REFERRAL FOR PROPOSED ACTION

RANGER 3 DEEPS UNDERGROUND MINE

FIGURES 21 – 37

LIST OF FIGURES

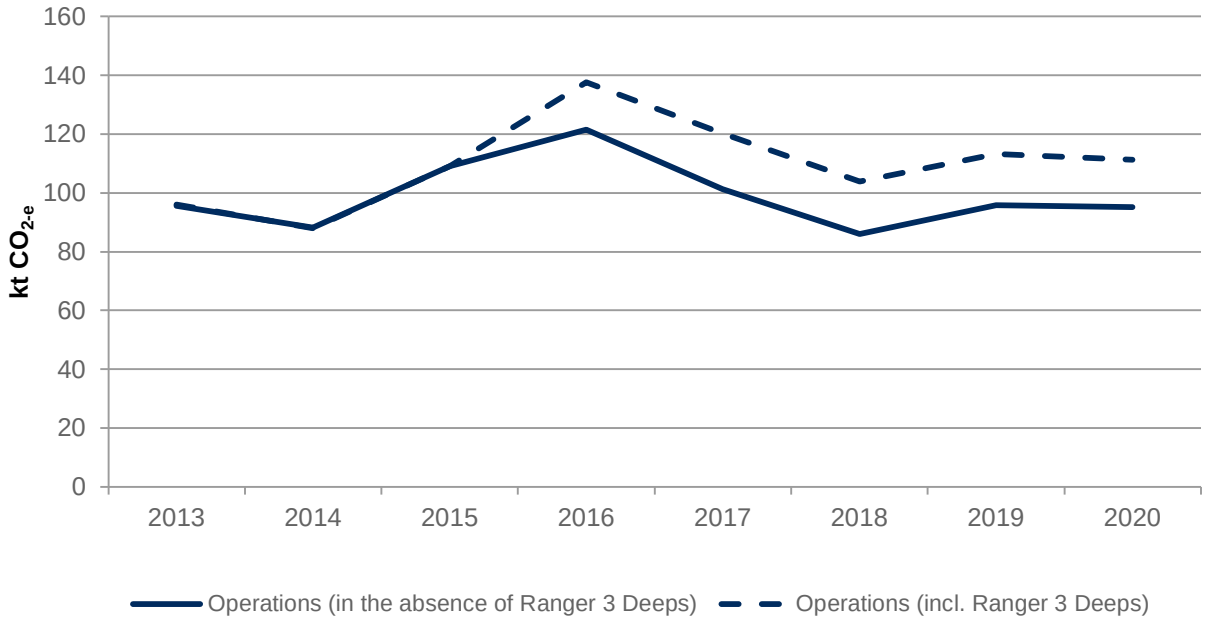

Figure 21: Estimates of greenhouse gas emissions based on diesel consumption (plant and mobile fleet)

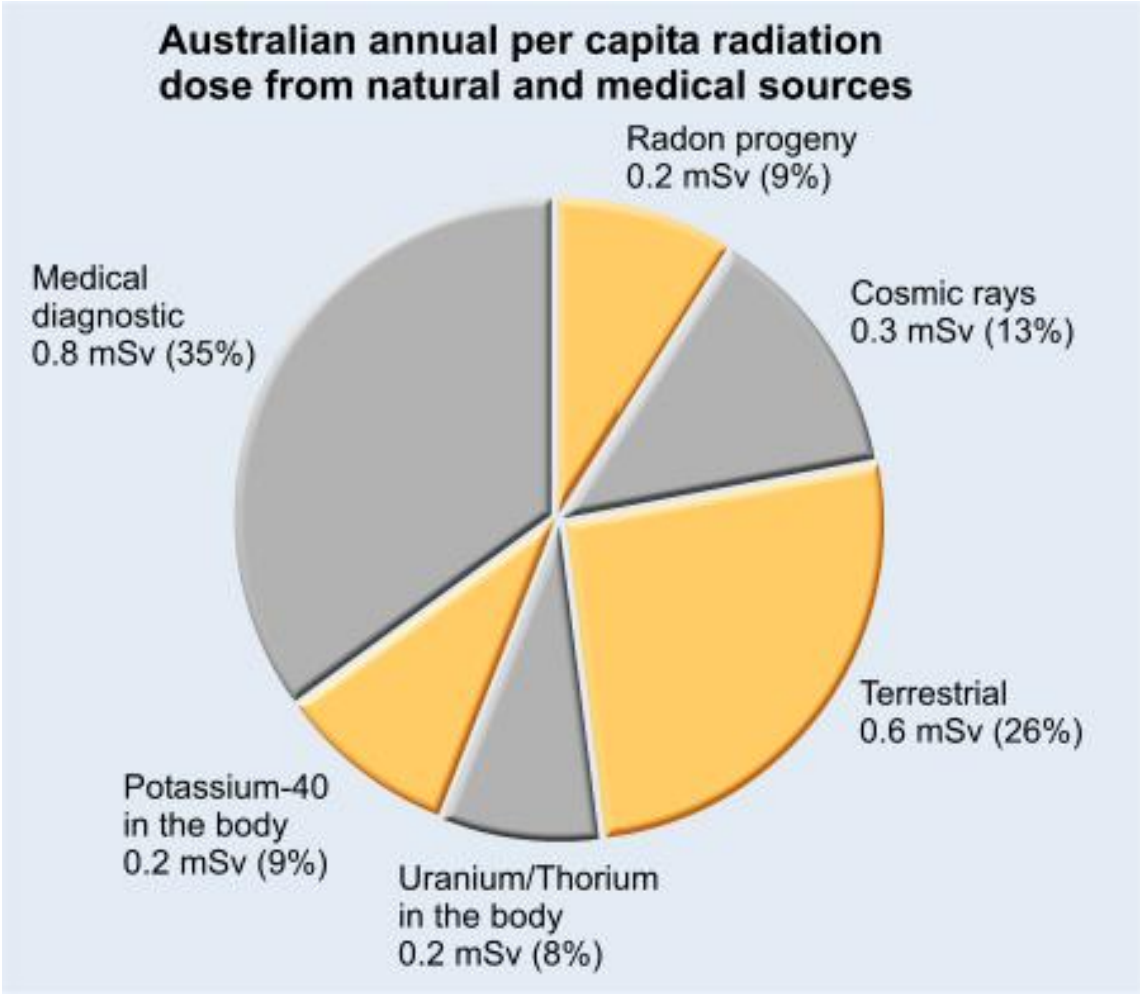

Figure 22: Australian annual per capita radiation dose from natural and medical sources (ARPANSA 2012)

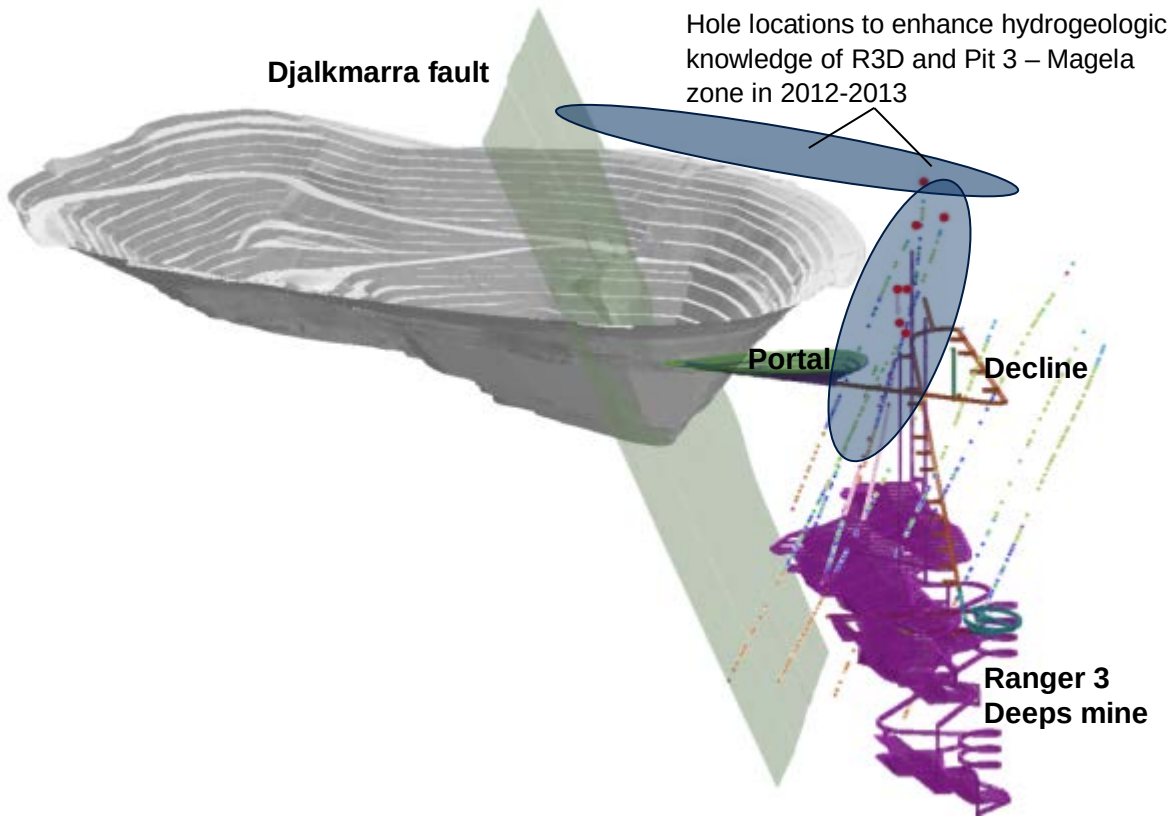

Figure 23: Location of planned hydrogeology test work for Ranger 3 Deeps

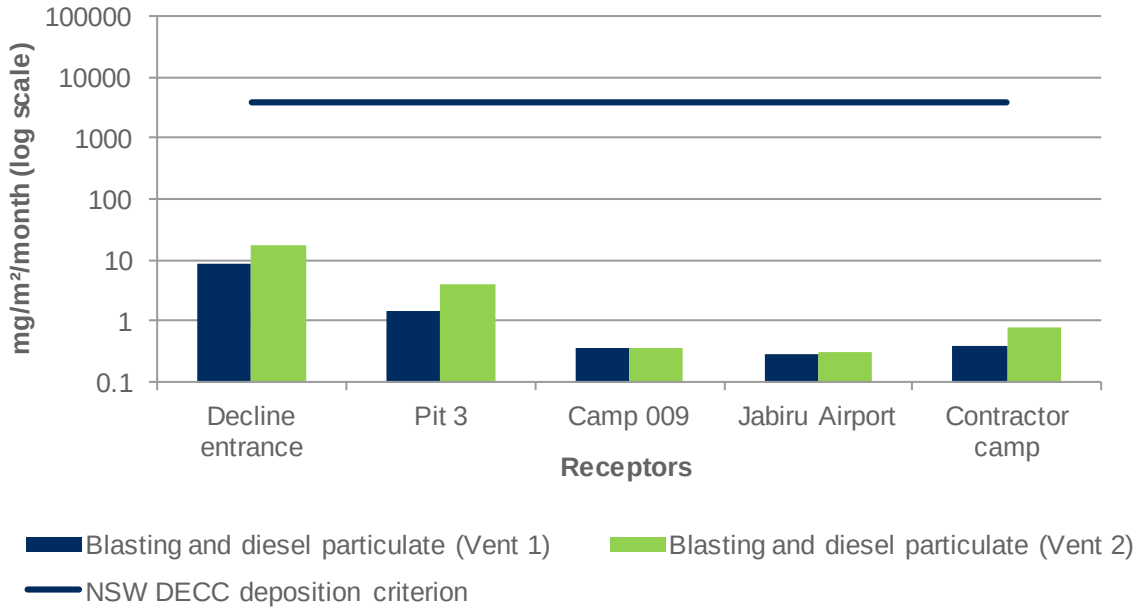

Figure 24: Predicted total suspended particulates deposition (blasting and diesel particulate) for alternate vent locations. Modelling is based on a single stope ventilated through a single exhaust point source.

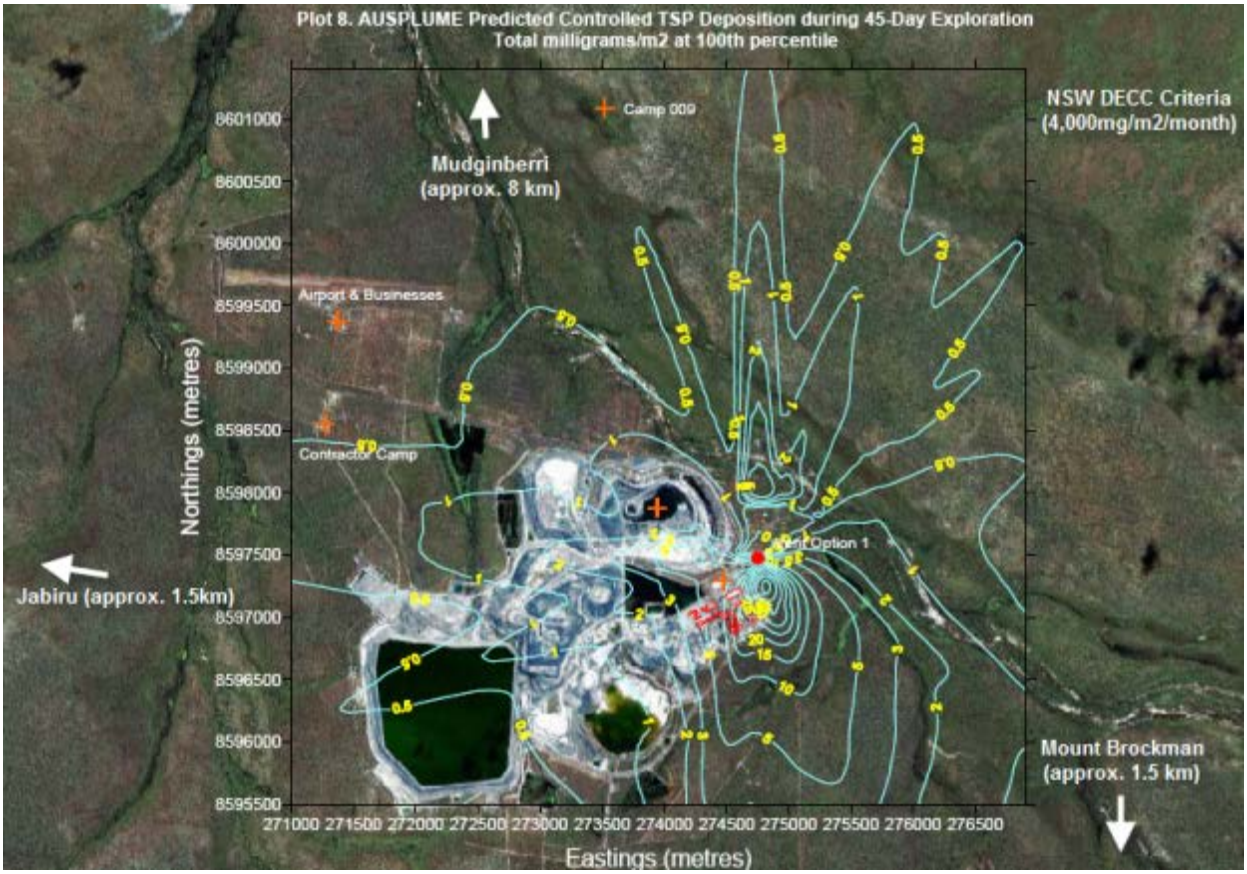

Figure 25: Predicted total suspended particulates deposition (mg/m²) from a 10 m ventilation stack, combined blast and diesel (with pollution reduction technology)

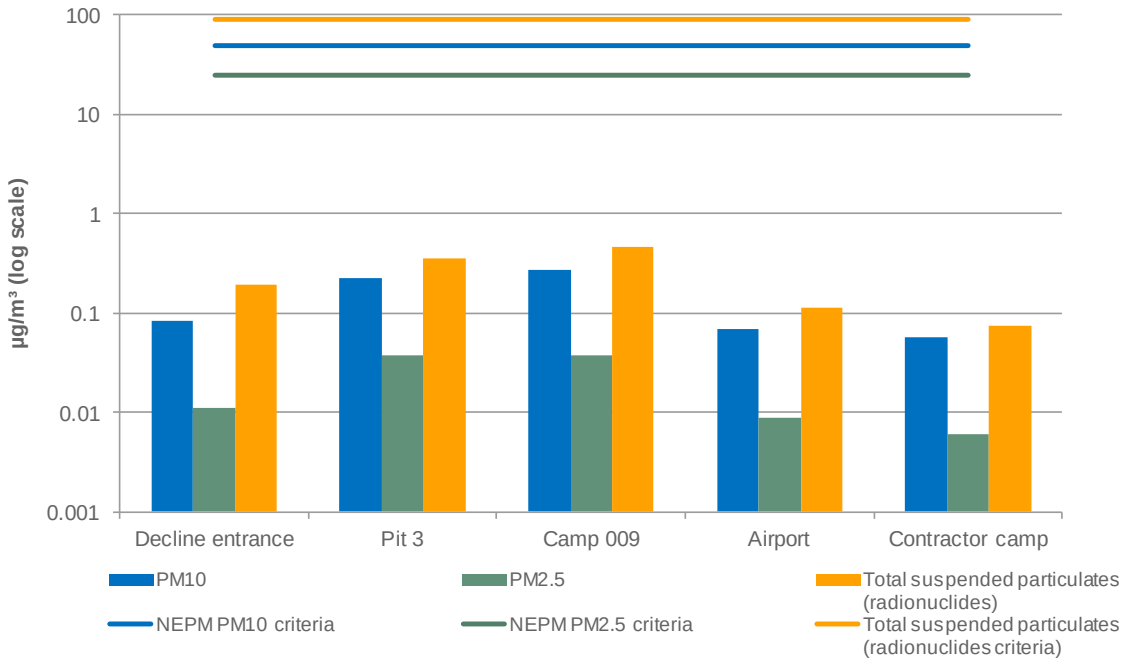

Figure 26: Predicted fine particulate concentrations across a number of receptors. Note: Blast particulate size distribution is derived from US Environmental Protection Agency and National Pollution Inventory sources. Modelling is based on a single stope ventilated through a single exhaust.

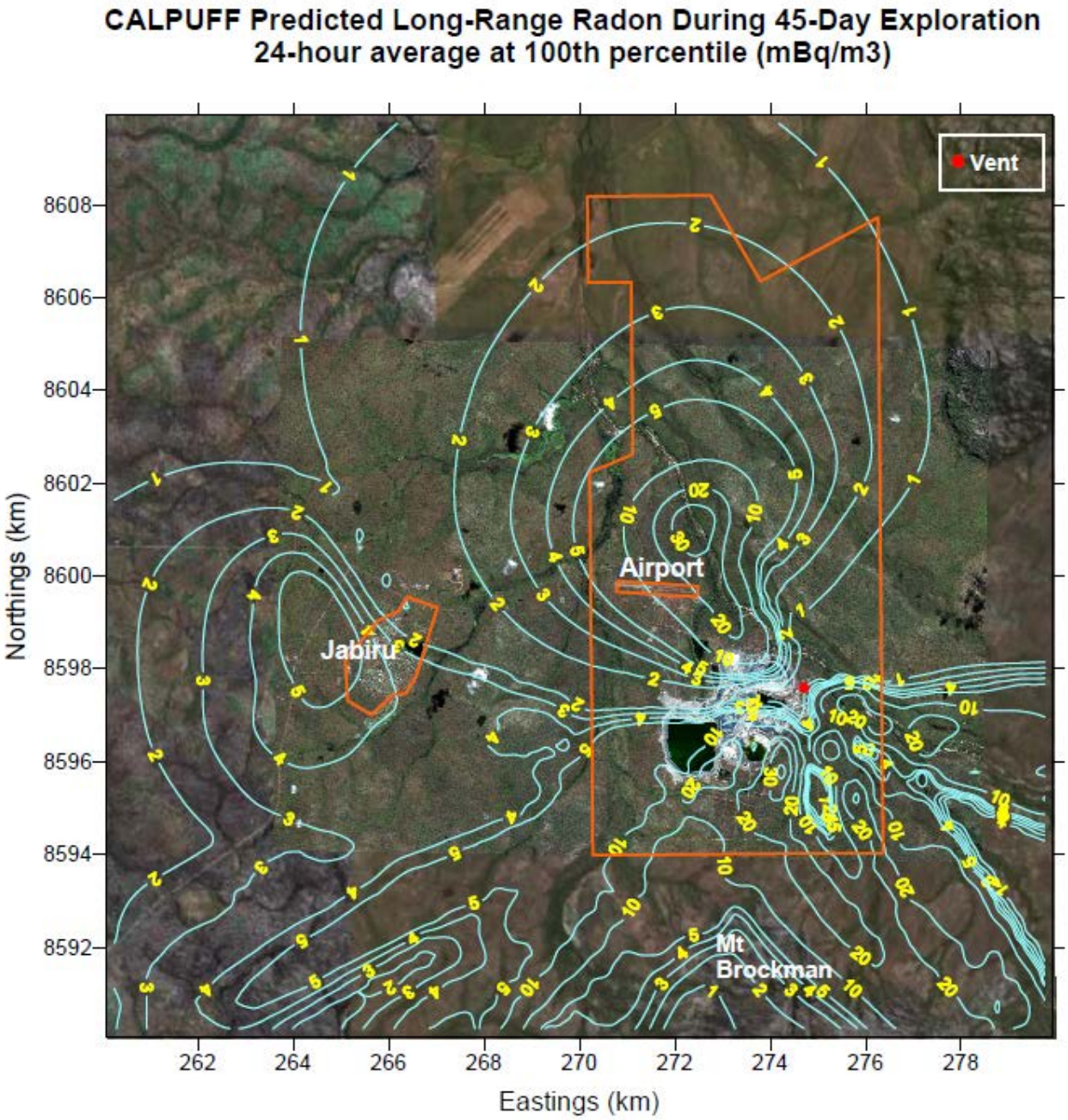

Figure 27: Predicted 24-hour average radon concentration (mBq/m^3) from a 10 m ventilation stack in and around the Ranger Project Area

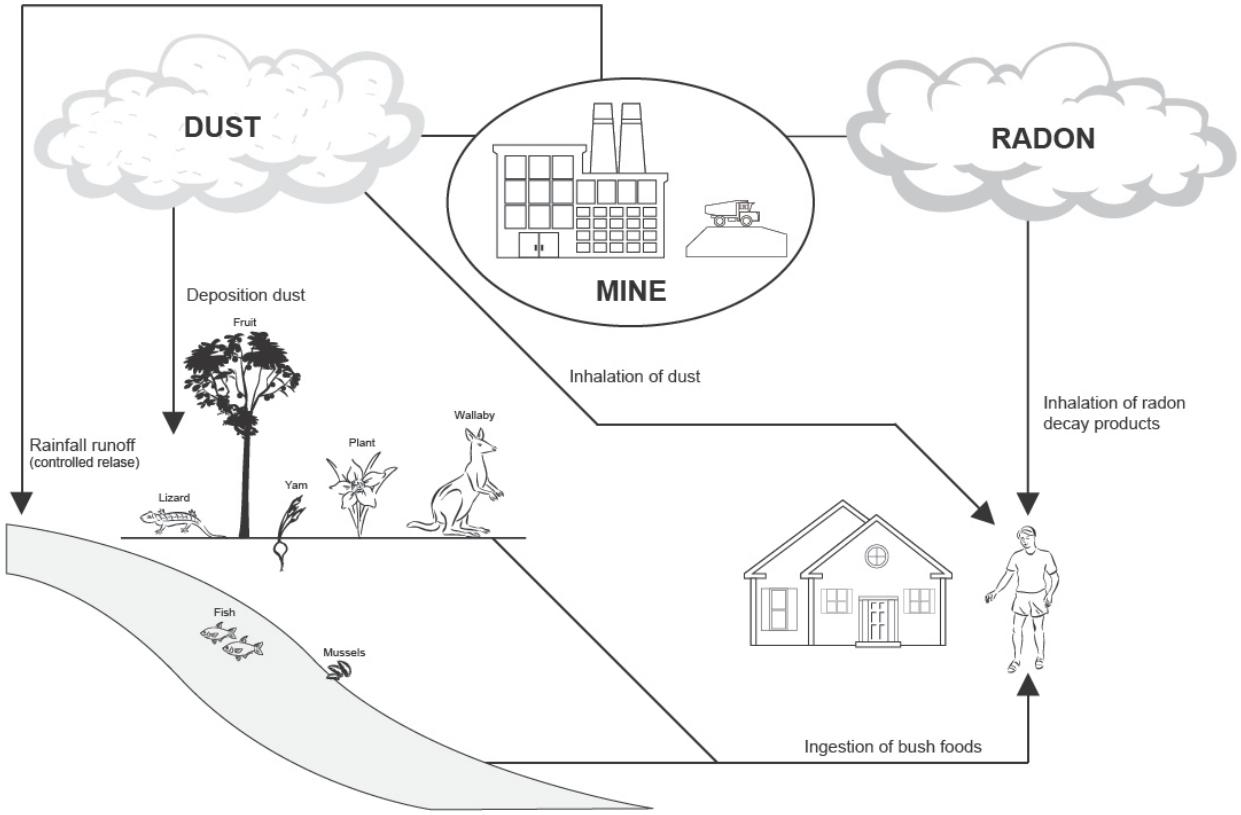

Figure 28: Potential pathways for transport of radionuclides into the environment

Figure 29: Location of groundwater monitoring sites (statutory monitoring sites shown in red)

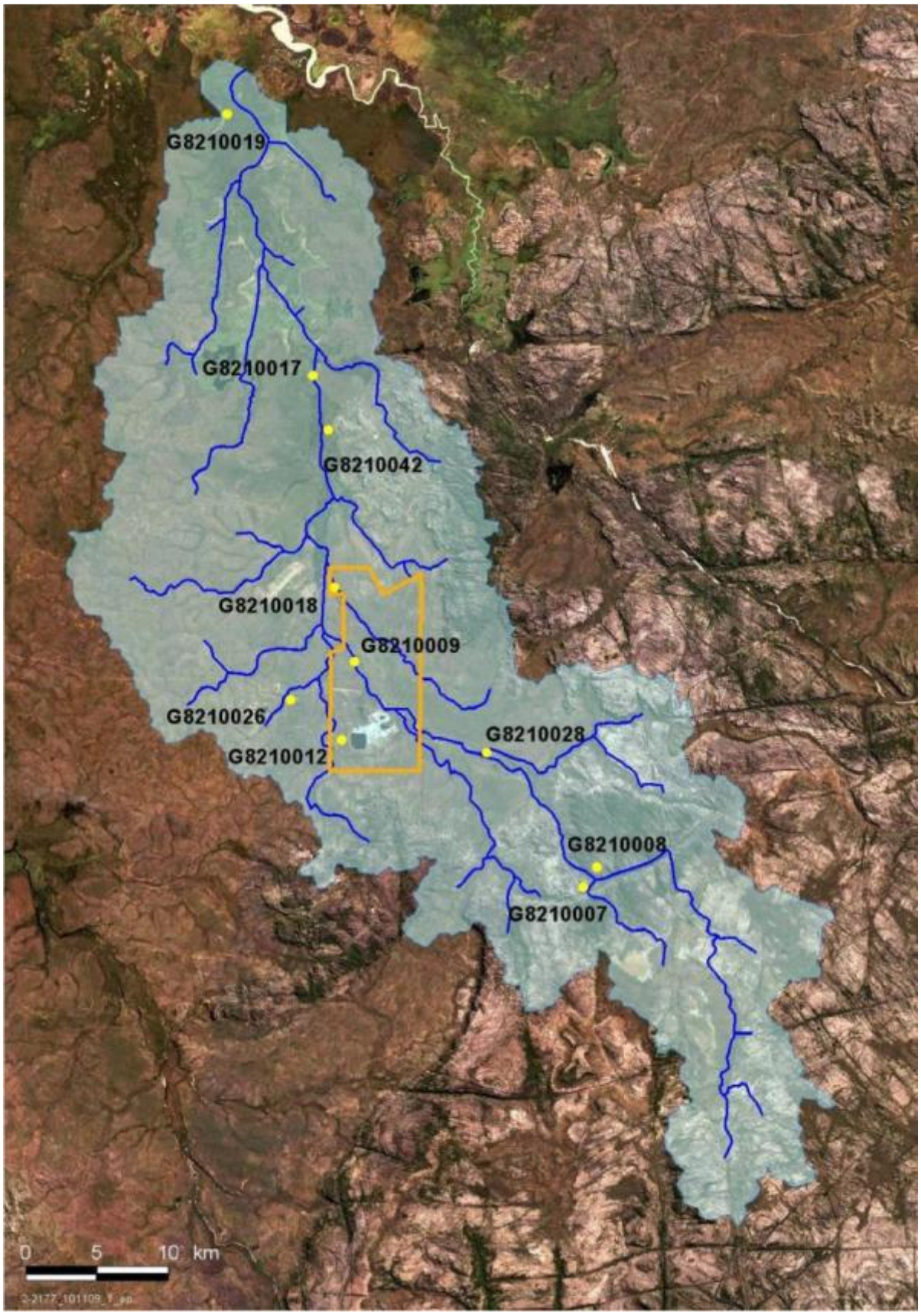

Figure 30: Magela catchment showing gauging stations

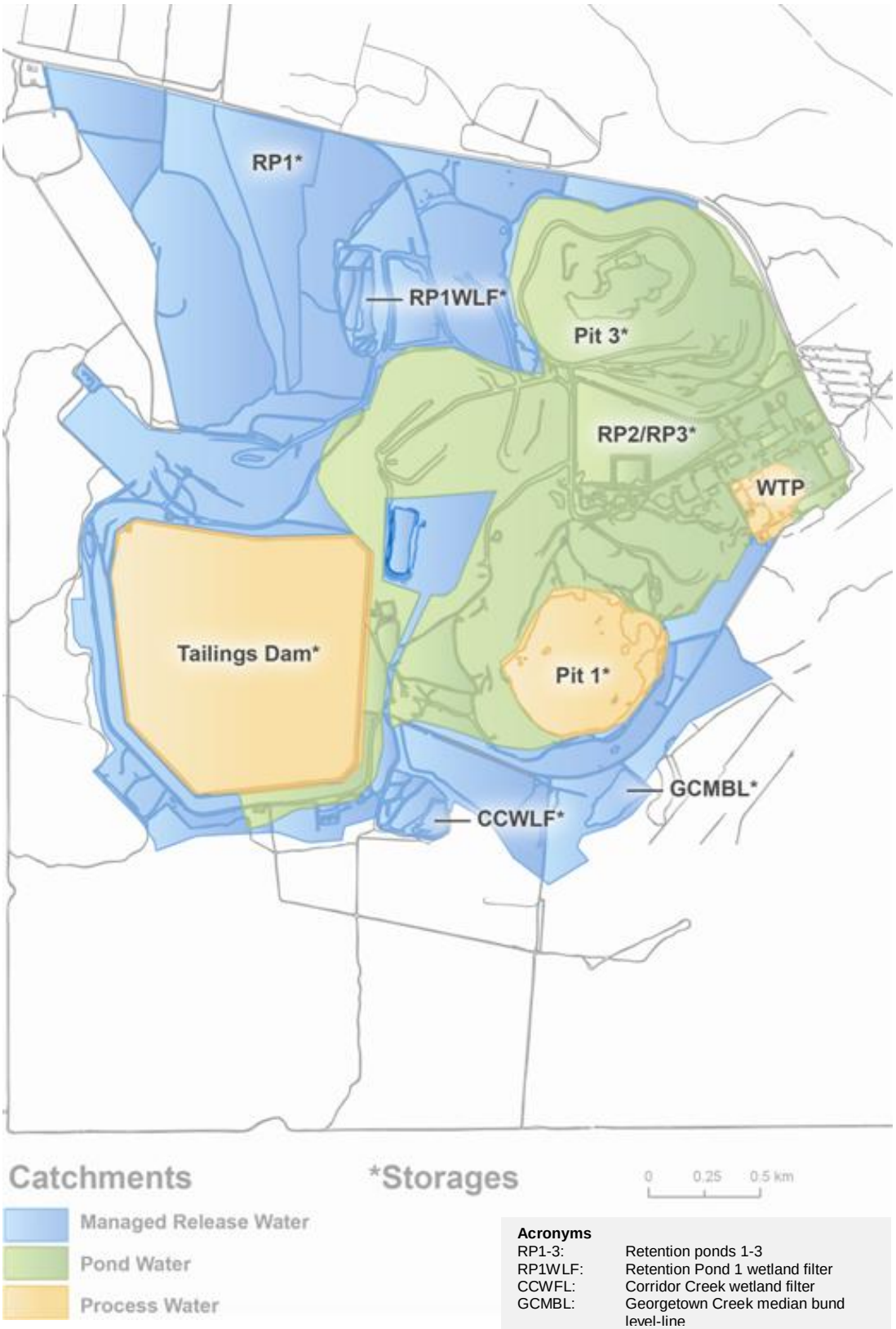

Figure 31: Current mine sub-catchments and water type. (NB: Pit 3 will become a process water catchment during transfer of tailing from the tailings dam during 2014-2020.)

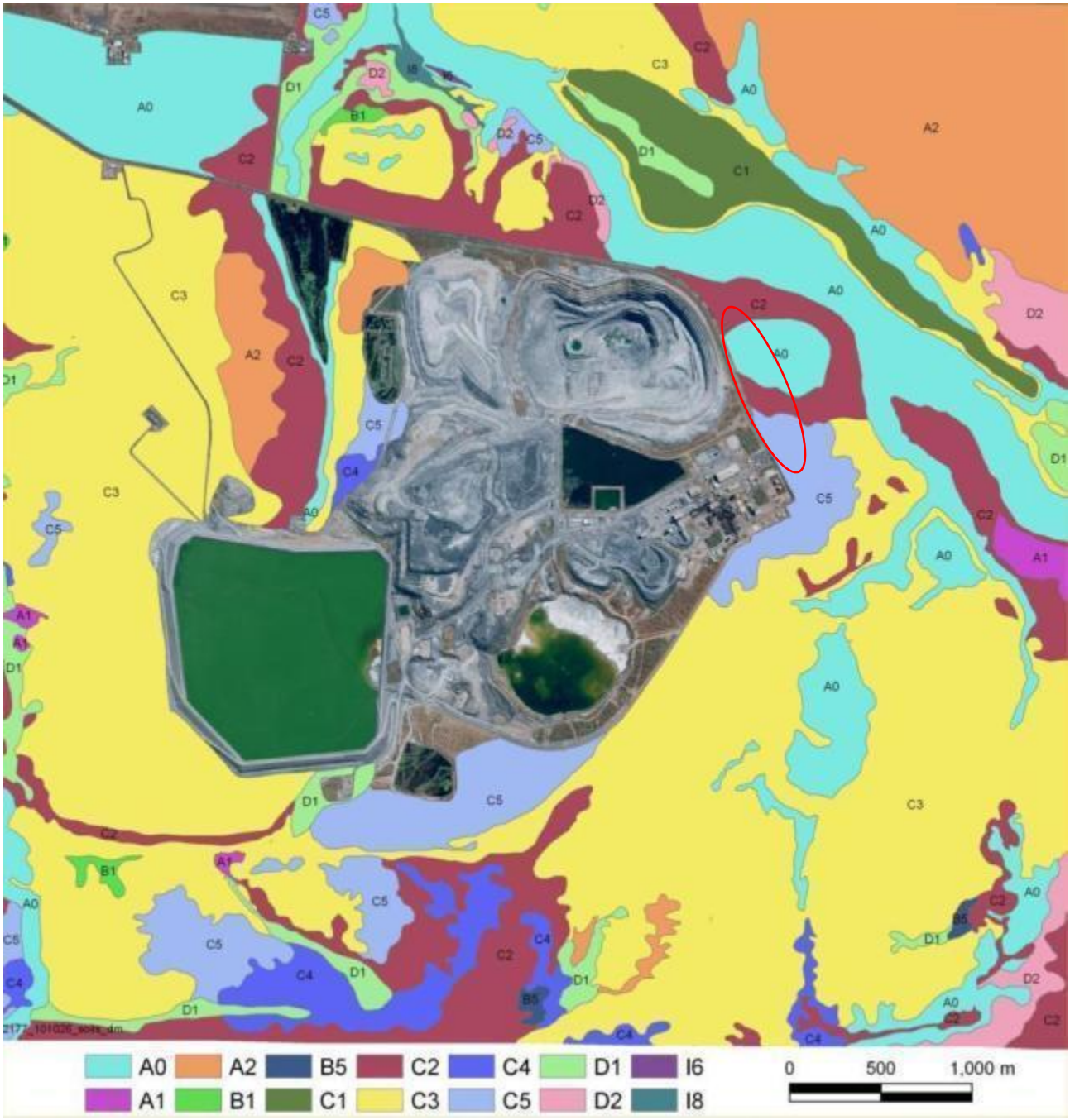

Figure 32: Dominant soil types in areas surrounding the Ranger operations based on a land mapping approach to define boundaries between soil types (modified from Hollingsworth 1999). (The proposed location of proposed Ranger 3 Deeps underground mine infrastructure within the Magela Land Application Area is shown in red.)

Figure 33: Ranger Project Area showing the extent of archaeological surveys and sites (unshaded)[2]

[2] Areas shaded in red, have not been surveyed; the operational area (shaded green) is exempt from cultural heritage surveys as agreed with traditional owners as part of the interim cultural heritage protocol.

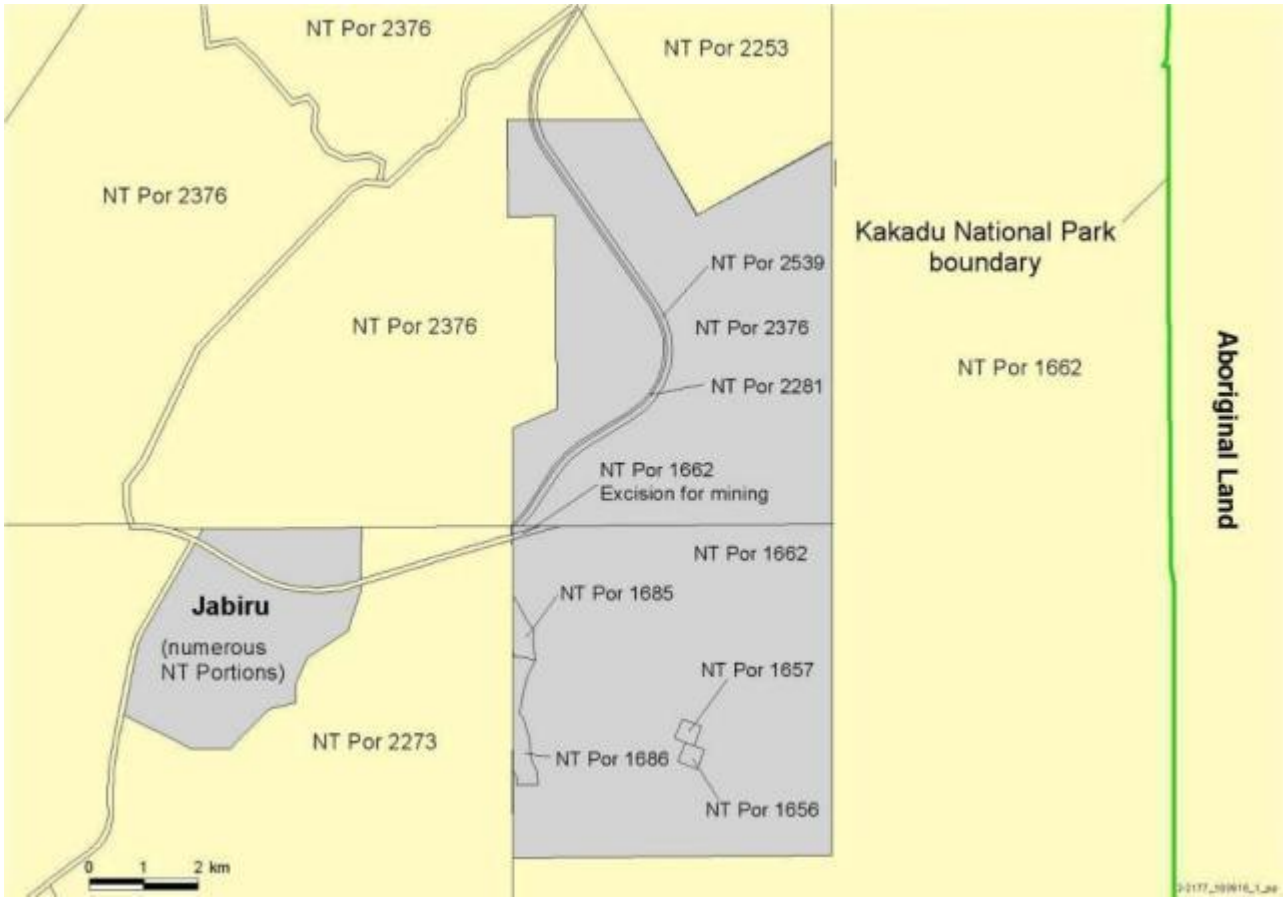

Figure 34: Land portions relevant to the Ranger Project Area, shown in grey

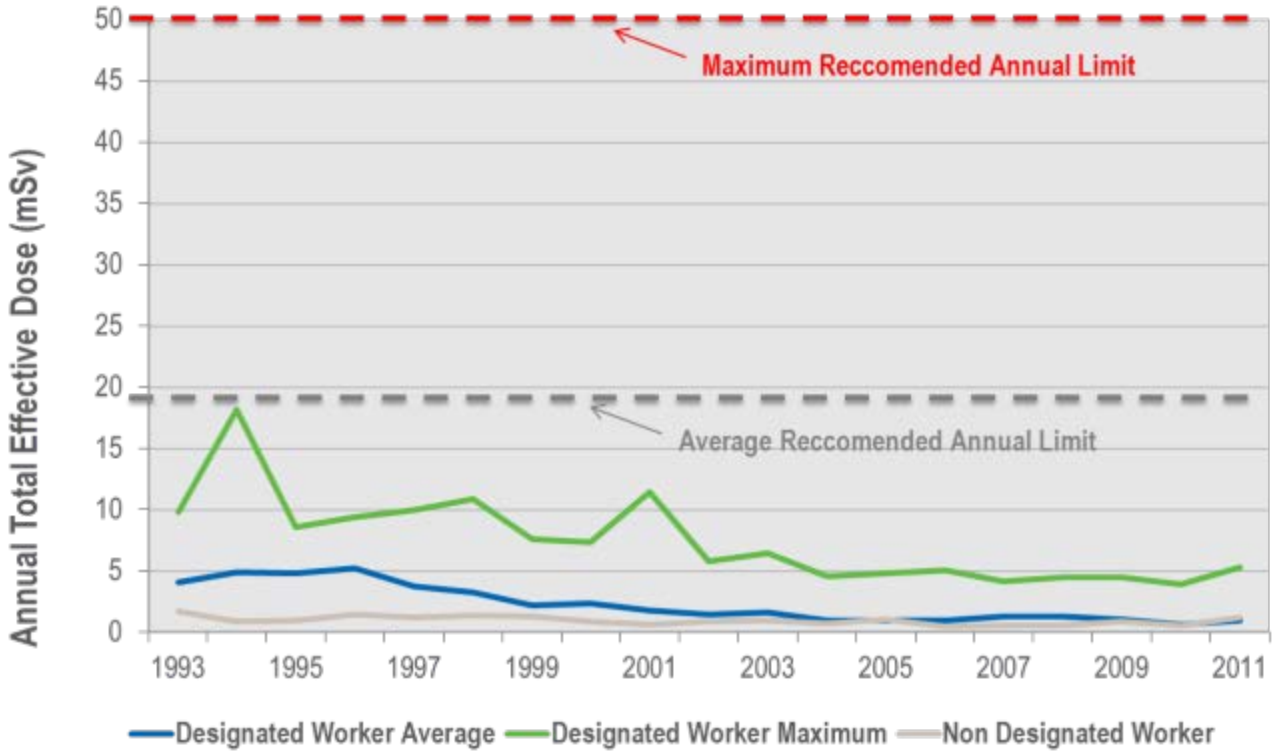

Figure 35: Occupational radiation exposures to workers at Ranger

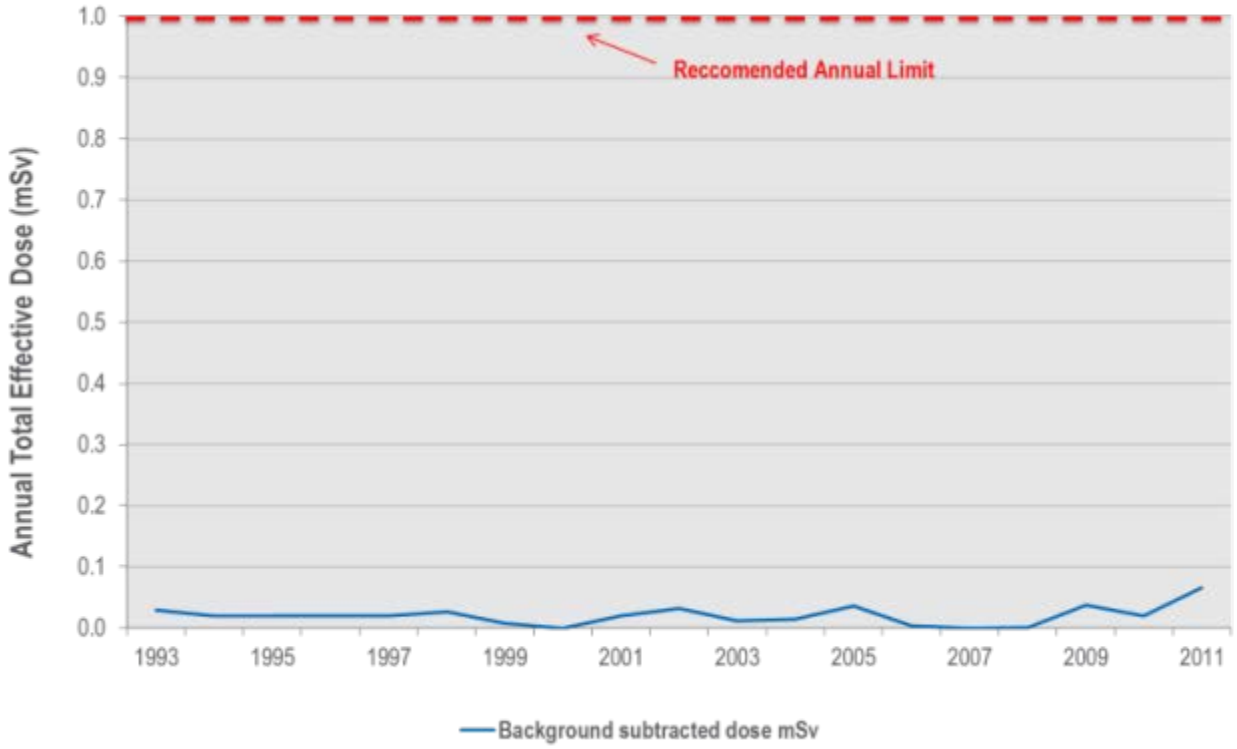

Figure 36: Mine contributed radiation dose to members of the public living in Jabiru

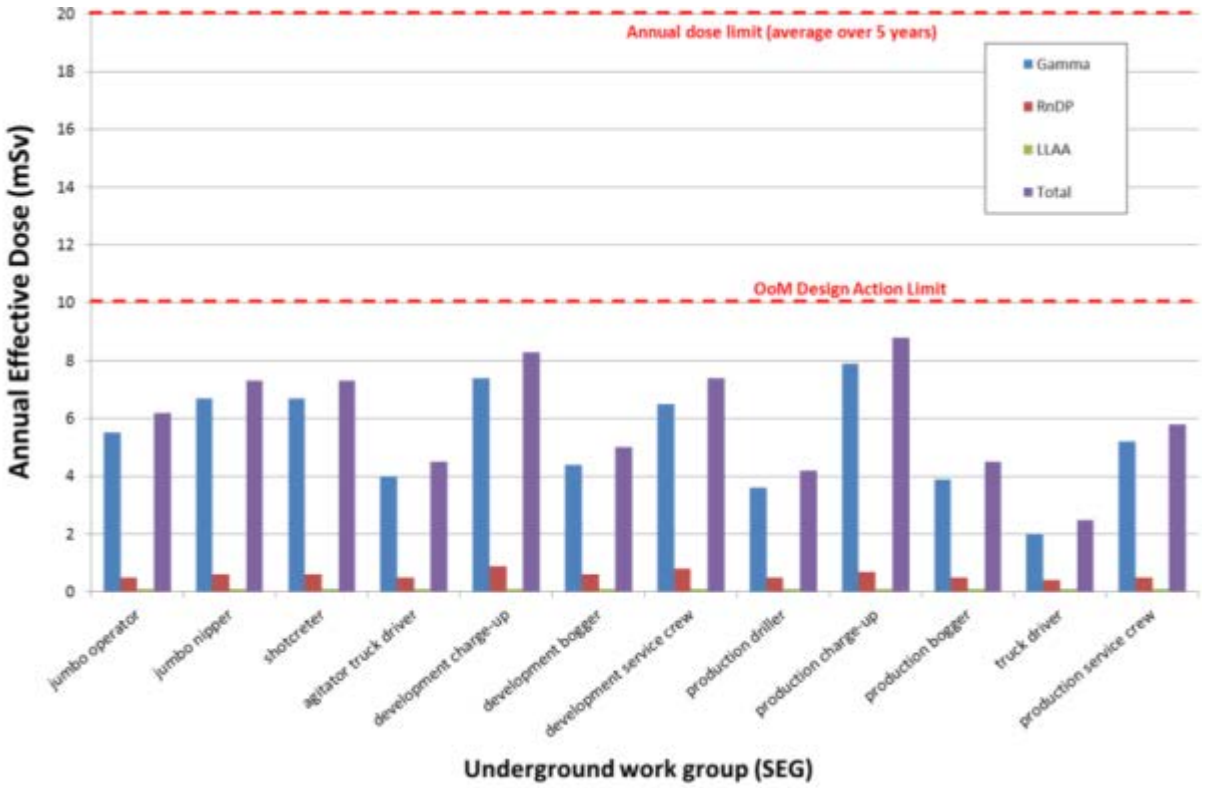

Figure 37: Preliminary estimates of occupational radiation doses to various work groups