEDIUM	EO to escort tour participants via pedestrian crossings and provided walkways. Clear walkways. Regular housekeeping inspections. Appropriate footwear advised by Discovery Centre at booking	Mod x U (3D) LOW	Education Officer Area Supervisor
	Weather and sun exposure	Min x L (2E) LOW	Minimise time exposed to sun and weather. EO to choose areas where protection from sun and weather is provided by awnings or inside. Participants advised to bring own sunscreen/ hat with initial info	Neg x VU (1C) VERY LOW	Education Officers Tour participants
Conclusion					
Any hazards noted throughout tour ANSTO Discovery staff	Ongoing hazard to other users of area.	Maj x L (4E) HIGH	Report any hazards identified to relevant Area Supervisor, Building Manager or via ANSTO Event Reporting System on INFRA as soon as possible.	Neg x VU (1C) VERY LOW	Education Officer

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Return to Discovery Centre	Vehicle Accident Vehicles and pedestrians using same area. Slips, Trips and Falls	Maj x U (4D) MEDIUM	All drivers of bus to be appropriately licensed. Follow NSW Road Rules and ANSTO Safe Driving Guidelines Shared zone signposted. Shared zone speed limited to 10km/h No parking in shared area outside Discovery Centre other than ANSTO tour vehicles. Different road surface to differentiate zones. Covered entrance to visitors centre, carpeted. Bumper stoppers highlighted in black and yellow stripes. Visitors to come off the bus one by one and follow signs to pick up belongings and leave the site.	Mod x U (3D) LOW	Bus Driver/ Education Officer Facilities Management
Fill ANSTO vehicle with fuel	Chemical spill Fire	Maj x HU (4B) LOW	Turn off vehicle. No mobile phones or two-way radios to be used whilst filling vehicle. Use filling pump as directed. Wash hands following filling vehicle with fuel.	Maj x HU (4B) LOW	Driver of vehicle
Return ANSTO vehicle to B7	Vehicle accident	Maj x U (4D) MEDIUM	Appropriate designated parking area has been allocated to bus. All drivers of bus to be appropriately licensed. Follow NSW Road Rules and ANSTO Safe Driving Guidelines	Maj x HU (4B) LOW	Driver of vehicle
Emergency / Rescue Scenarios					

Risk Analysis Matrix (AG-2395)

Revision 15. Effective Date 03/07/2020.

Risk Analysis Matrix

Medium	High	High	Very High	Very High	Very High	Very High	6	Catastrophic	Impact
Low	Medium	Medium	High	High	Very High	Very High	5	Severe	
Low	Low	Medium	Medium	High	High	Very High	4	Major	
Very Low	Very Low	Low	Low	Medium	Medium	High	3	Moderate	
Very Low	Very Low	Very Low	Very Low	Low	Low	Medium	2	Minor	
Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	1	Negligible	
A	B	C	D	E	F	G			
Extremely Unlikely	Highly Unlikely	Very Unlikely	Unlikely	Likely	Very Likely	Almost Certain			
Likelihood									

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Likelihood / Probability

Likelihood / Probability Levels	Qualitative Risk Analysis		Quantitative Risk Analysis	
	Likelihood	Likelihood definition	Probability range	Probability range definition
G	Almost Certain	<ul style="list-style-type: none"> Historical records of at least one occurrence per year at ANSTO in a similar situation The event is expected to occur in most circumstances / happens quite frequently (significant chance) Well publicised occurrences in other similar facilities 	≥ 1 / year (> 1 pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $f \geq 1 \text{ y}^{-1}$ (i.e. happens more often than once each year: ≥ 1 pa)
F	Very Likely	<ul style="list-style-type: none"> Has occurred a couple of times at ANSTO The event will probably occur in most circumstances (very good chance) 	1/10 years to 1 / year (0.1 pa to 1 pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $1 > f \geq 0.1 \text{ y}^{-1}$ (i.e. happens less often than once each year, but more often than once each ten years: 0.1 pa to 1 pa)
E	Likely	<ul style="list-style-type: none"> May have occurred at ANSTO The event could occur at some time (realistic chance) Known in similar facilities and industries 	1/100 years to 1/10 years (0.01 pa to 0.1 pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $0.1 > f \geq 0.01 \text{ y}^{-1}$ (i.e. happens less often than once each ten years, but more than once each hundred years: 0.01 pa to 0.1 pa)
D	Unlikely	<ul style="list-style-type: none"> May not have occurred at ANSTO The event could occur (reasonable chance) 	1/1,000 years to 1/100 years (10 ⁻³ pa to 0.01 pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $0.01 > f \geq 0.001 \text{ y}^{-1}$ (i.e. happens less often than once each hundred years, but more than once each thousand years: 10⁻³ pa to 0.01 pa)
C	Very Unlikely	<ul style="list-style-type: none"> The event could occur in certain circumstances (moderate chance) 	1/10,000 years to 1/1,000 years (10 ⁻⁴ pa to 10 ⁻³ pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $0.001 > f \geq 10^{-4} \text{ y}^{-1}$ (i.e. happens less often than once each 1000 years, but more than once each 10,000 years: 10⁻⁴ pa to 10⁻³ pa)
B	Highly Unlikely	<ul style="list-style-type: none"> The event could occur in exceptional circumstances (remote chance) 	1/100,000 years to 1/10,000 years (10 ⁻⁵ pa to 10 ⁻⁴ pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $10^{-4} > f \geq 10^{-5} \text{ y}^{-1}$ (i.e. happens less often than once each 10,000 years, but more than once each 100,000 years: 10⁻⁵ pa to 10⁻⁴ pa)
A	Extremely Unlikely	<ul style="list-style-type: none"> The event could occur in very exceptional circumstances only (very remote chance) 	1/million years to 1/100,000 years (10 ⁻⁶ pa to 10 ⁻⁵ pa)	<ul style="list-style-type: none"> The expected (or mean) frequency f is such that $10^{-5} > f \geq 10^{-6} \text{ y}^{-1}$ (i.e. happens less often than once each 100,000 years, but more than once each 1,000,000 years: 10⁻⁶ pa to 10⁻⁵ pa)

Note:

- Qualitative Risk Analysis**
 - Subjective approach that uses word form or descriptive scales to describe the likelihood of each risk event arising and its consequences
 - Most risk assessments will use this approach exclusively
 - Impact could be determined based on past industry outcomes
- Quantitative Risk Analysis**
 - Aims to analyse numerically the probability of each risk event occurring and its potential consequence
 - Always used in support of a qualitative risk analysis
 - Impact is determined by calculating the potential impact based on assessed criteria and generally accepted models (e.g. dose rates)

Risk Analysis Matrix AG-2395 (ACS010136.pdf) Revision 15. Effective Date 03/07/2020.

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Consequence – General

This table should be used for all risk assessments where a detailed analysis of environmental, ionising radiation and occupational health consequences are not required.

Impact Level	Impact Description	Financial Commercial operations	Financial ANSTO level	Financial Divisional level	Project Schedule	Project Cost Overrun ¹ (\$M) (F00M07M)	Project Quality	Operations / Plant and Equipment	Injury or Disease ²	Ionising Radiation ²		Environment ²	Patient Safety	Security	Legal / Compliance	Information Technology Services	Reputation	Government Relations	Human Resources	
										Occupationally Exposed Person	Public									
6	Catastrophic	>50% impact on net profit	>\$30M	>\$30M	>18 months	>20% of the total approved CAPEX budget	Total failure of the delivered system thus preventing it from meeting its primary purpose	Total loss of production / operations untenable in near to mid term	Multiple fatalities or serious permanent injuries	Tissue reactions expected or severe dose to multiple people	Tissue reactions possible or severe dose to multiple people	Very long-term damage (>10 yrs.) or a nationally significant impact or release	Death of a patient / Coroner notifiable	Cessation of all operations / multiple fatalities / major criminal or terrorist event	Cancellation, permanent suspension of site license. Repeal of ANSTO Act. Dismissal of Board and/or CEO. Senior officers barred from office or imprisoned. Prolonged regulatory suspension of operating licenses. Major restriction of core activities. Major compensation payable or (civil/criminal) prosecution. Serious administrative action for legislative breaches / large fines	Complete loss of all services for greater than 5 days	Prolonged international and national condemnation	Loss of government support for agency operations as a whole	Enterprise-wide strike action	
		30 - 50% impact on net profit	\$20M - \$30M	\$10M - \$30M	12 - 18 months	From >15 to 20% of the total approved CAPEX budget	Inability to achieve one or more critical requirements	Critical operations seriously affected > 6 months	Death, permanent disability or permanent ill health	Tissue reactions possible	Exceedance of legal limit for occupationally exposed person	Long-term damage (3 - 10 yrs.) or a regionally significant impact or release	General customer health problem that could attract public interest / Coroner notifiable	Impact on all operations (>24 hours) / shutdown / single fatality / crime or terrorism attempt	Medium compensation / work suspension orders / regulatory directions	Complete loss of all services for less than 5 days	International and national criticism	Extraordinary government enquiries called or examination into agency operations as a whole	Strikes at several facilities	
5	Severe	20 - 30% impact on net profit	\$10 - \$20M	\$3 - \$10M	6 - 12 months	From >10% to 15% of the total approved CAPEX budget	Significant shortfall in the required performance or functionality of the delivered product / service / system	Critical operations seriously affected 1-6 months	Long term illness or serious injury >5 days off (LTI), but recovery probable	Exceedance of legal limit for occupationally exposed person	Exceedance of legal limit for member of the public	Medium-term damage (1 - 3 yrs.) or an impact or release confined to Buffer Zone	Customer / community health problem causing significant backlog of patients or non-treatment / Possible adverse drug reaction due to a product quality issue / Coroner notifiable	Impact on some operations (>24 hours) / regulatory impact / injuries / negative media attention	Limited compensation / minor fines / major administrative complaint	Civil litigation / arbitration / minor administrative complaint / regulatory compliance notices	Loss of critical service(s) for more than 1 day	Very negative national criticism	Loss of government support for specific agency operations or projects	Strike at one facility
		10 - 20% impact on net profit	\$5M - \$10M	\$1M - \$3M	4 - 8 months	From >5% to 10% of the total approved CAPEX budget	Moderate shortfall in the required performance or functionality of the delivered product / service / system	Limited damage to equipment and/or facility / loss of production <1 month / report to Regulator	Medical attention / up to 5 days off (LSI)	Less than legal limit for occupationally exposed person	Less than legal limit for member of the public	Short-term damage (<1 yr.) or an impact or release confined to the ANSTO-site	Customer / community health problem causing significant delay of treatment / possible product recall situation / could be Coroner notifiable	Impact on some operations (>24 hours) / regulatory impact	Reportable minor incident / breach with no or minor implications	Loss of critical service for less than 1 day	Adverse national public attention	Extraordinary government enquiries called or examination of specific agency operations or projects	Organised stay aways	
3	Moderate	5 - 10% impact on net profit	\$3M - \$5M	\$300K - \$3M	2 - 4 months	From 2% to 5% of the total approved CAPEX budget	Minor shortfall in the required performance or functionality of the delivered product / service / system	Insignificant damage to equipment / short interruption to some operations (hours)	First aid or Early Intervention Program	Less than legal limit for member of the public	Less than one tenth legal limit for member of the public	Anomalous impact or release confined to work-area with negligible ongoing effects	Customer / community health problem causing delay/rebooking of some treatments	Impact on some operations (<24 hours)	Non-reportable regulatory non-compliance identified by external parties	Loss of non-critical service for more than 1 day / critical service degradation more than 1 hour	Local attention from media / NGO / public	Minister called on to publicly support agency	Disputes / Grievances	
2	Minor	<5% impact on net profit	<\$3M	< \$300K	<1 month	<2% of the total approved CAPEX budget	Insignificant impact on the required performance or functionality of the delivered product / service / system	Superficial damage to equipment / no loss of production	Minimal effects / very small injury not requiring treatment	Negligible increase on natural background radiation	Negligible increase on natural background radiation	Within routine operational conditions, but may be an environmental aspect with potential for improvement	No delay in treatment	No regulatory or operational impact	Non-reportable regulatory non-compliance identified internally	Loss of non-critical service for less than 1 day / critical service degradation less than 1 hour	Public concern restricted to local complaints	Additional oversight of operations required by Department	Complaints / dissatisfaction amongst staff	
1	Negligible																			

This table should not be construed to mean that different consequences at the same level are equivalent. For example, it is not meaningful or desirable to attempt to equate serious injury or death to financial costs.

¹ This is aimed at providing a project specific analysis of the potential financial impact on project objectives. The potential financial impact on ANSTO is guided by the 'Financial ANSTO level' consequence category.

² Use this consequence description where a detailed analysis is not required as per the applicable consequence table below i.e. Consequence – Environment, Consequence – Radiation or Consequence – Occupational Health