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Executive summary

This report summarises the results of a gamma dose rate survey conducted at the historic Sleisbeck mine in the Gunlom Land Trust in July 2008, after rehabilitation of the site was completed. 360 dose rate reading were taken over an approximately 7.6 ha area. The median terrestrial gamma dose rate measured across the area surveyed is 0.13 $\mu Gy \cdot hr^{-1}$. The arithmetic average is 0.23 $\mu Gy \cdot hr^{-1}$. The geometric mean, or 'typical value', is 0.14 $\mu Gy \cdot hr^{-1}$, similar to environmental background gamma dose rates measured in the area.

The remediation works have reduced the average terrestrial gamma dose rates across the Sleisbeck area by about threefold compared to the average pre rehabilitation dose rates in the area. Ninety-nine percent of the area surveyed exhibit terrestrial gamma dose rates below 1.25 $\mu Gy \cdot hr^{-1}$. This has resulted in a reduction of the annual doses received by the public accessing the area. Assuming that the area was occupied for one month during the dry season, effective doses from exposure to terrestrial gamma radiation are well below the annual dose constraint for the public for existing exposure situations of 10 mSv and lower than the 0.3 mSv dose constraint recommended in current ICRP (2007) guidelines for prolonged exposure from planned exposure situations.

Results of a gamma dose rate survey at the rehabilitated Sleisbeck mine, Northern Territory, Australia

A Bollhöfer & M Fawcett

1 Introduction

The old Sleisbeck mine was one of the many small abandoned uranium mine sites located in the South of the World Heritage listed Kakadu National Park, Northern Territory, Australia. It is located approximately 32 km south east of Guratba, or Coronation Hill, in the Katherine River catchment (Figure 1). It was one of the first uranium deposits discovered in the area by George Sleis, a Czechoslovakian geologist, in 1954 (Annabell 1977). The deposit was worked in 1957, but only ~600 tonnes of uranium ore were mined at Sleisbeck and 3 tonnes of U_3O_8 were produced (at Rum Jungle).

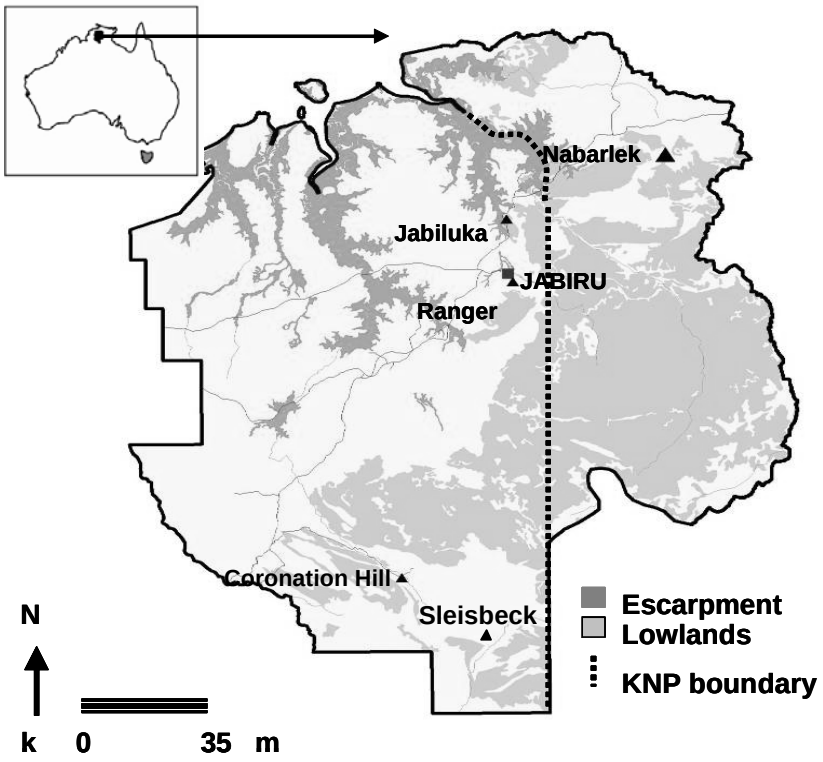

Figure 1 Location of the Sleisbeck mine in Kakadu National Park

The mine workings consisted of an open pit, approximately 100 m x 30 m in dimensions and three major waste rock dumps (‘truck dumps’) approximately 100 m to the south of the pit, which contained overburden and waste rock with low grade uranium mineralisation (Pfitzner et al 2003). When the deposit proved un-economic the pit, waste rock and mineralised material dumped to the south of the open pit, and the Sleisbeck camp, approximately 3 km west of the pit, were abandoned without any substantial effort to clean up or remediate the area.

In 1996 land granted to the Gunlom Aboriginal Land Trust, including the area of the old Sleisbeck mine, was leased to the Director of National Parks to be managed as part of Kakadu National Park. The lease agreement requires the Director to implement a plan of environmental rehabilitation of Guratba (Coronation Hill) and other mine sites and associated workings in the area so as to limit and where possible reverse the impact on the environment of any mining activities previously carried out (Supervising Scientist, 2008).

In 2002, an airborne gamma survey was flown of the area around Sleisbeck, as part of a program to characterise the extent and magnitude of radiological contamination in the Gunlom Land Trust area (Pfitzner et al 2003). This survey identified the truck dumps as the main source of the gamma signal measured aboard the plane. Ground truthing was conducted in June 2003 and July 2006 (Bollhöfer et al 2007), and found the areal extent of contamination to be ~1.2 ha. Maximum external gamma dose rates determined from the ground-truthed airborne gamma survey data were ~2.3 $\mu Gy \cdot hr^{-1}$ across a 7 m x 7 m area (Bollhöfer et al 2008). However, there were localised spots within the area where terrestrial gamma dose rates of above 5 $\mu Gy \cdot hr^{-1}$ were measured (Bollhöfer et al 2007). Trenches were also dug into the waste rock dumps, and the average height of mineralised material that was dumped on the topsoil was determined to be approximately 0.7 m. It was estimated that a total of ~8600 m^3 of material needed to be removed to clean up the area and that this would result in a reduction of external gamma dose rates to less than 0.3 $\mu Gy \cdot hr^{-1}$ (Bollhöfer et al 2008).

In May 2006, the Australian Government allocated $7.3 million over four years to the Director of National Parks to rehabilitate Guratba (Coronation Hill) and other mine sites and associated workings in the area. The rehabilitation program is being managed by Parks Australia, on behalf of the Director, and SSD is providing specialist assistance with the radiological assessment (Supervising Scientist, 2008). As part of the remediation and general clean up of the abandoned mine sites in the South Alligator River Valley, the rehabilitation of the former Sleisbeck mine site started in the dry season of 2007 and was finalised in December 2007.

The main works undertaken at Sleisbeck mine were in three phases (Waggitt & Fawcett 2008):

- Upgrading of the access track between Guratba and Sleisbeck.
- Pumping the water out (Figure 2) and backfilling of the pit with material from the truck dumps followed by placement of a cover layer of clean material sourced from nearby costean spoil piles and disused former tracks.
- Backfilling of selected costeans in the vicinity of the Sleisbeck pit that presented a potential safety hazard to humans and/or fauna.

The waste rock and low grade material from the truck dumps to the South of the pit was removed and dumped into the pit, and shaped to cover a mineralised area in the pit wall that exhibited very high external gamma dose rates of up to 38 $\mu Gy \cdot hr^{-1}$ (Tims & Ryan 1998) (Figure 3). Before remediation this hot spot area in the pit wall was only accessible by boat. The clean (ie background radioactivity) material for placement over the truck dump material was sourced from spoil piles located immediately to the east of the Sleisbeck pit. This material was spread across the backfilled pit surface in a single layer to a nominal depth of 700 mm (Figure 4). The second source of cover material was a disused track to the north-east of the pit. This provided material for the upper 300 mm layer (Waggitt & Fawcett 2008).

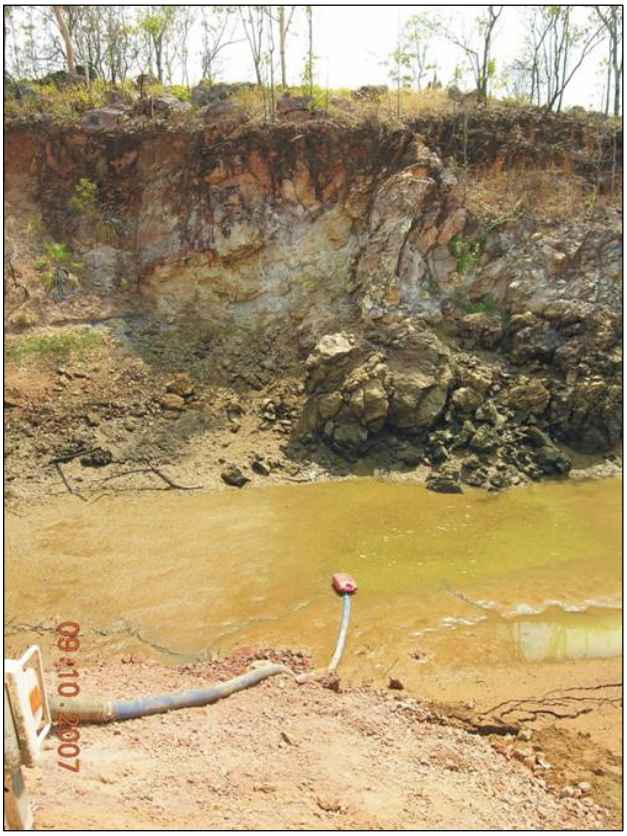

Figure 2 The pumped out Sleisbeck pit (photo: M Fawcett)

Figure 3 Sleisbeck pit during backfilling (photo: M Fawcett)

Once all the waste rock had been recovered from the old truck dumps, the footprint of each area was ripped to a depth of ~ 300 mm in order to break up compaction and provide a moisture retaining seedbed for subsequent revegetation (Figure 5). Revegetation of the site was undertaken in December 2007 using local provenance seed to the greatest extent possible (Waggitt & Fawcett 2008). Figure 6 shows a comparison view of the Sleisbeck pit before and after rehabilitation. Figure 7 shows an aerial view of the Sleisbeck pit area after rehabilitation.

Figure 4 Placing of the low radioactivity cover layer over the pit (photo: M Fawcett)

Figure 5 Ripping the footprint of the former truck dumps (photo: M Fawcett)

Figure 6 View of the Sleisbeck open pit before (left, photo by A Bollhöfer) and after (right, photo by M Fawcett) rehabilitation

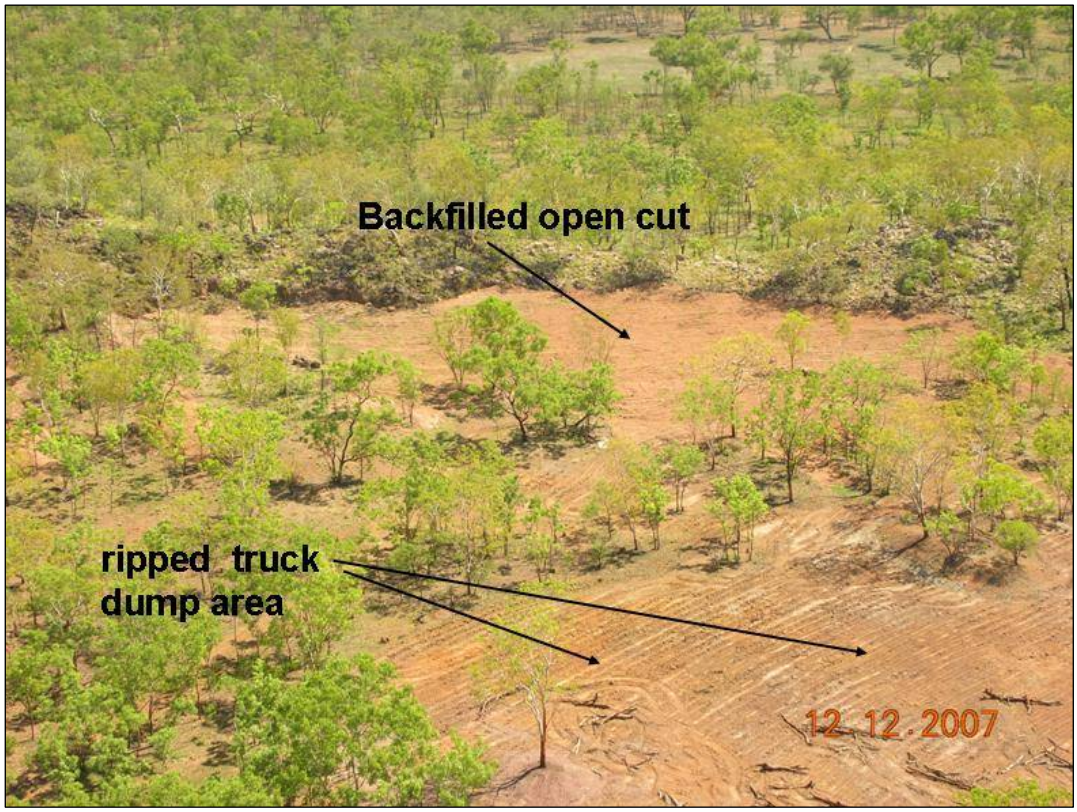

Figure 7 Aerial view of the rehabilitated Sleisbeck pit and the ripped truck dump area (photo by M Fawcett)

A ground gamma survey was conducted of the area in July 2008, to determine average external gamma dose rates on site after rehabilitation. Three conventional Geiger Müller tubes (GM680-Environmental dose rate meters) were used for the survey. This report summarises the result of the gamma dose rate survey, and provides a statistical analysis of the data. Its primary purpose is as a data summary to demonstrate that the rehabilitation objective, to limit and where possible reverse the impact on the environment of any historic mining activities carried out in the Gunlom Land Trust area, has been met.

The rehabilitation of the historic mine sites in the South Alligator River valley is regarded as an intervention (NHMRC 1995). This is because the sources of exposure and exposure pathways were already present due to earlier practices that preceded regulatory control, it is

an existing exposure situation. For these situations it is recommended that doses be optimized below a dose constraint. In ICRP 82 (1999), paragraph 4.1, it is recommended that:

> An existing annual dose approaching about 10 mSv may be used as a generic reference level below which intervention is not likely to be justifiable for some prolonged exposure situation.

Although annual doses for people in the South Alligator River valley from historic mining activities are well below this dose constraint (Bollhöfer et al 2002), the radiological standard for the South Alligator River Valley rehabilitation has been set at a threshold external gamma dose rate of 1.25 $\mu Gy \cdot hr^{-1}$ (±20 %), following discussion between Parks Australia, OSS, Fawcett Mine Rehabilitation Services and O'Kane Consultants in 2008.

2 Methods

The gamma survey of the rehabilitated Sleisbeck mine area was conducted on 9–10 July 2008. Three dose rate instruments of the same type and model were used for the measurement of the external gamma dose rates. The specifications of the instruments are given below (Esparon 2007).

Description:	Environmental dose rate meter
Manufacturer:	Mini-Instruments
Model:	6–80
Serial Number:	01065
Serial Number:	01049
Serial Number:	01064
Sensitivity:	18 counts/second per 1 $\mu Gy \cdot hr^{-1}$within the energy range of 55 keV to 2 MeV with a deviation of less than 25%

The instrument with serial number 01065 (GM 1) was calibrated on 21 April 2008 by Australian Radiation Services Pty Ltd, by testing the response of the monitor to a collimated beam of gamma rays from a ^{137}Cs source (Figures 8 & 9). The results obtained in the calibration were typical for this type of instrument and complied with the manufacturer's specifications. GM tube 3 (serial number 01049) and GM tube 2 (serial number 01064) were cross calibrated against GM tube 1, and measured count rates were corrected.

Gamma dose rates were measured in the field at a height of 1 m above ground. Count rates were registered for a period of 100 seconds and external gamma dose rates were determined using the calibration regression fits below.

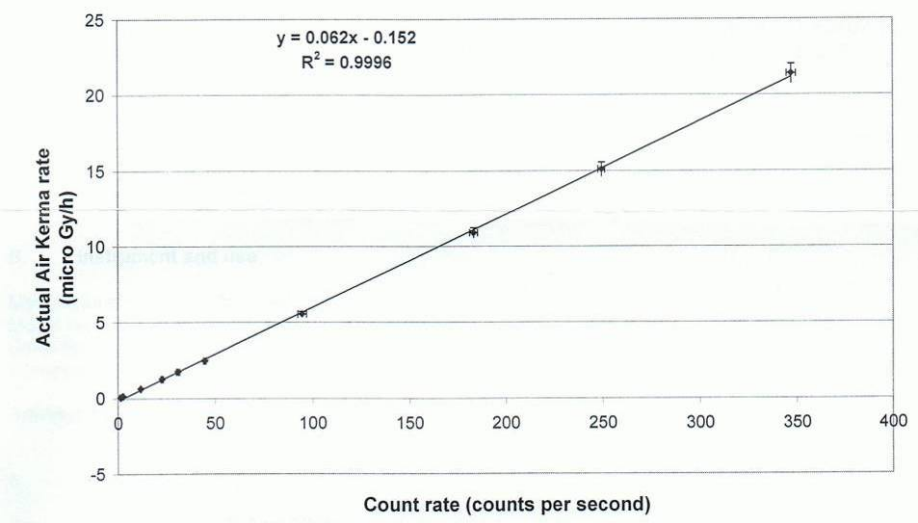

Figure 8 Response of the Mini Instruments Environmental survey monitor Model 6–80/MC–71 digital scalar to ^{137}Cs, 0–20 µGy·h^{-1} range – April 2008

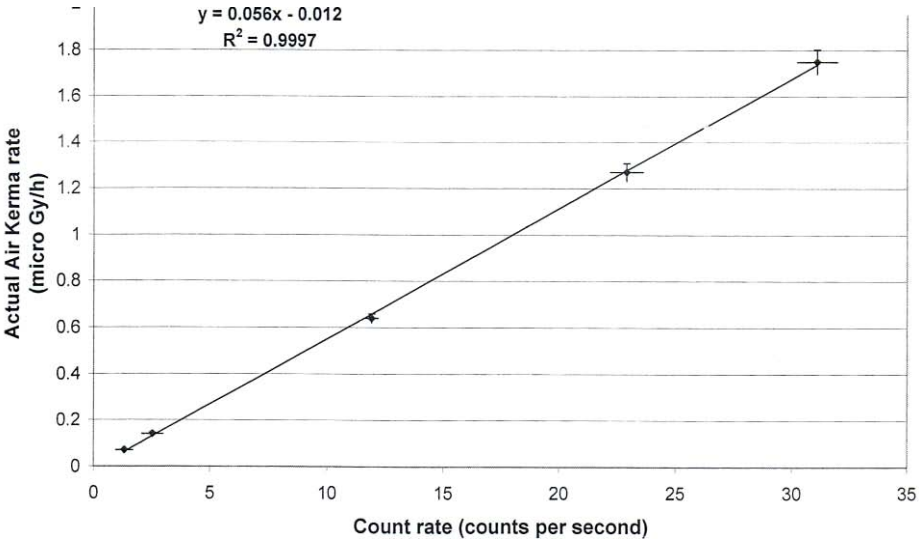

Figure 9 Response of the Mini Instruments Environmental survey monitor Model 6–80/MC–71 digital scalar to ^{137}Cs, 0-2 µGy·h^{-1} range – April 2008

3 Results

Tables A1 and A2 in the Appendix summarise eastings, northings, counts and comments recorded on the fieldsheets, and the results of the dose rate measurements at the Sleisbeck mine, respectively. Data were collected in the WGS84 coordinate system within Zone 53 and it is important to note that the precision of the GPS is typically around ±10 m. Approximately 7.6 ha were surveyed.

Figure 10 shows the locations and magnitude of the individual measurements overlaid on the Quickbird satellite image acquired in 2003, before rehabilitation of the mine site (notice that the pit is still present and filled with water).

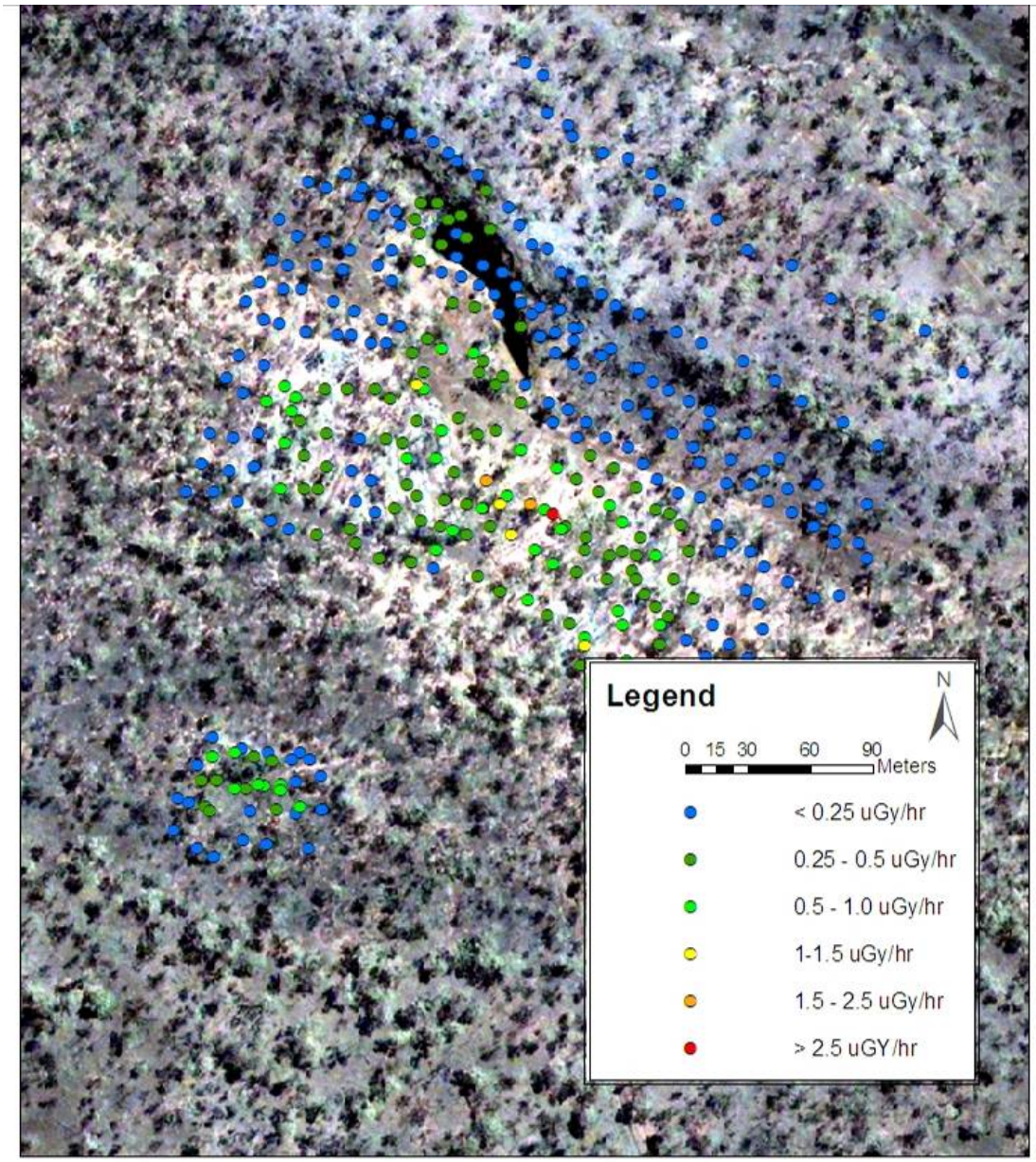

Figure 10 Gamma dose rates [µGy·hr^{-1}] measured at the rehabilitated Sleisbeck mine overlaid on Quickbird data acquired in August 2003 (before mine rehabilitation)

Marten (1992) has previously determined the dose rate from cosmic radiation in the Alligator Rivers Region to 0.07 µGy·hr^{-1}. This value needs to be subtracted from the above measurements to determine terrestrial gamma dose rates.

Figure 11 shows a histogram and probability plot of the terrestrial gamma dose rates measured at Sleisbeck after rehabilitation.

The median terrestrial gamma dose rate measured across the area surveyed (7.6 ha) is 0.13 µGy·hr^{-1}. Geometric and arithmetic averages are 0.14 and 0.23 µGy·hr^{-1}, respectively.

The probability plot shows that 99% of the area surveyed exhibited terrestrial gamma dose rates below 1.25 µGy·hr^{-1} assuming a lognormal distribution of the terrestrial gamma dose rates. There is a small area immediately to the east of the old access track to the rehabilitated pit of approximately 4 m^2 in size, where terrestrial gamma dose rates of above 3 µGy·hr^{-1} were measured. This area was part of the old track to the Sleisbeck pit, and mineralised

material may have been used as road fill. This would also explain the occasional high readings obtained on the access track. However, this area is very small and takes up less than 0.05 per mill of the total area surveyed.

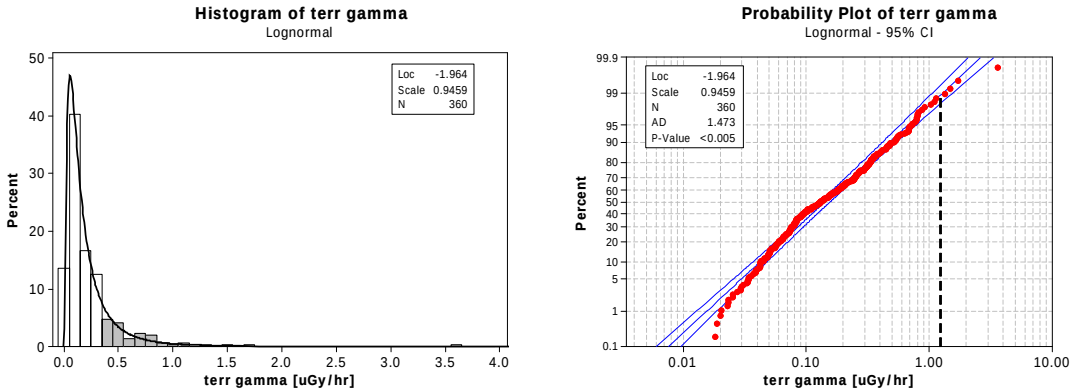

Figure 11 Histogram and probability plot of terrestrial gamma dose rates at Sleisbeck post rehabilitation. The probability plot shows that ~99% of the area surveyed exhibits terrestrial gamma dose rates below the threshold value of 1.25 µGy·hr^{-1}.

4 Conclusion

The rehabilitation of the old truck dumps and pit area at the Sleisbeck mine has reduced the average terrestrial gamma dose rates in the area by about threefold, from an average of between 0.57–0.76 µGy·hr^{-1} pre-rehabilitation (Bollhöfer et al 2008) to 0.23 µGy·hr^{-1} post rehabilitation. Typical dose rates measured are 0.14 µGy·hr^{-1}, indistinguishable from environmental background dose rates reported in the area, which range from 0.06–0.15 µGy·hr^{-1} (Tims et al 2000, Waggitt 2004, Bollhöfer et al 2008).

Ninety-nine percent of the area surveyed exhibits dose rates below the threshold value of 1.25 µGy·hr^{-1} (±20%). However, there are a couple of small areas where dose rates measured on ground are above this threshold value. These areas are close to or on existing tracks leading to the backfilled pit, indicating that some mineralised material may have been used as road fill when the tracks were built in the 1950s.

Assuming the unlikely scenario that the site is occupied for one month per year in the dry season, the average terrestrial gamma dose rate on site will lead to an effective dose from exposure to terrestrial gamma radiation of 0.11 and 0.13 mSv for an adult and child, respectively, using conversion factors of 0.69 Sv·Gy^{-1} (adults) and 0.79 Sv·Gy^{-1} (child) given in Table VIII of Annex A of UNSCEAR (2000). Approximately half of this dose originates from exposure to background radiation. These doses are not only well below the dose constraint of 10 mSv per year for existing situations, recommended by the International Commission on Radiation Protection (ICRP 1999), but also below the ICRP's most recent recommendations (ICRP 2007) of a dose constraint of about 0.3 mSv for prolonged exposure from planned exposure situations.

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Appendix A1 Eastings, northings, counts and comments recorded on the fieldsheets

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM1	WPT001	264869	8475637	240	Environmental
GM1	WPT002	264880	8475635	285	“
GM1	WPT003	264892	8475637	290	Env edge
GM1	WPT004	264905	8475632	1360	Edge of dump
GM1	WPT005	264914	8475626	531	Dump I + II
GM1	WPT006	264925	8475621	822	“
GM1	WPT007	264937	8475619	402	“
GM1	WPT008	264946	8475614	378	“
GM1	WPT009	264963	8475612	514	“
GM1	WPT010	264968	8475607	489	Dump 1
GM1	WPT011	264981	8475605	612	Dump I + II
GM1	WPT012	264992	8475603	678	Dump I / East edge
GM1	WPT013	264999	8475601	1605	Edge next to track
GM1	WPT014	265008	8475603	1978	On track
GM1	WPT015	265033	8475598	6137	Pad next to track
GM1	WPT016	265037	8475591	1269	
GM1	WPT017	265048	8475581	778	WRD III, not rehab
GM1	WPT018	265060	8475578	622	WRD III
GM1	WPT019	265071	8475571	705	WRD III edge
GM1	WPT020	265082	8475554	723	WRD III rehab
GM1	WPT021	265084	8475545	1160	End of dump
GM1	WPT022	265084	8475536	793	“
GM1	WPT023	265095	8475532	461	
GM1	WPT024	265104	8475519	396	
GM1	WPT025	265115	8475510	373	Environmental
GM1	WPT026	265122	8475499	367	“
GM1	WPT027	265119	8475514	342	“
GM1	WPT028	265113	8475521	354	“
GM1	WPT029	265106	8475530	377	
GM1	WPT030	265097	8475538	417	
GM1	WPT031	265088	8475549	509	
GM1	WPT032	265077	8475560	583	
GM1	WPT033	265073	8475567	698	
GM1	WPT034	265073	8475578	708	Edge of dump 3, not rehab
GM1	WPT035	265066	8475580	725	“
GM1	WPT036	265049	8475587	693	
GM1	WPT037	265039	8475592	883	Dump / rehab
GM1	WPT038	265029	8475600	1435	
GM1	WPT039	265022	8475603	2766	Grey material / ‘pad’
GM1	WPT040	265011	8475607	1543	
GM1	WPT041	265001	8475614	3190	On track
GM1	WPT042	264986	8475618	751	Within dump II
GM1	WPT043	264977	8475625	940	
GM1	WPT044	264963	8475625	943	Heap around tree
GM1	WPT045	264961	8475632	624	Dump I
GM1	WPT046	264953	8475634	492	“
GM1	WPT047	264941	8475634	411	“

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM1	WPT048	264925	8475637	775	
GM1	WPT049	264912	8475643	574	
GM1	WPT050	264908	8475647	1562	On rubble pile around tree
GM1	WPT051	264896	8475652	1076	Edge of dump I
GM1	WPT052	264885	8475656	311	Env
GM1	WPT053	264877	8475663	289	“
GM1	WPT054	264902	8475739	255	“
GM1	WPT055	264911	8475731	262	“
GM1	WPT056	264924	8475728	278	Disturbed
GM1	WPT057	264936	8475724	285	
GM1	WPT058	264956	8475724	392	
GM1	WPT059	264969	8475719	496	
GM1	WPT060	264980	8475714	418	Edge of pit
GM1	WPT061	264989	8475712	276	Above pit
GM1	WPT062	264998	8475708	340	“
GM1	WPT063	265005	8475703	294	“
GM1	WPT064	265018	8475699	308	“
GM1	WPT065	265023	8475694	341	
GM1	WPT066	265034	8475685	321	Hill / rocks
GM1	WPT067	265043	8475681	295	“
GM1	WPT068	265056	8475674	248	“
GM1	WPT069	265072	8475668	245	“
GM1	WPT070	265081	8475661	261	“
GM1	WPT071	265098	8475652	271	“
GM1	WPT072	265107	8475641	233	“
GM1	WPT073	265118	8475624	228	
GM1	WPT074	265134	8475619	257	
GM1	WPT075	265145	8475610	199	
GM1	WPT076	265161	8475601	206	
GM1	WPT077	265168	8475590	228	
GM1	WPT078	265179	8475584	191	
GM1	WPT079	265183	8475603	217	Rocky slope / hill
GM1	WPT080	265159	8475612	187	“
GM1	WPT081	265141	8475625	227	“
GM1	WPT082	265125	8475637	236	“
GM1	WPT083	265108	8475647	235	“
GM1	WPT084	265088	8475657	281	“
GM1	WPT085	265074	8475668	247	“
GM1	WPT086	265061	8475677	222	“
GM1	WPT087	265045	8475687	252	“
GM1	WPT088	265043	8475687	255	“
GM1	WPT089	265036	8475696	316	“
GM1	WPT090	265027	8475697	370	Edge of hill / pit
GM1	WPT091	265016	8475707	328	Above pit
GM1	WPT092	265009	8475714	271	“
GM1	WPT093	265000	8475717	292	“
GM1	WPT094	264987	8475721	301	“
GM1	WPT095	264980	8475727	591	“
GM1	WPT096	264969	8475732	565	Top of west pit wall
GM1	WPT097	264960	8475736	442	Disturbed area
GM1	WPT098	264947	8475741	383	

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM1	WPT099	264940	8475750	358	Disturbed area
GM1	WPT100	264925	8475754	309	Rel undisturbed
GM1	WPT101	264916	8475757	329	Env
GM1	WPT102	264970	8475747	631	In pit
GM1	WPT103	264983	8475739	636	“
GM1	WPT104	264992	8475730	662	“
GM1	WPT105	265003	8475734	602	On top of gamma hot spot in wall
GM1	WPT106	264989	8475741	732	Next to pit wall
GM1	WPT107	264922	8475473	302	Undisturbed
GM1	WPT108	264910	8475470	392	“
GM1	WPT109	264903	8475469	1117	
GM1	WPT110	264895	8475468	1389	
GM1	WPT111	264886	8475467	692	
GM1	WPT112	264872	8475471	838	
GM1	WPT113	264865	8475471	742	
GM1	WPT114	264867	8475458	708	
GM1	WPT115	264859	8475460	245	
GM1	WPT116	264881	8475467	1126	
GM1	WPT117	264892	8475469	1307	
GM1	WPT118	264903	8475466	960	
GM1	WPT119	264912	8475458	1522	
GM1	WPT120	264923	8475457	262	
GM1	WPT121	264916	8475438	295	
GM1	WPT122	264896	8475440	329	
GM1	WPT123	264885	8475442	263	
GM1	WPT124	264968	8475660	6478	
GM2	WPT002	264865	8475622	118	
GM2	WPT003	264878	8475619	217	
GM2	WPT004	264890	8475621	273	
GM2	WPT005	264903	8475610	1103	
GM2	WPT006	264914	8475610	652	
GM2	WPT007	264921	8475610	538	
GM2	WPT008	264939	8475604	383	
GM2	WPT009	264948	8475599	402	
GM2	WPT010	264957	8475601	703	Tree mound
GM2	WPT011	264970	8475595	782	
GM2	WPT012	264979	8475592	625	
GM2	WPT013	264985	8475590	1279	Tree mound
GM2	WPT014	264992	8475588	614	
GM2	WPT015	265003	8475592	677	
GM2	WPT016	265013	8475588	2344	track
GM2	WPT017	265024	8475581	1328	
GM2	WPT018	265033	8475574	1460	
GM2	WPT019	265044	8475570	617	
GM2	WPT020	265059	8475567	709	
GM2	WPT021	265064	8475552	1005	
GM2	WPT022	265066	8475545	1226	
GM2	WPT023	265068	8475528	875	
GM2	WPT024	265079	8475523	531	
GM2	WPT025	265093	8475523	429	environment
GM2	WPT026	265099	8475506	383	

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM2	WPT027	265110	8475499	330	
GM2	WPT028	265119	8475492	350	
GM2	WPT029	265126	8475529	363	
GM2	WPT030	265117	8475536	302	new line
GM2	WPT031	265109	8475545	350	
GM2	WPT032	265100	8475558	463	
GM2	WPT033	265091	8475567	568	
GM2	WPT034	265082	8475578	860	
GM2	WPT035	265075	8475587	689	
GM2	WPT036	265066	8475594	932	
GM2	WPT037	265060	8475602	877	
GM2	WPT038	265055	8475609	751	
GM2	WPT039	265044	8475615	477	
GM2	WPT040	265035	8475620	981	
GM2	WPT041	265018	8475629	1565	
GM2	WPT042	265006	8475638	559	
GM2	WPT043	264997	8475636	590	track
GM2	WPT044	264988	8475644	620	
GM2	WPT045	264980	8475638	1425	Tree mound
GM2	WPT046	264968	8475643	794	Big hill
GM2	WPT047	264955	8475653	814	
GM2	WPT048	264948	8475658	681	
GM2	WPT049	264935	8475658	730	
GM2	WPT050	264924	8475658	510	
GM2	WPT051	264910	8475654	1013	
GM2	WPT052	264905	8475659	1638	
GM2	WPT053	264895	8475669	295	environment
GM2	WPT054	264883	8475674	274	
GM2	WPT055	264899	8475720	258	new line
GM2	WPT056	264906	8475717	222	
GM2	WPT057	264920	8475717	285	
GM2	WPT058	264933	8475715	302	
GM2	WPT059	264949	8475717	321	
GM2	WPT060	264956	8475710	386	
GM2	WPT061	264967	8475702	437	
GM2	WPT062	264985	8475699	472	edge of pit
GM2	WPT063	264996	8475697	478	
GM2	WPT064	265007	8475694	417	
GM2	WPT065	265018	8475688	740	
GM2	WPT066	265027	8475683	393	
GM2	WPT067	265034	8475675	389	
GM2	WPT068	265043	8475670	342	edge of pit
GM2	WPT069	265051	8475663	268	
GM2	WPT070	265069	8475650	243	
GM2	WPT071	265069	8475650	247	
GM2	WPT072	265078	8475646	252	
GM2	WPT073	265090	8475637	229	
GM2	WPT074	265100	8475630	242	
GM2	WPT075	265103	8475623	221	
GM2	WPT076	265116	8475613	199	
GM2	WPT077	265127	8475612	233	

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM2	WPT078	265136	8475604	195	
GM2	WPT079	265147	8475599	185	
GM2	WPT080	265158	8475592	215	
GM2	WPT081	265168	8475584	231	track
GM2	WPT082	265183	8475577	226	
GM2	WPT083	265229	8475666	205	
GM2	WPT084	265211	8475686	197	
GM2	WPT085	265189	8475693	181	
GM2	WPT086	265166	8475701	184	
GM2	WPT087	265147	8475717	198	
GM2	WPT088	265126	8475724	190	
GM2	WPT089	265111	8475739	192	
GM2	WPT090	265093	8475746	174	
GM2	WPT091	265084	8475753	166	
GM2	WPT092	265080	8475761	215	
GM2	WPT093	265069	8475768	192	
GM2	WPT094	265057	8475771	167	
GM2	WPT095	265042	8475779	206	
GM2	WPT096	265040	8475784	174	
GM2	WPT097	265030	8475790	205	
GM2	WPT098	265028	8475808	219	
GM2	WPT099	265020	8475814	206	
GM3	WPT001	264858	8475609	245	New line
GM3	WPT002	264871	8475609	249	
GM3	WPT003	264882	8475604	268	
GM3	WPT004	264898	8475595	434	
GM3	WPT005	264907	8475591	417	
GM3	WPT006	264920	8475588	493	
GM3	WPT007	264930	8475582	471	
GM3	WPT008	264936	8475591	862	Large mound of dirt around standing trees
GM3	WPT009	264939	8475584	580	
GM3	WPT010	264950	8475577	561	
GM3	WPT011	264965	8475575	478	
GM3	WPT012	264976	8475572	432	
GM3	WPT013	264977	8475581	987	Large mound of dirt around standing trees
GM3	WPT014	264983	8475579	461	
GM3	WPT015	264997	8475568	539	
GM3	WPT016	265008	8475561	518	
GM3	WPT017	265021	8475557	1001	Built up dirt area
GM3	WPT018	265030	8475550	874	
GM3	WPT019	265041	8475546	736	
GM3	WPT020	265048	8475539	1125	Cleared land
GM3	WPT021	265048	8475535	2112	Small mound of dirt around standing tree
GM3	WPT022	265046	8475526	750	Cleared land
GM3	WPT023	265050	8475517	1151	Small mound of dirt
GM3	WPT024	265061	8475510	630	Cleared land
GM3	WPT025	265063	8475504	396	Undisturbed bushland
GM3	WPT026	265070	8475495	345	“
GM3	WPT027	265079	8475489	314	“
GM3	WPT028	265090	8475480	295	Dugout channel
GM3	WPT029	265103	8475477	328	Undisturbed bushland

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM3	WPT030	265133	8475543	288	New line
GM3	WPT031	265131	8475555	294	Undisturbed bushland
GM3	WPT032	265125	8475562	289	“
GM3	WPT033	265113	8475580	348	“
GM3	WPT034	265098	8475580	593	“
GM3	WPT035	265094	8475593	597	Cleared land
GM3	WPT036	265089	8475598	725	“
GM3	WPT037	265082	8475600	685	“
GM3	WPT038	265073	8475611	583	Edge of cleared area
GM3	WPT039	265062	8475620	479	
GM3	WPT040	265051	8475626	486	
GM3	WPT041	265044	8475635	435	
GM3	WPT042	265033	8475642	373	
GM3	WPT043	265027	8475646	462	
GM3	WPT044	265018	8475651	499	
GM3	WPT045	265006	8475660	519	
GM3	WPT046	264998	8475666	604	
GM3	WPT047	264984	8475666	466	
GM3	WPT048	264971	8475658	1008	Large mound of dirt around standing trees
GM3	WPT049	264971	8475666	597	
GM3	WPT050	264966	8475675	525	
GM3	WPT051	264953	8475680	409	
GM3	WPT052	264946	8475680	296	
GM3	WPT053	264937	8475684	312	
GM3	WPT054	264930	8475684	283	
GM3	WPT055	264915	8475685	303	
GM3	WPT056	264902	8475689	276	
GM3	WPT057	264895	8475691	234	
GM3	WPT058	264886	8475700	237	New line
GM3	WPT059	264893	8475709	258	
GM3	WPT060	264904	8475706	278	
GM3	WPT061	264913	8475706	275	
GM3	WPT062	264928	8475700	309	
GM3	WPT063	264938	8475695	320	
GM3	WPT064	264951	8475691	360	
GM3	WPT065	264960	8475688	451	
GM3	WPT066	264973	8475682	536	Cleared land
GM3	WPT067	264980	8475677	996	Large mound of dirt around standing trees
GM3	WPT068	264995	8475675	1360	Cleared land / edge of old pit
GM3	WPT069	265000	8475671	770	“
GM3	WPT070	265009	8475664	600	“
GM3	WPT071	265020	8475660	375	Bushy area
GM3	WPT072	265031	8475651	345	Cleared land
GM3	WPT073	265040	8475648	390	“
GM3	WPT074	265049	8475642	320	Bushy, rocky area on hill slope
GM3	WPT075	265058	8475635	279	“
GM3	WPT076	265069	8475630	261	“
GM3	WPT077	265076	8475622	293	“
GM3	WPT078	265083	8475615	277	“
GM3	WPT079	265093	8475608	328	Edge of cleared area
GM3	WPT080	265103	8475606	341	“

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM3	WPT081	265111	8475593	365	“
GM3	WPT082	265118	8475584	305	Undisturbed bushland
GM3	WPT083	265127	8475580	264	“
GM3	WPT084	265134	8475573	252	“
GM3	WPT085	265145	8475566	278	“
GM3	WPT086	265158	8475558	251	“
GM3	WPT087	265170	8475559	268	“
GM3	WPT088	265188	8475631	206	New line / line follows highest point of hill
GM3	WPT089	265172	8475642	221	Highest point of hill
GM3	WPT090	265152	8475652	215	“
GM3	WPT091	265139	8475662	183	“
GM3	WPT092	265124	8475671	191	“
GM3	WPT093	265104	8475680	222	“
GM3	WPT094	265092	8475685	228	“
GM3	WPT095	265074	8475694	201	“
GM3	WPT096	265063	8475698	215	“
GM3	WPT097	265056	8475703	238	“
GM3	WPT098	265047	8475709	270	“
GM3	WPT099	265037	8475714	279	“
GM3	WPT100	265030	8475725	324	“
GM3	WPT101	265023	8475727	429	“
GM3	WPT102	265017	8475736	291	“
GM3	WPT103	265012	8475745	270	“
GM3	WPT104	265001	8475753	587	“
GM3	WPT105	264997	8475760	317	“
GM3	WPT106	264987	8475767	281	“
GM3	WPT107	264983	8475771	275	“
GM3	WPT108	264976	8475776	227	“
GM3	WPT109	264965	8475780	306	“
GM3	WPT110	264954	8475785	218	“
GM3	WPT111	264945	8475787	236	“
GM3	WPT112	264934	8475761	295	bottom of crest leading towards pit / east
GM3	WPT113	264942	8475754	289	“
GM3	WPT114	264951	8475750	426	“
GM3	WPT115	264958	8475743	380	“
GM3	WPT116	264967	8475739	489	“
GM3	WPT117	264978	8475747	588	“
GM3	WPT118	264987	8475732	280	New line
GM3	WPT119	264912	8475484	287	
GM3	WPT120	264899	8475480	542	
GM3	WPT121	264890	8475482	706	
GM3	WPT122	264881	8475484	1587	Large mound of dirt around standing trees
GM3	WPT123	264870	8475482	1354	
GM3	WPT124	264863	8475478	354	
GM3	WPT125	264870	8475491	283	New line
GM3	WPT126	264884	8475486	307	
GM3	WPT127	264897	8475484	257	
GM3	WPT128	264908	8475481	234	
GM3	WPT129	264917	8475481	288	
GM3	WPT130	264910	8475455	300	New line
GM3	WPT131	264901	8475457	490	

GM tube	WPT	Easting	Northing	counts per 100 sec	comments
GM3	WPT132	264888	8475456	388	
GM3	WPT133	264876	8475456	468	
GM3	WPT134	264869	8475456	622	
GM3	WPT135	264854	8475462	237	
GM3	WPT136	264852	8475447	208	New line
GM3	WPT137	264863	8475438	222	
GM3	WPT138	264871	8475434	220	

Appendix A2 Results of the gamma dose rate measurements

	Waypoint	Eastings	Northings	γ-dose rate $\mu Gy \cdot hr^{-1}$	± $\mu Gy \cdot hr^{-1}$
GM1	WPT001	264868.7	8475637	0.12	0.01
GM1	WPT002	264879.5	8475635	0.15	0.01
GM1	WPT003	264892.1	8475637	0.15	0.01
GM1	WPT004	264904.8	8475632	0.75	0.02
GM1	WPT005	264913.9	8475626	0.29	0.01
GM1	WPT006	264924.7	8475621	0.45	0.02
GM1	WPT007	264937.4	8475619	0.21	0.01
GM1	WPT008	264946.4	8475614	0.20	0.01
GM1	WPT009	264962.7	8475612	0.28	0.01
GM1	WPT010	264968.1	8475607	0.26	0.01
GM1	WPT011	264980.8	8475605	0.33	0.01
GM1	WPT012	264991.6	8475603	0.37	0.01
GM1	WPT013	264998.8	8475601	0.89	0.02
GM1	WPT014	265007.8	8475603	1.10	0.02
GM1	WPT015	265033.1	8475598	3.65	0.05
GM1	WPT016	265036.8	8475591	0.70	0.02
GM1	WPT017	265047.7	8475581	0.42	0.02
GM1	WPT018	265060.3	8475578	0.34	0.01
GM1	WPT019	265071.2	8475571	0.38	0.01
GM1	WPT020	265082.2	8475554	0.39	0.02
GM1	WPT021	265084.1	8475545	0.64	0.02
GM1	WPT022	265084.2	8475536	0.43	0.02
GM1	WPT023	265095	8475532	0.25	0.01
GM1	WPT024	265104.1	8475519	0.21	0.01
GM1	WPT025	265115	8475510	0.20	0.01
GM1	WPT026	265122.3	8475499	0.19	0.01
GM1	WPT027	265118.6	8475514	0.18	0.01
GM1	WPT028	265113.1	8475521	0.19	0.01
GM1	WPT029	265105.8	8475530	0.20	0.01
GM1	WPT030	265096.8	8475538	0.22	0.01
GM1	WPT031	265087.6	8475549	0.27	0.01
GM1	WPT032	265076.7	8475560	0.31	0.01
GM1	WPT033	265073.1	8475567	0.38	0.01
GM1	WPT034	265073	8475578	0.38	0.01
GM1	WPT035	265065.7	8475580	0.39	0.02
GM1	WPT036	265049.4	8475587	0.38	0.01
GM1	WPT037	265038.6	8475592	0.48	0.02
GM1	WPT038	265029.5	8475600	0.79	0.02
GM1	WPT039	265022.2	8475603	1.54	0.03
GM1	WPT040	265011.4	8475607	0.85	0.02
GM1	WPT041	265000.5	8475614	1.77	0.03
GM1	WPT042	264986.1	8475618	0.41	0.02
GM1	WPT043	264977	8475625	0.51	0.02
GM1	WPT044	264962.6	8475625	0.52	0.02
GM1	WPT045	264960.7	8475632	0.34	0.01
GM1	WPT046	264953.5	8475634	0.26	0.01
GM1	WPT047	264940.8	8475634	0.22	0.01
GM1	WPT048	264924.6	8475637	0.42	0.02
GM1	WPT049	264911.9	8475643	0.31	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM1	WPT050	264908.3	8475647	0.86	0.02
GM1	WPT051	264895.6	8475652	0.59	0.02
GM1	WPT052	264884.8	8475656	0.16	0.01
GM1	WPT053	264877.5	8475663	0.15	0.01
GM1	WPT054	264902	8475739	0.13	0.01
GM1	WPT055	264911.1	8475731	0.13	0.01
GM1	WPT056	264923.8	8475728	0.14	0.01
GM1	WPT057	264936.4	8475724	0.15	0.01
GM1	WPT058	264956.2	8475724	0.21	0.01
GM1	WPT059	264968.9	8475719	0.27	0.01
GM1	WPT060	264979.8	8475714	0.22	0.01
GM1	WPT061	264988.8	8475712	0.14	0.01
GM1	WPT062	264997.9	8475708	0.18	0.01
GM1	WPT063	265005.1	8475703	0.15	0.01
GM1	WPT064	265017.8	8475699	0.16	0.01
GM1	WPT065	265023.2	8475694	0.18	0.01
GM1	WPT066	265034.1	8475685	0.17	0.01
GM1	WPT067	265043.2	8475681	0.15	0.01
GM1	WPT068	265055.9	8475674	0.13	0.01
GM1	WPT069	265072.1	8475668	0.13	0.01
GM1	WPT070	265081.2	8475661	0.13	0.01
GM1	WPT071	265097.5	8475652	0.14	0.01
GM1	WPT072	265106.6	8475641	0.12	0.01
GM1	WPT073	265117.6	8475624	0.12	0.01
GM1	WPT074	265133.9	8475619	0.13	0.01
GM1	WPT075	265144.8	8475610	0.10	0.01
GM1	WPT076	265161.1	8475601	0.10	0.01
GM1	WPT077	265168.4	8475590	0.12	0.01
GM1	WPT078	265179.3	8475584	0.09	0.01
GM1	WPT079	265182.7	8475603	0.11	0.01
GM1	WPT080	265159.2	8475612	0.09	0.01
GM1	WPT081	265141	8475625	0.12	0.01
GM1	WPT082	265124.7	8475637	0.12	0.01
GM1	WPT083	265108.4	8475647	0.12	0.01
GM1	WPT084	265088.5	8475657	0.15	0.01
GM1	WPT085	265073.9	8475668	0.13	0.01
GM1	WPT086	265061.2	8475677	0.11	0.01
GM1	WPT087	265044.9	8475687	0.13	0.01
GM1	WPT088	265043.1	8475687	0.13	0.01
GM1	WPT089	265035.8	8475696	0.16	0.01
GM1	WPT090	265026.8	8475697	0.20	0.01
GM1	WPT091	265015.9	8475707	0.17	0.01
GM1	WPT092	265008.6	8475714	0.14	0.01
GM1	WPT093	264999.6	8475717	0.15	0.01
GM1	WPT094	264986.9	8475721	0.16	0.01
GM1	WPT095	264979.7	8475727	0.32	0.01
GM1	WPT096	264968.8	8475732	0.30	0.01
GM1	WPT097	264959.7	8475736	0.24	0.01
GM1	WPT098	264947.1	8475741	0.20	0.01
GM1	WPT099	264939.8	8475750	0.19	0.01
GM1	WPT100	264925.3	8475754	0.16	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM1	WPT101	264916.3	8475757	0.17	0.01
GM1	WPT102	264970.5	8475747	0.34	0.01
GM1	WPT103	264983.2	8475739	0.34	0.01
GM1	WPT104	264992.2	8475730	0.36	0.01
GM1	WPT105	265003	8475734	0.33	0.01
GM1	WPT106	264988.5	8475741	0.40	0.02
GM1	WPT107	264922.5	8475473	0.16	0.01
GM1	WPT108	264909.9	8475470	0.21	0.01
GM1	WPT109	264902.7	8475469	0.61	0.02
GM1	WPT110	264895.5	8475468	0.77	0.02
GM1	WPT111	264886.5	8475467	0.38	0.01
GM1	WPT112	264872	8475471	0.46	0.02
GM1	WPT113	264864.8	8475471	0.40	0.02
GM1	WPT114	264866.7	8475458	0.38	0.01
GM1	WPT115	264859.5	8475460	0.13	0.01
GM1	WPT116	264881	8475467	0.62	0.02
GM1	WPT117	264891.8	8475469	0.72	0.02
GM1	WPT118	264902.7	8475466	0.53	0.02
GM1	WPT119	264911.8	8475458	0.84	0.02
GM1	WPT120	264922.6	8475457	0.13	0.01
GM1	WPT121	264915.6	8475438	0.15	0.01
GM1	WPT122	264895.7	8475440	0.17	0.01
GM1	WPT123	264884.9	8475442	0.14	0.01
GM1	WPT124	264967.6	8475660	1.20	0.02
GM2	WPT002	264865.2	8475622	0.06	0.01
GM2	WPT003	264877.9	8475619	0.12	0.01
GM2	WPT004	264890.5	8475621	0.15	0.01
GM2	WPT005	264903.2	8475610	0.66	0.03
GM2	WPT006	264914	8475610	0.38	0.02
GM2	WPT007	264921.2	8475610	0.32	0.02
GM2	WPT008	264939.3	8475604	0.22	0.01
GM2	WPT009	264948.4	8475599	0.23	0.02
GM2	WPT010	264957.4	8475601	0.42	0.02
GM2	WPT011	264970	8475595	0.46	0.03
GM2	WPT012	264979.1	8475592	0.37	0.02
GM2	WPT013	264984.5	8475590	0.77	0.04
GM2	WPT014	264991.7	8475588	0.36	0.02
GM2	WPT015	265002.5	8475592	0.40	0.02
GM2	WPT016	265013.4	8475588	1.42	0.07
GM2	WPT017	265024.2	8475581	0.80	0.04
GM2	WPT018	265033.3	8475574	0.88	0.04
GM2	WPT019	265044.2	8475570	0.36	0.02
GM2	WPT020	265058.6	8475567	0.42	0.02
GM2	WPT021	265064.2	8475552	0.60	0.03
GM2	WPT022	265066	8475545	0.74	0.04
GM2	WPT023	265068	8475528	0.52	0.03
GM2	WPT024	265078.9	8475523	0.31	0.02
GM2	WPT025	265093.3	8475523	0.25	0.02
GM2	WPT026	265098.8	8475506	0.22	0.01
GM2	WPT027	265109.7	8475499	0.19	0.01
GM2	WPT028	265118.8	8475492	0.20	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM2	WPT029	265125.7	8475529	0.21	0.01
GM2	WPT030	265116.6	8475536	0.17	0.01
GM2	WPT031	265109.3	8475545	0.20	0.01
GM2	WPT032	265100.2	8475558	0.27	0.02
GM2	WPT033	265091.1	8475567	0.33	0.02
GM2	WPT034	265082	8475578	0.51	0.03
GM2	WPT035	265074.7	8475587	0.41	0.02
GM2	WPT036	265065.6	8475594	0.56	0.03
GM2	WPT037	265060.1	8475602	0.52	0.03
GM2	WPT038	265054.6	8475609	0.45	0.02
GM2	WPT039	265043.8	8475615	0.28	0.02
GM2	WPT040	265034.7	8475620	0.59	0.03
GM2	WPT041	265018.4	8475629	0.94	0.05
GM2	WPT042	265005.7	8475638	0.33	0.02
GM2	WPT043	264996.7	8475636	0.35	0.02
GM2	WPT044	264987.6	8475644	0.37	0.02
GM2	WPT045	264980.5	8475638	0.86	0.04
GM2	WPT046	264967.8	8475643	0.47	0.03
GM2	WPT047	264955.1	8475653	0.48	0.03
GM2	WPT048	264947.8	8475658	0.40	0.02
GM2	WPT049	264935.2	8475658	0.43	0.02
GM2	WPT050	264924.4	8475658	0.30	0.02
GM2	WPT051	264910	8475654	0.61	0.03
GM2	WPT052	264904.5	8475659	0.99	0.05
GM2	WPT053	264895.5	8475669	0.17	0.01
GM2	WPT054	264882.8	8475674	0.15	0.01
GM2	WPT055	264898.6	8475720	0.14	0.01
GM2	WPT056	264905.8	8475717	0.12	0.01
GM2	WPT057	264920.3	8475717	0.16	0.01
GM2	WPT058	264932.9	8475715	0.17	0.01
GM2	WPT059	264949.1	8475717	0.18	0.01
GM2	WPT060	264956.4	8475710	0.22	0.02
GM2	WPT061	264967.3	8475702	0.25	0.02
GM2	WPT062	264985.3	8475699	0.27	0.02
GM2	WPT063	264996.2	8475697	0.28	0.02
GM2	WPT064	265007	8475694	0.24	0.02
GM2	WPT065	265017.9	8475688	0.44	0.02
GM2	WPT066	265026.9	8475683	0.23	0.02
GM2	WPT067	265034.2	8475675	0.22	0.02
GM2	WPT068	265043.3	8475670	0.20	0.01
GM2	WPT069	265050.6	8475663	0.15	0.01
GM2	WPT070	265068.7	8475650	0.14	0.01
GM2	WPT071	265068.7	8475650	0.14	0.01
GM2	WPT072	265077.7	8475646	0.14	0.01
GM2	WPT073	265090.4	8475637	0.13	0.01
GM2	WPT074	265099.5	8475630	0.13	0.01
GM2	WPT075	265103.2	8475623	0.12	0.01
GM2	WPT076	265115.9	8475613	0.11	0.01
GM2	WPT077	265126.7	8475612	0.13	0.01
GM2	WPT078	265135.8	8475604	0.11	0.01
GM2	WPT079	265146.7	8475599	0.10	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM2	WPT080	265157.6	8475592	0.12	0.01
GM2	WPT081	265168.4	8475584	0.13	0.01
GM2	WPT082	265182.9	8475577	0.12	0.01
GM2	WPT083	265229	8475666	0.11	0.01
GM2	WPT084	265210.8	8475686	0.11	0.01
GM2	WPT085	265189.1	8475693	0.10	0.01
GM2	WPT086	265165.6	8475701	0.10	0.01
GM2	WPT087	265147.4	8475717	0.11	0.01
GM2	WPT088	265125.7	8475724	0.10	0.01
GM2	WPT089	265111.2	8475739	0.10	0.01
GM2	WPT090	265093.1	8475746	0.09	0.01
GM2	WPT091	265084	8475753	0.09	0.01
GM2	WPT092	265080.3	8475761	0.12	0.01
GM2	WPT093	265069.4	8475768	0.10	0.01
GM2	WPT094	265056.8	8475771	0.09	0.01
GM2	WPT095	265042.3	8475779	0.11	0.01
GM2	WPT096	265040.4	8475784	0.09	0.01
GM2	WPT097	265029.6	8475790	0.11	0.01
GM2	WPT098	265027.6	8475808	0.12	0.01
GM2	WPT099	265020.3	8475814	0.11	0.01
GM3	WPT001	264858.1	8475609	0.13	0.01
GM3	WPT002	264870.7	8475609	0.13	0.01
GM3	WPT003	264881.6	8475604	0.14	0.01
GM3	WPT004	264897.9	8475595	0.23	0.01
GM3	WPT005	264907	8475591	0.22	0.01
GM3	WPT006	264919.6	8475588	0.26	0.01
GM3	WPT007	264930.5	8475582	0.25	0.01
GM3	WPT008	264935.8	8475591	0.47	0.02
GM3	WPT009	264939.5	8475584	0.31	0.02
GM3	WPT010	264950.4	8475577	0.30	0.02
GM3	WPT011	264964.8	8475575	0.26	0.01
GM3	WPT012	264975.7	8475572	0.23	0.01
GM3	WPT013	264977.4	8475581	0.54	0.02
GM3	WPT014	264982.8	8475579	0.25	0.01
GM3	WPT015	264997.3	8475568	0.29	0.02
GM3	WPT016	265008.2	8475561	0.28	0.01
GM3	WPT017	265020.9	8475557	0.55	0.02
GM3	WPT018	265029.9	8475550	0.48	0.02
GM3	WPT019	265040.8	8475546	0.40	0.02
GM3	WPT020	265048.1	8475539	0.62	0.02
GM3	WPT021	265048.1	8475535	1.17	0.04
GM3	WPT022	265046.4	8475526	0.41	0.02
GM3	WPT023	265050.1	8475517	0.63	0.02
GM3	WPT024	265060.9	8475510	0.34	0.02
GM3	WPT025	265062.8	8475504	0.21	0.01
GM3	WPT026	265070.1	8475495	0.18	0.01
GM3	WPT027	265079.2	8475489	0.16	0.01
GM3	WPT028	265090.1	8475480	0.15	0.01
GM3	WPT029	265102.7	8475477	0.17	0.01
GM3	WPT030	265132.8	8475543	0.15	0.01
GM3	WPT031	265130.9	8475555	0.15	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM3	WPT032	265125.4	8475562	0.15	0.01
GM3	WPT033	265112.6	8475580	0.18	0.01
GM3	WPT034	265098.2	8475580	0.32	0.02
GM3	WPT035	265094.5	8475593	0.32	0.02
GM3	WPT036	265089	8475598	0.39	0.02
GM3	WPT037	265081.8	8475600	0.37	0.02
GM3	WPT038	265072.7	8475611	0.31	0.02
GM3	WPT039	265061.8	8475620	0.26	0.01
GM3	WPT040	265050.9	8475626	0.26	0.01
GM3	WPT041	265043.6	8475635	0.23	0.01
GM3	WPT042	265032.7	8475642	0.20	0.01
GM3	WPT043	265027.3	8475646	0.25	0.01
GM3	WPT044	265018.2	8475651	0.27	0.01
GM3	WPT045	265005.5	8475660	0.28	0.01
GM3	WPT046	264998.2	8475666	0.33	0.02
GM3	WPT047	264983.8	8475666	0.25	0.01
GM3	WPT048	264971.3	8475658	0.55	0.02
GM3	WPT049	264971.2	8475666	0.32	0.02
GM3	WPT050	264965.7	8475675	0.28	0.01
GM3	WPT051	264953	8475680	0.22	0.01
GM3	WPT052	264945.8	8475680	0.15	0.01
GM3	WPT053	264936.8	8475684	0.16	0.01
GM3	WPT054	264929.6	8475684	0.15	0.01
GM3	WPT055	264915.1	8475685	0.16	0.01
GM3	WPT056	264902.5	8475689	0.14	0.01
GM3	WPT057	264895.3	8475691	0.12	0.01
GM3	WPT058	264886.2	8475700	0.12	0.01
GM3	WPT059	264893.3	8475709	0.13	0.01
GM3	WPT060	264904.1	8475706	0.14	0.01
GM3	WPT061	264913.1	8475706	0.14	0.01
GM3	WPT062	264927.6	8475700	0.16	0.01
GM3	WPT063	264938.5	8475695	0.17	0.01
GM3	WPT064	264951.1	8475691	0.19	0.01
GM3	WPT065	264960.2	8475688	0.24	0.01
GM3	WPT066	264972.9	8475682	0.29	0.02
GM3	WPT067	264980.1	8475677	0.55	0.02
GM3	WPT068	264994.6	8475675	0.75	0.03
GM3	WPT069	265000	8475671	0.42	0.02
GM3	WPT070	265009.1	8475664	0.32	0.02
GM3	WPT071	265019.9	8475660	0.20	0.01
GM3	WPT072	265030.8	8475651	0.18	0.01
GM3	WPT073	265039.9	8475648	0.21	0.01
GM3	WPT074	265048.9	8475642	0.17	0.01
GM3	WPT075	265058	8475635	0.14	0.01
GM3	WPT076	265068.9	8475630	0.13	0.01
GM3	WPT077	265076.2	8475622	0.15	0.01
GM3	WPT078	265083.4	8475615	0.14	0.01
GM3	WPT079	265092.5	8475608	0.17	0.01
GM3	WPT080	265103.3	8475606	0.186	0.01
GM3	WPT081	265110.7	8475593	0.19	0.01
GM3	WPT082	265118	8475584	0.16	0.01

	Waypoint	Eastings	Northings	γ-dose rate μGy·hr^{-1}	± μGy·hr^{-1}
GM3	WPT083	265127	8475580	0.14	0.01
GM3	WPT084	265134.3	8475573	0.13	0.01
GM3	WPT085	265145.2	8475566	0.14	0.01
GM3	WPT086	265157.9	8475558	0.13	0.01
GM3	WPT087	265170.5	8475559	0.14	0.01
GM3	WPT088	265187.9	8475631	0.10	0.01
GM3	WPT089	265171.5	8475642	0.11	0.01
GM3	WPT090	265151.6	8475652	0.11	0.01
GM3	WPT091	265138.9	8475662	0.09	0.01
GM3	WPT092	265124.4	8475671	0.10	0.01
GM3	WPT093	265104.5	8475680	0.11	0.01
GM3	WPT094	265091.8	8475685	0.13	0.01
GM3	WPT095	265073.7	8475694	0.10	0.01
GM3	WPT096	265062.9	8475698	0.11	0.01
GM3	WPT097	265055.6	8475703	0.12	0.01
GM3	WPT098	265046.5	8475709	0.14	0.01
GM3	WPT099	265037.5	8475714	0.14	0.01
GM3	WPT100	265030.2	8475725	0.17	0.01
GM3	WPT101	265022.9	8475727	0.23	0.01
GM3	WPT102	265017.4	8475736	0.15	0.01
GM3	WPT103	265011.9	8475745	0.14	0.01
GM3	WPT104	265001.1	8475753	0.32	0.02
GM3	WPT105	264997.4	8475760	0.17	0.01
GM3	WPT106	264986.5	8475767	0.15	0.01
GM3	WPT107	264982.9	8475771	0.14	0.01
GM3	WPT108	264975.6	8475776	0.12	0.01
GM3	WPT109	264964.8	8475780	0.16	0.01
GM3	WPT110	264953.9	8475785	0.11	0.01
GM3	WPT111	264944.9	8475787	0.12	0.01
GM3	WPT112	264934.3	8475761	0.15	0.01
GM3	WPT113	264941.6	8475754	0.15	0.01
GM3	WPT114	264950.6	8475750	0.23	0.01
GM3	WPT115	264957.9	8475743	0.20	0.01
GM3	WPT116	264966.9	8475739	0.26	0.01
GM3	WPT117	264977.7	8475747	0.32	0.02
GM3	WPT118	264986.8	8475732	0.14	0.01
GM3	WPT119	264911.5	8475484	0.15	0.01
GM3	WPT120	264899	8475480	0.29	0.02
GM3	WPT121	264889.9	8475482	0.38	0.02
GM3	WPT122	264880.9	8475484	0.88	0.03
GM3	WPT123	264870.1	8475482	0.75	0.03
GM3	WPT124	264862.9	8475478	0.19	0.01
GM3	WPT125	264870	8475491	0.15	0.01
GM3	WPT126	264884.5	8475486	0.16	0.01
GM3	WPT127	264897.1	8475484	0.13	0.01
GM3	WPT128	264908	8475481	0.12	0.01
GM3	WPT129	264917	8475481	0.15	0.01
GM3	WPT130	264910	8475455	0.16	0.01
GM3	WPT131	264901	8475457	0.26	0.01
GM3	WPT132	264888.4	8475456	0.21	0.01
GM3	WPT133	264875.7	8475456	0.25	0.01

	Waypoint	Eastings	Northings	γ-dose rate $\mu Gy \cdot hr^{-1}$	± $\mu Gy \cdot hr^{-1}$
GM3	WPT134	264868.5	8475456	0.34	0.02
GM3	WPT135	264854.1	8475462	0.12	0.01
GM3	WPT136	264852.4	8475447	0.10	0.01
GM3	WPT137	264863.3	8475438	0.11	0.01
GM3	WPT138	264870.5	8475434	0.11	0.01