



engenium
smart project delivery

Demonstrated Capabilities

- Road design
- Stormwater drainage design
- Road pavement design
- Site supervision of geotechnical and survey services.

NBWT Access to Lens EF Facilities Feasibility Study

Project Location

Pilbara Region, Western Australia.

Scope

Engenium was engaged by a blue-chip mining company in the Pilbara to complete a Prefeasibility Study (PFS) and Feasibility Study (FS) for an 11 km long unsealed access road to link an existing access road to existing facilities at the eastern end of Lens EF. The scope included survey, geotechnical investigations, hydrology study and the detailed design of the road and drainage.

Business Objective

Due to changes in the pit layout all light vehicles, buses, and fuel tanker road trains need to be escorted through the active pit area to access the Lens EF crib hut, maintenance shutdown areas, office facilities and fuel hub. Future mine development will mean an increase in traffic travelling through to this eastern end of the pit area. The proposed access road will help to reduce risk to personnel and increase the efficiency of haulage operations by limiting interactions with other traffic.

Challenges to Overcome

For much of its length, the proposed access road is parallel to an existing railway line. Not all watercourse crossings by the railway have culverts and therefore diversion drains have been constructed to divert stormwater downstream to the nearest culvert. The condition of these railway diversion drains is poor, with water ponding in them. Therefore, road culverts were

only designed at locations immediately upstream of the existing railway culverts to minimise stormwater entering the railway diversion drains. Ensuring that no additional runoff from other catchments was diverted to the railway culverts was challenging. The access road at the western end passed under an existing overhead 33kV powerline and to comply with the clients' requirements for vertical and horizontal clearances changes to the PFS road alignment were made. Suitable borrow pit areas close to the proposed road alignment was a challenge. The nearest basecourse material borrow pit is located 2 km from the eastern end - a haulage distance of approximately 12 km to the western end of the road. Therefore, minimising earthworks quantities was a key consideration in the design.

Smarts

Minimising earthwork quantities was achieved in several ways. The road crossfall was changed from the standard 4% to 3%. The fill batters and table drain foreslopes were steepened from 1V:6H to 1V:4H to reduce earthworks. Engenium was able to demonstrate that, due to the relatively low vehicle speeds and low traffic volumes, there was an insignificant change in risk to road users by steepening the batters.

Project Outcome

Throughout the PFS and FS Engenium developed a good relationship with the client, which assisted in delivering the project on time and budget.

Delivering Value. Delivering Results.