Our mission is to become a reliable and respected uranium producer.
The Mulga Rock Project is located near Kalgoorlie-Boulder, a major mining service centre.

The workforce will be fly-in fly-out and accommodated in a site village with a sealed airstrip.

Installation of a private long-term evolution (LTE) 4G network future-proofs the project and allows mining automation to be implemented at a later date.

Large water borefield secured with 167-200GL of water.
The infrastructure component of the Mulga Rock Project includes all supporting facilities located outside the mining area. Infrastructure includes the engineering design, procurement and management for the following site infrastructure works:

» Main access road;

» Internal access roads and tracks;

» Bulk earthworks including clearing of all required areas, installations including culverts, box cuts, backfill, hard stands, dams, drains, catchments, services trenching and water storage ponds for the process plant site, mining services area, accommodation village, airstrip, power station, internal roads, borefields, and explosive magazine storage;

» Accommodation village installation, reticulated services, waste disposal, water treatment and associated infrastructure;

» Aerodrome and airstrip;

» Communications system;

» Transportable buildings including offices, change rooms, crib rooms and ablutions;

» Steel framed buildings including workshops, warehouse and uranium packaging building;

» Fuel storage and distribution facility;

» Power station civils and generator haul building;

» Power reticulation across the project site;

» Site fencing and security;

» Process plant security;

» Kakarook borefield water supply;

» Pit water reinjection borefield;

» Potable water supply and waste water treatment; and

» Wheel wash system for road-based vehicles.

ACCESS ROAD

Kalgoorlie-Boulder is the nearest major mining service centre to the MRP, located approximately 290km by road from the site. The majority of construction equipment and reagents will be transported from Kalgoorlie. Access from Kalgoorlie to the MRP site is via Yami Road (27km) before turning on to the Kurnalpi-Pinjin Road (134km) and then 80km along the Tropicana Gold Mine access road before reaching the MRP access road turnoff.

A 42km main access road will be constructed to a standard suitable for triple B road trains. Several burrow pits have been excavated along the proposed route as part of the DFS and material sent for geotechnical testing. InfraTech (civil geotechnical engineers) provided GRES with the construction and pavement design specifications to allow road construction quotes to be obtained.

A 1.5km MRP village and airstrip access road will be constructed with a width of 9m. There are two internal service tracks required for the MRP. The first of these is an access track to the Kakarook North borefield, which will be used regularly by a diesel tanker and maintenance vehicles. The Kakarook North Road will be 32.5km in length with a 4m wide running surface, including drainage with an adjacent 5m wide buried pipeline corridor.

The second internal service track will provide access to the proposed pit water reinjection borefield to the
south of the Ambassador pit. This road will not experience regular traffic, and the 15km long track will have a 4m wide running surface and including drainage with an adjacent 5m wide pipeline corridor.

**ACCOMMODATION VILLAGE**

The MRP accommodation village, containing both temporary and permanent facilities, will be located near the MRP main access road and approximately 15km west of the process plant. The MRP accommodation village will contain 498 rooms in total consisting of:

- 200 room temporary construction accommodation; and
- 298 permanent rooms.

Village design specification was developed by GRES with permanent accommodation units consisting of four rooms per module, each with ensuite bathrooms and the following standard specifications:

- 14.4m x 4.2m room size;
- Precast concrete floor; and
- Double insulated walls between all rooms.

The installation at the accommodation village will include all services, equipment and reticulation for phone, data, TV and video entertainment to each room. A temporary satellite link will be provided for the communications until the site-wide communications system is installed.
AERODROME

An aerodrome to service the operation will be constructed adjacent to the accommodation village (see Figure 9.1). The sealed landing strip will be 2,100m in length with a width of 30m and aligned with the prevailing northwest/southeast wind direction. The runway (Code 3C) is suitable for a Fokker F100 (or similar) jet aircraft capable of carrying up to 100 passengers, with aircraft movements planned for daylight hours only. A taxiway and aircraft parking apron will be linked to the runway, as will an adjacent Jet A1 fuel facility, with reception hall, waiting area, toilets and vehicle parking. The obstacle limitation surfaces describing the required ‘clear airspace’ around the airport were drafted, and no infringements such as terrain or proposed towers or other structures were identified.

Civil geotechnical studies have been completed along the length of the proposed airstrip with geotechnical pits excavated every 400m along the length of the runway.

COMMUNICATIONS SYSTEM

Walker, Newman and Associates were engaged by Vimy to complete the DFS engineering of the site-wide telecommunications and IT system for the MRP.

Three new communication towers are required to support the communications infrastructure across the MRP. The main 50m guyed mast communication tower will be installed at the process plant. This mast will support the main external data link for telephone/data/internet services via the Eastern Goldfields Goldnet microwave connection to Kalgoorlie and then fibre-optic link back to Vimy’s Perth office. The mast will also support the private Long Term Evolution (LTE) 4G mobile network and microwave dishes that provide data links to the accommodation village and Kakarook North extraction borefield.

The process plant communications tower will also have a UHF radio antenna for communication with incoming freight trucks to the security gatehouse.

A second 50m guyed mast tower will be located at the Kakarook North extraction borefield. This mast will provide a private microwave data link between the process plant and the borefield. The tower will also support the private LTE 4G mobile antennae for regional communications and telemetry across the extraction borefield.

A 20m self-supporting mast will be installed at the accommodation village. This will support 4G public mobile service at the village, and private microwave data link between the process plant and the accommodation village.

The main elements of the telecommunications infrastructure include:

- Public mobile phone cell at the camp;
- Private LTE network over the entire project area;
- Borefield telemetry system;
- CCTV system;
- Access control system;
- Corporate Local Area Network (LAN);
- Telephone system;
- MRP PCs/computing infrastructure;
- Corporate IT infrastructure;
- Fibre-optic cabling;
- Camp entertainment system;
- Communications masts/towers;
- Communications shelters;
- Communications power systems;
- Private microwave radio; and
- Aerodrome VHF radio communications.

Installation of a private LTE network across the project essentially future-proofs the project to allow mining automation to be implemented at a later date.

BULK FUEL STORAGE

The main bulk diesel storage facility will consist of two 1,000kL tanks, which is equivalent to approximately three weeks’ storage. The main fuel storage area will be located within the process plant adjacent to the bulk unloading facility to allow unloading of triple road trains. The bulk fuel storage area will also include two vehicle refuelling stations complete with dedicated pumps and concrete slabs. The plant bulk fuel storage area will have two main delivery pipelines complete with dedicated supply pumps which will service the power station day tank located 120m away and supply fuel to the mine bulk storage facility located 450m away.

The power station will be serviced by a 36kL self-bunded day tank complete with level sensor and auto shut-off valve. The mine bulk storage facility will house two self-bunded tanks, 100kL capacity each, to refuel the heavy
vehicles (HVs), light vehicles (LVs) and fuel truck. The fuel supplied to the Kakarook North borefield diesel storage tank will be via a site refuelling truck to a diesel storage tank of 17kL located at the borefield.

**POWER STATION**

Vimy engaged Project Consultancy Services (PCS) to determine the most economic option for electricity supply to the MRP. Electricity to the project will be supplied over the fence under an electricity service agreement.

PCS completed a pre-qualification tender process aimed at shortlisting the electrical power service providers to three companies for consideration during the final round of tendering for the MRP. Preliminary tender submissions were required to be within +0/-10% accuracy. A nominal ten-year contract term was specified in the electricity supply request for proposal (RFP). The RFP was issued to nine potential independent power providers, who provided separate proposals for a diesel or natural gas fired power station. PCS also obtained a bundled transport tariff over a fifteen-year term from APA Group to construct and operate a gas lateral from the Eastern Goldfields gas pipeline to Mulga Rock.

Based on the tender evaluations and PCS cost analysis, a diesel-fired power station has been selected for the MRP. There is 10.3 MW of total installed load with a maximum contracted electricity demand of 7.2MW and an estimated average demand of 6.3MW.
WATER INFRASTRUCTURE

Raw water for the MRP will be sourced from the Kakarook North borefield located approximately 32.5km by road to the northeast of the process plant site. Rockwater Hydrogeological and Environmental Consultants (Rockwater) has conservatively estimated the borefield to contain 167GL of ground water, which based on the expected total project raw water demand of 1.8 to 2.6GL per annum, will comfortably service the mine well beyond its LOM.

The groundwater at Kakarook North has a relatively low-salinity and is suitable for water make-up requirements to the process plant, as well as feed water to the potable water treatment plant that will supply the MRP site including the accommodation village.

The Kakarook North borefield and raw water distribution system has been designed and costed by GRES with assistance from Rockwater, using in-house experience and budget quotations from Original Equipment Manufacturers (OEM). The water supply and distribution system consists of the following major assets:

- Sixteen extraction bores (twelve duty, four standby);
- 4ML borefield water staging pond (at borefield);
- Borefield water duty/standby transfer pumps;
- Package diesel-fired diesel generator set and substation (at borefield);
- 32.5km buried polyethylene transfer pipeline;
- Raw water header tank at process plant; and
- 16ML raw water storage dam at process plant.

Pit water will be used for dust suppression in the mine pit (on haul roads, pit benches, ex-pit overburden landforms and in-pit backfill), and dust suppression for regional and site roads. Any excess pit water will be reinjected downstream of the main Ambassador paleochannel. Rockwater identified an area approximately 7.8km to 12.5km south of the main Ambassador pit within the same paleochannel system as Ambassador, which is deemed sufficiently remote from active mining and well suited for groundwater reinjection.

A reinjection borefield trial was completed in early 2017, confirming reinjection rates that can be sustained. The DFS has made an allowance for the installation of five reinjection bores in Year 7, in preparation for the significant excess pit water quantities expected from Year 9 onwards due to deeper mining depths at Ambassador West, and the commencement of mining activities at Shogun and Emperor.

Figure 9.2: Proposed water infrastructure piping layout
A REINJECTION BOREFIELD TRIAL WAS COMPLETED IN EARLY 2017, CONFIRMING SUSTAINABLE REINJECTION RATES.