

The Project surface infrastructure



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The majority of the new infrastructure will be constructed within the existing operational footprint.

The following new infrastructure is proposed to support the underground mine:

- power plant (diesel power generation units);
- refrigerated air and mine ventilation infrastructure;
- backfill plant;
- mine dewatering facilities; and
- auxiliary infrastructure (e.g. offices).

The majority of the new infrastructure will be constructed within the existing operational footprint. Some remaining infrastructure, such as ventilation shafts, and associated refrigeration equipment will be located adjacent to the mine access road in the Magela land application area. For this area, vegetation clearing is expected to be less than one hectare.

Power Plant

The power plant will consist of up to five 2.0 MW/11 kV diesel fuelled generators, progressively installed as the project develops. The units will be integrated with the existing plant to maximise the efficiency of the system as power demand varies. The annual average electrical load for the underground mine and surface infrastructure will be approximately 5 MW. The largest portion of this load will be for the refrigeration and ventilations systems.

Refrigeration and ventilation

The mine will be ventilated to supply fresh air to personnel underground. Fresh air is drawn in through intake vents and removed from the mine through exhaust vents. Each

exhaust vent has a fan at the surface to move the air through the ventilation system. During the build-up and wet season when temperature and humidity are high, the fresh air will be cooled before it enters the mine to maintain suitable conditions for the health and safety of the workers.

The equipment used in the Project mine ventilation system will be similar to that used at other underground mines around the world.

Backfill plant

The underground mine will be progressively backfilled with a cemented paste as ore is removed from the stopes. The purpose of the backfill is to support the surrounding rocks so that adjacent areas can be safely mined; reduces the risk of surface subsidence post mine closure; and inhibits the movement of contaminants through the deep groundwater.

Backfill will be pumped underground as a paste and then solidify in the mine. It will consist of tailings, crushed low-grade ore or waste rock and cement binder.

The backfill plant, located above the mine, will include facilities to de-slime (remove the fine particles), dewater and wash tailings from the existing processing plant, as well as equipment to mix the backfill components.

Dewatering facilities

Mine water originates from seepage of groundwater into the mine workings, and water used for drilling and dust suppression. This water will be treated to remove fibres from the spray-on concrete (shotcrete) used for ground-support, traces of oil from operating equipment and fine rock particles from the mine itself.

Water will be collected at two collection points or sumps: one for the far north area and one for the remaining areas. It will then be pumped from the sumps to the surface and into a silt trap, settling pond and oil/water separator, before flowing into Retention Pond 2 where it enters the main water management system. The existing water management system and water treatment plants have sufficient capacity to manage the anticipated volume of mine water.

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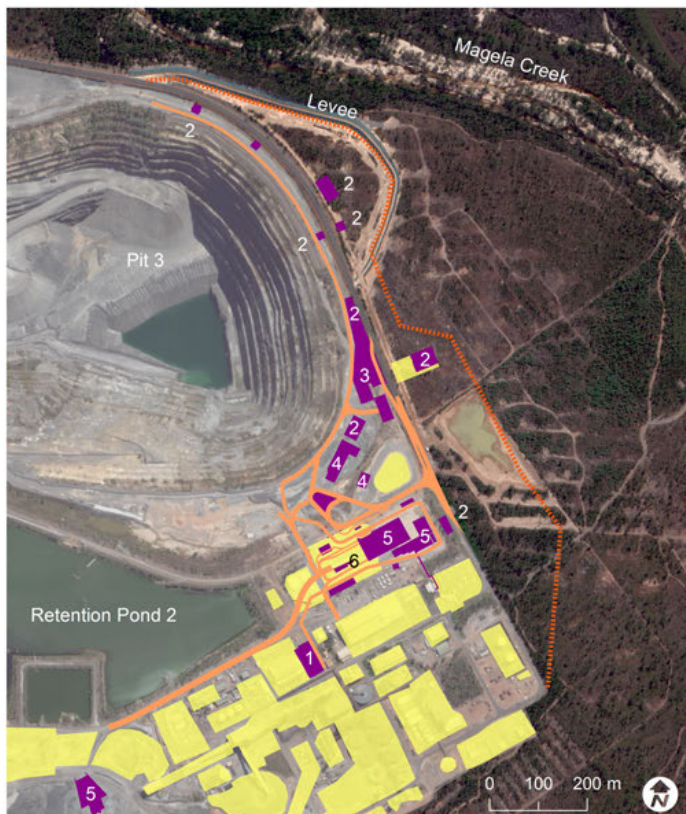
Auxiliary infrastructure

In addition to the main infrastructure described above, a range of additional equipment, materials handling and service infrastructure will be required and established as part of the Project. These include additional diesel storage, water and

compressed air supply, reticulation of materials and power, office complex, modifications and extensions to heavy and light vehicle roads within the current operational area and installation of a means of secondary emergency egress from the underground mine.

Fast Facts

- Minimal new infrastructure is required for the Project.
- Most of the new infrastructure will be located inside the existing Ranger mine access road.
- Some ventilation shafts and associated refrigeration infrastructure will be located within the Magela land application area.
- Land clearing will be less than one hectare.
- Additional power will comprise up to five 2 MW diesel generators.
- Paste used to backfill mined out stopes will be delivered via a purpose-built backfill plant and reticulation system.
- Tailings, crushed low-grade ore or waste rock and cement binder will be used to make the backfill paste.



- Maximum extent of infrastructure
- Project infrastructure (indicative)
- Project roads (indicative)
- Existing infrastructure

Indicative location of key Project infrastructure

Further reading:

Refer to Chapter 3 of the *ERA Ranger 3 Deeps: Draft Environmental Impact Statement*.