# Radiation Management Plan

# Wiluna Uranium Project

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# Contents

# 1 Introduction

## 1.1 Scope

This Radiation Management Plan (RMP) applies to all uranium exploration activities associated with the Wiluna Uranium Project located in central Western Australia (WA). This RMP provides the framework for radiation safety during exploration activities for employees of Toro Energy Limited (Toro) and its contractors. Uranium exploration activities at the Wiluna Uranium Project including but not limited to:

- Drilling (aircore, RC percussion, sonic core);
- Down hole geophysical logging;
- Collection, analysis and storage of samples;
- Hydrogeological testwork;
- Collection, analysis and storage of water samples; and
- Various ground geophysical survey techniques.
- Rehabilitation of drill holes and sample disposal.

Note that radiation is one of a number of hazards that exists in the workplace and Toro Energy maintains a broader health and safety management system which includes radiation.

This RMP applies to the following Toro operated tenements as of March 2016.

| Wiluna | Lake Maitland | Nowthanna |
|---|---|---|
| M53/45, M53/49, M53/122, E53/1136, M53/147, E53/1555, E53/1288, M53/1095, P53/1358, P53/1359, P53/1060, E51/1075, E53/1132, M53/123, M53/1090, M53/113, M53/796, M53/224, M53/910, M53/121, M53/253, E53/1287, E53/1687, M53/336, E53/1296, P53/1369, P53/1350, P53/1370, P53/1371, P53/1352, P53/1355, P53/1356, P53/1357, P53/1372, P53/1372, P53/1373, P53/1374, P53/1397, M53/1092 | M53/1089, E53/1210, E53/1211, E53/1060, E37/1144, E37/1145, E37/1146 | E51/1072, E51/1075 |

## 1.2 Project Description

At present the Wiluna Uranium Project is comprised of six separate deposits, Centipede, Lake Way, Lake Maitland, Millipede, Dawson Hinkler and Nowthanna. This RMP also covers the Firestrike prospect, which is not currently a recognised ore body. The location of the project is shown in Figure 1. The tenements covered by the RMP are also shown in the figure.

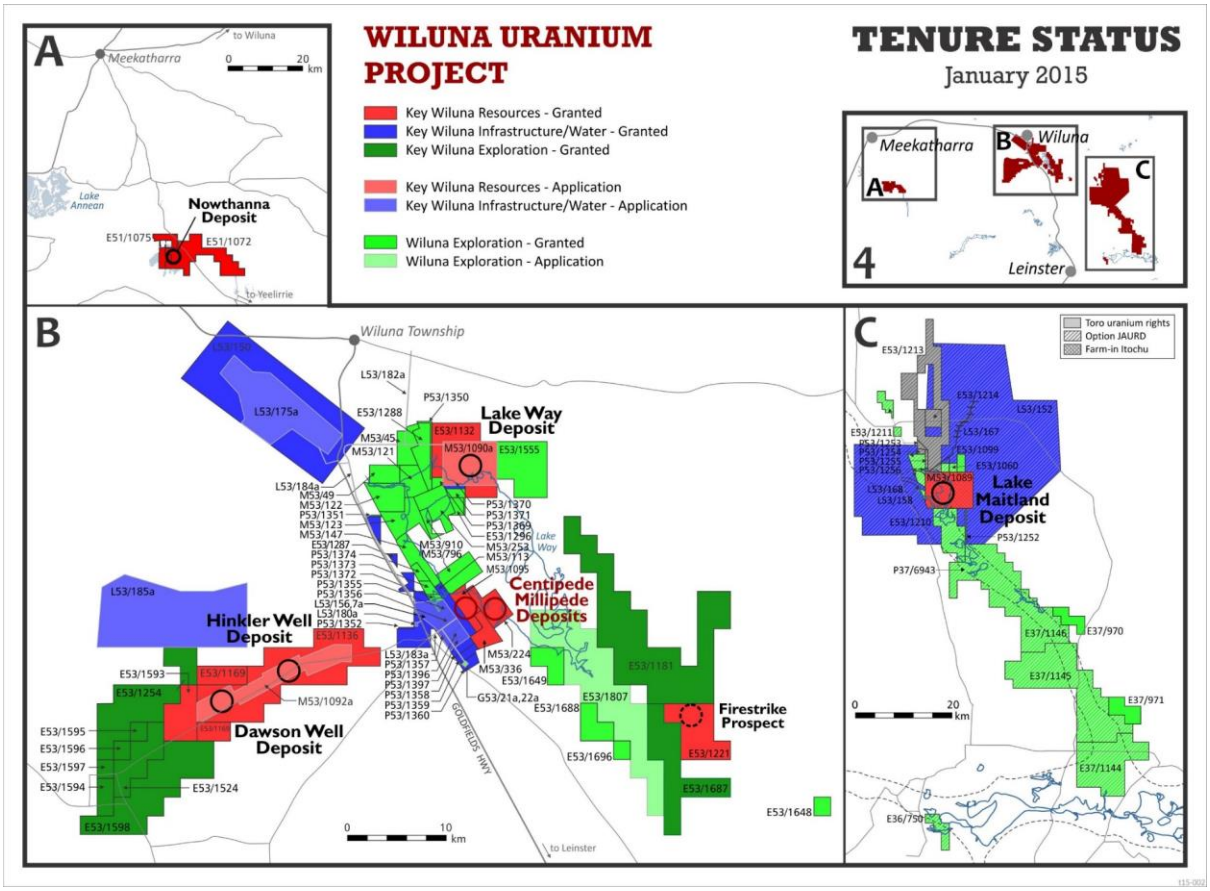


**Figure 1 Location of the Wiluna Uranium Project.**

All the deposits and potential prospects covered by this RMP are calcrete hosted uranium deposits associated with salt lake systems. Each deposit is shallow in nature with all deposits sitting within 15m of the ground surface. Due to the associations with salt lake systems all deposits sit at or below the water table and remain water logged year round.

In general the grade of each deposit is considered to be low. The average grade of each deposit when using a 200ppm U cut off is shown in table 1.

| **Deposit** | **Average grade using a 200 ppm cut off** | **Contained pounds of $U_3O_8$ (MLB's)** |
|---|---|---|
| Centipede | 566 | 13.0 |

| | | |
|---|---|---|
| Lake Way | 545 | 12.3 |
| Millipede | 485 | 6.9 |
| Lake Maitland | 555 | 24.3 |
| Dawson Hinkler | 315 | 9.4 |
| Nowthanna | 399 | 10.5 |
| Firestrike | No information | No Information |

## 1.3 Reason for the RMP

This RMP has been prepared to primarily address the requirements of the *Mines Safety and Inspection Regulations 1995* (WA) Section 16, Radiation Safety [MSIR part 16.2] and *Radiation Safety Act* 1975.

The following legislation and guidelines were also referenced in preparation of the RMP:

- *Mines Safety and Inspection Act* 1994 (WA)
- NORM Guidelines 2010 (WA), Managing Naturally Occurring Radioactive Material (NORM) in mining and mineral processing- guideline: NORM 1, 2.1, 3.1-4, 4, 5, 6 (NORM Guidelines)
- *Radiation Safety Act 1975* (WA) (RS Act);
- *Radiation Safety (General) Regulations 1983* (WA);
- *Radiation Safety (Transport of Radioactive Substances) Regulations 2002* (WA);
- Recommendations for Limiting Exposures to Ionising Radiation (1995) and National Standard for Limiting Occupational Exposure to Ionising Radiation (2002);
- Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (2005);
- Australian Radiation Protection and Nuclear Safety Agency Code of Practice for the Safe Transport of Radioactive Material (2008);
- Safety Guide for Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing (2011); and

# 2 Exposure Pathways

The exposure pathways are described below in relation to activities and situations associated with the Wiluna Uranium Project.

## 2.1 Gamma Radiation Exposure

Direct irradiation from gamma sources may occur from mineralised sample cuttings, core and rock chips from drilling procedures, bulk sample/sludge from excavating procedures and exposure from ore bodies. Gamma radiation may become significant for workers who work for extended periods with large amounts of higher grade ore. However, due to the low grade and limited contact, exposure is expected to be low.

Results obtained from personal TLD badges issued to employees in the 2011 drilling program returned readings of <0.03mSv, which is the below minimum detection limit. Furthermore the 6 week drilling program completed in 2015 saw the monitoring of 10 employees for the full duration of their work period. Once again all badges returned below minimum detection limit values.

The sample storage area (known as the Core Shed) is expected to be the source of the highest gamma levels on the project sites. This area is fenced and has a locked gate. Only trained workers work in this area.

## 2.2 Radon Decay Product Exposure

Radon decay product exposure may occur when sources of radon are present, for example in enclosed areas such as costeans or the Core Shed. Radon decay product exposure is insignificant in the Project area due to the ventilation provided by the open spaces. Even though the Bag Farm area is in the open and well ventilated, care must be exercised when working in the Bag Farm as this area contains samples from drilling and exploration operations.

## 2.3 Inhalation of Airborne Dust

Airborne dust exposure can occur from inhalation of airborne ore dust that contains long lived alpha emitters (and short lived beta and gamma emitters). This exposure pathway can be important during drilling or excavating activities. Dust exposure levels may also be increased when sludge (from wet drilling) becomes dry leaving mineralised material. Dust is controlled using correct work practices and respiratory protection if necessary.

## 2.4 Ingestion of Mineralised Material

Ingestion may occur when radioactive material is transferred from hands to food when eating/drinking or to the mouth when eating, drinking or smoking. This exposure pathway is controlled with good hygiene and housekeeping practices.

## 2.5 Absorption of Mineralised Material

Absorption of contamination through cuts or abrasions in the skin is a potential exposure pathway.. Good hygiene practices control this exposure pathway.

# 3 Project Risk Assessment

## 3.1 Drill Program Duration

This RMP is designed specifically for short duration field campaigns associated with geological drilling investigations across the deposits. Drilling programs are usually for specific purposes and are designed to be carried out as quickly and efficiently as possible. Typically Toro field programs last between six to eight weeks and involve a staff of up to 15 people.

During the drilling programs staff are housed in temporary camps located close to the work areas, but in an area  away from the deposits. Typically only one drill program is carried out per year, however multiple ore bodies may be targeted during these programs.

The most recent drill program was conducted in mid-2015 and involved a 6 week program during which 130 drill holes were completed.

Due to the short nature of the program, radiation exposure to workers is very low. For previous drilling programs, dose estimates have been calculated from TLD badge monitoring, other estimates that were made by Toro Energy are outlined in the Environmental Review and Monitoring Programme (ERMP) (Toro Energy, 2012).

## 3.2 Gamma Exposure

Gamma exposure to workers during drilling activities has been estimated to be less than 1mSv. This is based on the gamma dose estimated in the ERMP for full time miners, which is 3.9mSv/y. (Note that in the supplement to the ERMP, Toro Energy revised this estimate to 1mSv/y).

Given that the exposure time for workers during a drilling programme is up to 8 weeks, then in a worst case, gamma doses would be no more than 0.5mSv.

## 3.3 Radon Decay Product Exposure

Exposure to the decay products of radon during drilling programmes is expected to be low. Monitoring conducted for the ERMP in 2010 gave typical concentrations of approximately 0.02uJ/$m^3$ to 0.03uJ/$m^3$, with peaks up to 10 times these values.

If it is assumed that the average concentrations are 0.3uJ/$m^3$, then the maximum dose received during an 8 week drilling programme is calculated as follows;

- Exposure time 8 weeks at 6 days per week at 10 hours per day giving 480 hours
- Average concentration is 0.3uJ/$m^3$
- Dose factor 1.4uSv/(uJ/$m^3$) (from ARPANSA 2005)

This gives a maximum dose of approximately 0.2mSv.

## 3.4 Exposure to Radionuclides in Dust

### 3.4.1 Dust During Drilling

It is expected that dust exposure during drilling programs will be very low due to the subsurface being saturated and therefore wet and damp at the point of mineralization.

Some dust may be generated during the initial stages of the drill hole above the water table, however this area is not mineralized and therefore will not constitute a radiological risk. The below calculation should be considered as an example only and not an expected dose contribution during drilling.

If it assumes that dust generated during drilling produces a dust cloud of 5mg/$m^3$ or ore dust (containing 600ppmU), then the potential exposure to a worker is calculated as follows;

- Exposure time = 480 hours
- Dust cloud = 5mg/m3 or 7.4mBq/m3 (based on dust containing 600ppmU)
- Breathing rate of 1.2$m^3$/h
- Dose factor 3.5uSv/Bq (from ARPANSA 2005)

This gives a dose from inhalation of radionuclides in dust of approximately 0.2mSv.

Sample Handling, Storage and Disposal

Core is generally recovered as part of drilling programs and is either stored to be used as reference material in the future, or is packed and sent for analysis at laboratories. From time to time excess samples are emptied out of their storage drums for disposal. In these instances radon may build up in drums, and the samples placed in the drums may be of a high enough grade that the gamma dose rate is well in excess of that encountered during normal drilling operations.

The time spent in contact with higher grade samples is usually restricted to that which is needed to empty the drum, and in many cases mechanical methods are used to increase safety in this task which leads to a reduction in exposure. For this reason the exposure to gamma during the emptying of drums is not expected to lead to significant exposure.

During the opening of drums, the lids must be unscrewed and removed manually. As radon is heavier than air it tends to sit low in the atmosphere and will not escape from the drums upon opening. If drums are opened carefully and allowed time to ventilate the exposure from radon will also be negligible.

### 3.4.2 Entering Sample Storage Areas

At Lake Maitland some samples are kept within a locked shed. Although well ventilated, there is a possibility of radon building up inside the shed. The samples kept inside the shed are of a low grade, however they are kept inside cubic meter bulk bags and radon is free to escape.

Radon build up inside the shed has the potential to be problematic and Toro has no data that identifies how radon levels build up inside the shed. As the shed is sheltered and contains many suitable areas in which to work there is the possibility that a moderate dose due to radon gas and other radon daughter products may occur inside the she if it is used after an extended period of being locked. This potential to exposure can be significantly reduced by opening the large roller side doors, which increases natural ventilation.

# 4 Monitoring and Management

## 4.1 Site Induction

All personnel reporting to site will be required to undergo a site induction. The induction will cover general health, safety and environmental requirements for the site, including radiation and its management. Relevant radiation issues will also be covered in daily toolbox and pre start meetings as required.

## 4.2 Gamma Radiation

Gamma radiation is managed by ensuring that mineralized material from drilling and sampling programs is securely and safely stored away from occupied areas. This also includes ensuring that temporary core and sample storage areas in the corefarm are adequately located.

All personnel working on the drill program will be issued with their own TLD badge. Badges are to be worn at all times during work hours and must be returned to the TLD badge board (located in the camp) each evening and prior to leaving site to return home, or at the completion of the program. It will be the responsibility of the RSO or delegate to order the badges and assign each person a badge.

At the completion of the program, or after three months (whichever comes first) the RSO or delegate will collect all badges and will return them to the laboratory for analysis.

Results from the monitoring will be recorded in the radiation monitoring log book and will be made available to staff. Results will also be sent to the employers of contract staff, this will give the contract company the ability to monitor their staffs dose on other job sites. In addition field staff will also be entered on the Australian National Radiation Dose Register (ANRDR) which is maintained by ARPANSA.

TLD badge monitoring is conducted under the guidance of procedure WIL-HSE-SOP-002 TLD Badge Monitoring.

## 4.3 Dust Inhalation

Dust management on site will be managed in accordance with Toro's Personal Hygiene and PPE Procedure (WIL-HSE-SOP-003). For work that involves the generation of dust, personnel will be required to wear P2 dust masks.

Focused dust sampling is conducted on those workgroups where dust exposure may occur. Drilling personnel will be monitored randomly at various times throughout the work program and positional dust sampling will be conducted near too the drill rig. The personal dust monitoring will be carried out in accordance with Toro procedures WIL-HSE_ SOP-045 calibration of personal dust pumps, WIL-HSE-SOP-046 Weighing filters on the microbalance and WIL-HSE-SOP-007 Personal Dust Sampling.

## 4.4 Radon Decay Products

As noted earlier, exposure to radon and its decay products during all activities on site is expected to be negligible. In unventilated areas Toro will conduct real time radon monitoring to ensure that areas are safe to work in. Monitoring will be carried out over several hours prior to people going to work in the area. Radon monitoring will occur using a RAD7 radon monitor. The procedure for using the monitor is prescribed in the procedure WIL-HSE-SOP- 051 Set up and Use of the RAD7.

## 4.5 Transport of samples

All transport of samples is conducted in accordance with the ARPANSA Transport Code.

In general, the overall approach is to pack individual samples in bags and then into a lined 200l steel drum. Care is taken to ensure that higher grade samples are placed into the middle of the drum, to ensure that the dose rate on the surface of the outside of the drum does not exceed 5uSv/h. This means that the drum may be transported as an "excepted package". An excepted package should be labelled as excepted and should contain a notice inside the package saying "radiation" face up to notify the receiver. The outside of the package will be labelled UN2910 only.

When the doserate exceeds 5uSv/h, then they will most likely be able to be sent as Low Specific Activity (LSA-1)(RPS2 2008, pg.12, e). If the package is to be shipped as "Low Specific Activity (LSA-1)" then the following labelling and documentation needs to be completed:

1. Determine the transport index (TI) by measuring the maximum gamma dose rate (µSv/h) at 1m from the surface of the package and dividing this value by 10.
2. Measure the maximum gamma dose rate at the surface of the package and use the following table to determine the correct label.

| Transport Index | Radiation level on external surface | Category |
|---|---|---|
| More than 0.05 but not more than 1 | More than 5 µSv/h but not more than 500 µSv/h | II Yellow |

| | | |
|---|---|---|
| More than 1 but not more than 10 | More than 500 µSv/h but not more than 2000 µSv/h | III Yellow |

It is envisaged during the drilling that all samples will fall into either the excepted package or LSA 1 category. Should samples fall outside of this for any reason the Transport of Geological Samples Procedure should be consulted (WIL-HSE-SOP-010 transport of Geological Samples).

## 4.6 Storage of Samples

### 4.6.1 Non-Processed Samples

For the purposes of this RMP, non-processed samples will be limited to those samples that have not been sent away to a laboratory for further investigation. Non-processed samples will primarily be drill core and rock chips collected during drilling.

Non-processed samples will be collected in calico and plastic bags and will be returned to either the Centipede or Lake Maitland storage areas. At these areas, samples to be kept will then the placed into lined and lockable steel drums and will be stored within a locked and fenced compound.

At Centipede the drums will be stored on the purpose built concrete pad. At Lake Maitland the drums will be stored on pallets in areas outside of drainage lines, and in elevated areas that do not flood. The site will also be fenced and locked to prevent access to non-Toro personnel.

Regular inspections at both storage sites shall be undertaken to ensure the integrity of the drums is not being compromised by the storage practices. These inspections will be noted with date and conditions including photographing of the site, this will then be uploaded to the Toro server for auditing purposes. This information will also be passed onto the DMP and Radiological Council at reporting time.

Where drums are found to be deteriorating, the samples will be removed from the drums and placed into a new lined drum. Where a drum has been damaged, the calico bag and drum liner should prevent any leakage of sample into the environment. To ensure no leakage has occurred and caused localized contamination, the immediate vicinity of the drum shall be checked using a scintillometer. Where the scintillometer finds that localized contamination has occurred, the extent of this contamination will be defined and the affected soil in this area will be recovered and stored in its own drum at the designated storage facility to prevent further contamination and to allow for the soil to be disposed of.

### 4.6.2 Processed Samples

In this RMP, processed samples refers to all samples that have left site and have been transported for any further investigation. All of these samples shall be stored at the Centipede storage facility, on the concrete pad. Further consultation will be undertaken with the various regulatory agencies before these samples are disposed of.

## 4.7 Contamination Monitoring

During a drilling program area surface contamination monitoring will occur each week in specific areas such as office buildings, vehicles and communal areas such as the kitchen and recreation room.

Area checks are to be carried out by the RSO or their delegate and are to be done in accordance with the procedure WIL-HSE-SOP-004 Alpha Surface Surveys.

Results of the surface monitoring should be recorded in the Radiation Monitoring Log Book. If the area looks dirty or a high reading greater than 370cpm (which for this machine is equivalent to the regulatory limit of 0.4Bqcm$^{-2}$, if another machine is used check manual for equivalent values) is recorded, then the site manager should be informed and the area should be cleaned. If the high reading happens in a food preparation area, the area should immediately be cleaned and an incident report should be filled out.

## 4.8 Disposal of Samples

From time to time samples will require disposal. Toro has developed a sample disposal hierarchy and sample disposal procedure to deal with excess samples and their disposal WIL-HSE-SOP-060 Rehabilitation and Sample Disposal Procedure, 2014.

The preference for sample disposal, as outlined in the procedure, is to replace samples back into the drill holes from which they came. During drilling operations excess sample and core is replaced back down the hole as much as possible. Inert material is then replaced into the hole with a minimum cover of 400mm. When samples are taken during the drilling program, often these samples will not be returned to site in time to be returned to the hole prior to the hole being rehabilitated. On these occasions the second more favored method in the disposal hierarchy will be employed.

The second favored method for disposing of samples is to dig a hole adjacent to the drill hole. The hole is dug to a depth that leaves enough volume for the samples to be placed to a depth of 400mm. This method of sample disposal is only used when the number of holes to be dug is reasonable and where the samples have not been processed.

Where bulk samples are to be disposed of, large pits shall be dug in areas agreed upon by Toro the DMP and Radiological Council. The appropriate approvals will be sought before excavation of the pit. It is expected that the location of these pits will be within mineralized areas, but not necessarily within economic mineralization areas.

## 4.9 Rehabilitation

Prior to any hole being drilled a local background radiation level will be taken and recorded. This will be used as a benchmark when closing drill holes. At the completion of the hole once it has been rehabilitated a photo of the hole plus a second radiation reading will be taken. Any surficial mineralized material will be returned down hole or buried in a hole adjacent to the drill hole. Samples may also be collected and stored in lined drums if deemed appropriate.

## 4.10 Vehicle Hygiene

Prior to leaving site, or when switching between sites all vehicles and plant need to be cleared to leave site.

In order for a vehicle to leave site it must first be washed to remove all weeds, seeds and dirt. Purposely constructed wash down facilities are located outside the Centipede Core Farm, inside the Resource Evaluation Pit and at the northern edge of the Lake Maitland deposit. Where it is deemed not practical to transport plant and vehicles to these wash down areas then a mobile trailer mounted water tank and higher pressure cleaner will be utilized. In this case a sump will be dug to catch run off water.

Once cleaned, vehicles are to be inspected by the RSO or their delegate to assess whether they are fit to leave site. To be cleared, items must be thoroughly inspected using the Ludlum Data Logger Alpha/Beta surface contamination detector to ensure that any contamination is removed from the vehicle prior to it leaving site. Vehicles must be visually clean prior to inspection. A surface contamination check on the dried plant or vehicle is conducted and if the levels exceed 370cps (or equivalent to regulatory limit 0.4Bqcm$^{-1}$), then the identified areas of contamination will require further cleaning, this will be followed by additional checks to ensure no contamination is present.

The procedure to be followed is WIL-HSE-SOP-005 Clearance of Items from Site.

## 4.11 Waste Management

All waste materials will be removed from the site during and at the completion of the program. Non mineralized wastes, such as food scraps, packing boxes and general rubbish will be dispsoed of at the Wiluna rubbish tip.

Rubbish that may have come into contact with mineralization such as PVC pipe will be cleaned and checked before being able to be sent to the tip. In order to be able to leave site the radiation readings on the PVC must be at or below background readings. The RSO will determine whether a waste may be disposed of off-site.

Any wastes that cannot be disposed of at the Wiluna rubbish tip because of contamination or other reasons will be stored appropriately at the Centipede core farm. Waste oils will be stored in the waste oil drum, while mineralized samples may be stored in steel drums.

## 4.12 Incidents

It is mandatory to report all incidents that occur on site within 24 hours of the incident occurring. All incidents shall be reported as per the procedure WIL-HSE-SOP-032 Incident reporting and investigation.

# 5 Dose Assessment

The total effective dose to the non-designated employee group is determined by summing the individual contributions from external gamma dose, internal dose from the long lived alpha activity in dust and the contribution of Radon as calculated in 3.3.

The effective dose from external gamma will be directly determined from TLD badges.

The effective dose due to the inhalation of long lived alpha activity (LLAA) in dusts will be calculated as a group average for the work group from the following occasion.

$$EwA = [LLAA].\ DCF.BR.\ HW$$

Where;

$E_{LLAA}$ = Effective dose due to the inhalation of LLAA in dusts (mSv)

[LLAA] = Average concentration of LLAA from personal monitoring (adps/$m^3$)

DCF = Dose conversion faction (mSv/adps)

BR = Breathing rate (1.2$m^3$ per hour)

HW = the maximum hours worked by an individual

The dose conversion factor for the Wiluna Uranium Project and other exploration projects will be the standard for uranium ore of 0.0035 mSv/adps obtained from the ARPANSA code of practice [8] and using the ICRP-66 and IAEA recommended default AMAD of 5µm for occupational exposures.

# 6 Roles and Responsibilities

## 6.1 Geology Manager – Exploration Manager

The dedicated Exploration Manager for the project, as registered with the DMP (or Geology Manager) has the overall responsibility for radiation protection at the exploration site. Specifically this includes responsibility to:

- Provide the necessary support to enable their staff to implement all aspects of this Radiation Management Plan and will allocate funds, materials and equipment where appropriate to address requirements;
- Allocate the necessary resources such that company operations and procedures are in compliance with relevant legislation and codes; and
- Have radiation protection as a prime consideration in project planning in respect to the overall development of the project, and the procurement of machinery, plant or equipment

and the administration of work schedules.

## 6.2 Radiation Safety Officer

The Radiation Safety Officer reports to the Geology Manager and has the responsibility to:

- implement the radiation management and radioactive waste management procedures detailed in this document;
- understand the regulations, codes of practice and local rules relevant to the operations being undertaken;
- check that radiation work in their area is carried out safely and in accordance with appropriate procedures;
- provide inductions and appropriate training in radiation safety at a local level;
- ensure that radiation monitoring as required by this document is undertaken;
- ensure that radiation monitoring equipment is properly and regularly calibrated;
- report and record any radiation incidents or accidents;
- implement appropriate procedures in the event of a radiation accident, incident or other unplanned event, and direct decontamination procedures in the event of a spill;
- If informed by an employee or contractor that she is pregnant, review her working situation, and if necessary take steps to ensure that her radiation exposure will not exceed 1 mSv for the remainder of the pregnancy.

## 6.3 Employees and Contractors

All employees and contractors on site have the responsibility to:

- follow radiation protection and waste management practices as directed and comply with legitimate instructions related to these;
- participate in radiation training programs as directed;
- make proper use of plant and equipment supplied for radiation protection, or for the monitoring or assessment of radiation exposures;
- not engage in any careless or reckless action which might result in unnecessary radiation exposure to themselves or others, or compromise the management of radioactive waste;
- report any defects of which they become aware, in plant equipment or procedures, which may compromise radiation protection or the management of radioactive waste ;
- report all incidents or accidents;
- advise of previous employment involving occupational exposure to radiation, and cooperate in obtaining records of such previous exposure; and
- If a female employee or contractor becomes pregnant they must as soon as is practicable notify the manager of the site, who in turn must inform the Radiation Protection Advisor.

# 7 Reporting and Record Keeping

## 7.1 Record Keeping

All records of monitoring and radiation management will be kept in accordance with the Radiation Record Keeping Procedure (WIL-HSE-SOP-001). Forms shall be filled out on site by the RSO or his delegate and will be scanned and emailed back to the RSO for storage on the main Toro servers back in Perth.

## 7.2 Site Library

All procedures shall be kept in a site library located in the office at the Centipede Core Farm. Access to the procedures shall be made available to all personnel so that the monitoring prescribed by this plan may be followed.

All forms and records of monitoring shall be stored in the site library whilst the drilling program is ongoing. At the completion of the program, the forms shall be returned to the Toro Perth office where they shall be scanned and filed electronically.

## 7.3 Reporting

As drilling at the project will occur in a campaign style frequency an annual radiation report will not be developed by Toro. Instead a radiation report will be developed at the completion of each campaign which shall be submitted to the various regulatory bodies.

It is expected that the report will contain the following;

- Details of the campaign including location of the works, details of any site moves, and the dates of the program
- The number and location of all drill holes
- Pre and post drilling background radiation levels from each hole
- The details of all personal monitoring that occurred across the program
- The results from all monitoring
- An analysis of the results, comparing results to previous campaigns and explaining any trends or anomalies
- Details of any samples that were disposed of, including maps showing disposal locations.

# 8 List of Commitments

| Commitment | Frequency | Section of the RMP | Responsibility |
|---|---|---|---|
| All personnel to undergo a radiation specific induction as part of the general site safety induction. | At the start of the program | 4.1 | RSO or delegate |

| | | | |
|---|---|---|---|
| All personnel to be issued TLD badges | Across the entire program | 4.2 | RSO or delegate |
| All personnel to be supplied dust masks when working in dusty or windy conditions | As required | 4.3 | RSO or delegate |
| Dust monitoring on each drill rig on site and to occur at least once whilst on site. | All work groups to be monitored during the program at least once | 4.3 | RSO |
| Real time radon monitoring to occur in sample storage sheds where ventilation may not naturally occur. | Prior to commencing work in unventilated areas | 4.4 | RSO |
| All samples to be transported using the appropriate method depending on activity of the samples. No sample will leave site without being assessed for suitability to be sent by a particular carrier. | Prior to any sample leaving site | 4.5 | RSO or delegate |
| All non-processed samples will be stored at either the Centipede or Lake Maitland Core farms, which shall both be fenced. | N/A | 4.6 | Geology Manager |
| Any materials that leak from drums to be inspected and collected and placed into a new drum | As required. | 4.6 | RSO or delegate |
| Area monitoring Surface contamination monitoring to occur throughout the drill program targeting vehicles, common areas and food preparation areas | Weekly | 4.7 | RSO or delegate |
| Readings higher than 370cps to be cleaned immediately. High readings in food preparation areas will be recorded as an incident | As required | 4.7 | RSO or delegate |

| | | | |
|---|---|---|---|
| All samples to be disposed of in accordance with the Toro procedure. | As required | 4.8 | Geology Manager |
| Pre and post drilling radiation checks to take place to ensure hole is rehabilitated correctly | Pre and post the installation of each drill hole. | 4.9 | Geology Manager |
| All vehicles to be washed prior to being able to leave site or move between sites. Radiation on vehicles should be less than 370cps or equivalent 0.4Bqm$^{-2}$. | Prior to leaving site. | 4.10 | Geology Manager |
| All waste to be disposed of at the Wiluna rubbish tip. Wastes shall be checked for radiation contamination and cleaned if required prior to disposal | Pre and post the installation of each drill hole. | 4.11 | Geology Manager |
| All incidents to be reported within 24 hours of them occurring | As required | 4.12 | Geology Manager |
| A site library shall be established at the Centipede core farm office that contains all procedures required to comply with this RMP. | At the commencement of each program. | 5 | RSO |
| Records of all monitoring and results will be maintained on site | During the program | 7.1 | RSO |
| A close out report will be sent to the DMP at the completion of each drill program outlining the work done, the results and analyzing any trends. | At the completion of the program. | 7.2 | RSO |

# 9 References

WIL-HSE-SOP-002 TLD Badge Monitoring

WIL-HSE-SOP-003 Personnel Hygiene and PPE Procedure

WIL-HSE_ SOP-045 calibration of personal dust pumps

WIL-HSE-SOP-046 Weighing filters on the microbalance

WIL-HSE-SOP-007 Personal Dust Sampling

WIL-HSE-SOP- 051 Set up and Use of the RAD7

WIL-HSE-SOP-010 transport of Geological Samples

WIL-HSE-SOP-004 Alpha Surface Surveys

WIL-HSE-SOP-032 Incident reporting and investigation

WIL-HSE-SOP-005 Clearance of Items from Site

WIL-HSE-SOP-001 Radiation Record Keeping

WIL-HSE-SOP-032 Incident reporting and investigation

Safe Transport of Radioactive Material 2008, Radiation Protection Series No.2