

Appendix H

Traffic



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QPM Energy Project

Traffic Technical Report

Prepared for QPM Energy

October 2022

QPM Energy Project

Traffic Technical Report

QPM Energy

E210671 RP1

October 2022

Version	Date	Prepared by	Approved by	Comments
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Abbreviations

The following abbreviations are used in this report:

Table 1 **Abbreviations**

Abbreviation	Term
CTMP	Construction Traffic Management Plan
DIDO	drive-in-drive-out
DR	District Road
DTMR	Department of Transport and Main Roads
EA	Environmental Authority
EAR	Environmental Assessment Report
EMM	EMM Consulting Pty Ltd
FIFO	fly-in-fly-out
GCF	Gas Compression Facility
ha	hectares
km	Kilometres
Land Act	<i>Land Act 1994</i>
m	metres
NH	National Highway
NQGP	North Queensland Gas Pipeline
NHVR	National Heavy Vehicle Regulator
OSOM	Oversize overmass
QLUMP	Queensland Land Use Mapping Program
QPM Energy	Queensland Pacific Metals Energy
RR	Regional Road
RSNL Act	<i>Rail Safety National Law Act 2017</i>
SCR	State-controlled road
SSR	State Strategic Road
t	tonne
TCP	Traffic Control Plan
TECH	Townsville Energy Chemicals Hub
the Project	QPM Energy Project
TI Act	<i>Transport Infrastructure Act 1994</i>

TABLE OF CONTENTS

Abbreviations	i
1 Introduction	1
1.1 Project overview	1
1.2 Purpose of this report	1
1.3 Project footprint and study area	1
2 Project description	4
2.1 Project overview	4
2.2 Key project components	4
2.3 Project description influencing traffic matters	5
3 Legislation, policies, standards and guidelines	7
4 Assessment methodology	8
4.1 Desktop assessment	8
4.2 Impact assessment	8
4.3 Risk assessment method	8
5 Existing environment	11
5.1 Road network	11
5.2 Key intersections	11
5.3 Level crossing	13
5.4 Crash analysis	14
6 Development traffic	15
6.1 Construction phase	15
6.2 Construction vehicle types	16
6.3 Operational phase	16
6.4 Decommissioning and rehabilitation	17
7 Traffic impact assessment	18
7.1 Impacts on the road network	18
7.2 Impacts on the intersections	18
7.3 Pedestrian access	19
8 Other mitigation measures	20
8.1 Stakeholder consultation	20

8.2	Traffic control plan and intersection swept path drawings	20
8.3	Inspection and monitoring	21
8.4	Incident and non-compliance notification and complaints management	21
8.5	Occupational health & safety	21
8.6	Works site security	21
8.7	Assessment of the dangerous goods	21
9	Risk assessment	22
10	Conclusion	23
11	References	24

Tables

Table 2.1	Project components	4
Table 2.2	Anticipated workforce	5
Table 3.1	Relevant legislation, policies, standards and guidelines to the traffic assessment	7
Table 4.1	Likelihood criteria	9
Table 4.2	Consequence criteria	9
Table 4.3	Risk assessment matrix	10
Table 9.1	Risk assessment table	22

Figures

Figure 1.1	Local context	3
Figure 5.1	Red Hill Road/Proposed GCF Access Road	12
Figure 5.2	Red Hill Road/Mabbin Road/Ellensfield Road	13
Figure 5.3	Existing rail line intersecting Goonyella Road and Red Hill Road	14

1 Introduction

1.1 Project overview

The QPM Energy Project (the Project) involves the design, construction and operation of a gas compression facility (GCF) and a high-pressure pipeline that links a proposed GCF to the nearby existing North Queensland Gas Pipeline (NQGP).

The Project proposes to collect waste coal mine gas at the proposed GCF via waste gathering lines from existing adjacent mines. At the GCF, waste coal mine gas will be dehydrated and filtered, with the remaining clean gas then compressed and transported via high-pressure pipeline to the existing and operational NQGP. The NQGP will then transport the compressed gas north to Townsville, where it will be depressurised and distributed, by a third party, to industrial users, including QPM's Townsville Energy Chemicals Hub (TECH) Project.

The Project is located approximately 43 kilometres (km) north of Moranbah.

1.2 Purpose of this report

This traffic assessment has been prepared by EMM Consulting Limited (EMM) on behalf of QPM Energy in support of an application for a new Environmental Authority (EA) for a resource activity, as part of the Project.

The purpose of this document is to provide sufficient detail to support an application for a site-specific EA.

The key objectives of this traffic assessment are to:

- review the relevant statutory and policy controls that apply to the site and land use;
- provide details of:
 - description of the proposed construction and operational details;
 - the location of proposed access points;
 - estimated number of construction and operational vehicle movements (light and heavy); and
 - any potential impacts to general traffic within the vicinity of the site from construction and operational vehicles;
- assess the risks associated with deliveries of construction materials and equipment and operations of the site.

This assessment has been made in accordance with the Department of Transport and Main Roads Specifications.

1.3 Project footprint and study area

The Project footprint is comprised of the following components and land areas:

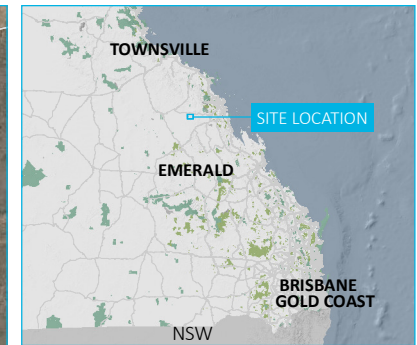
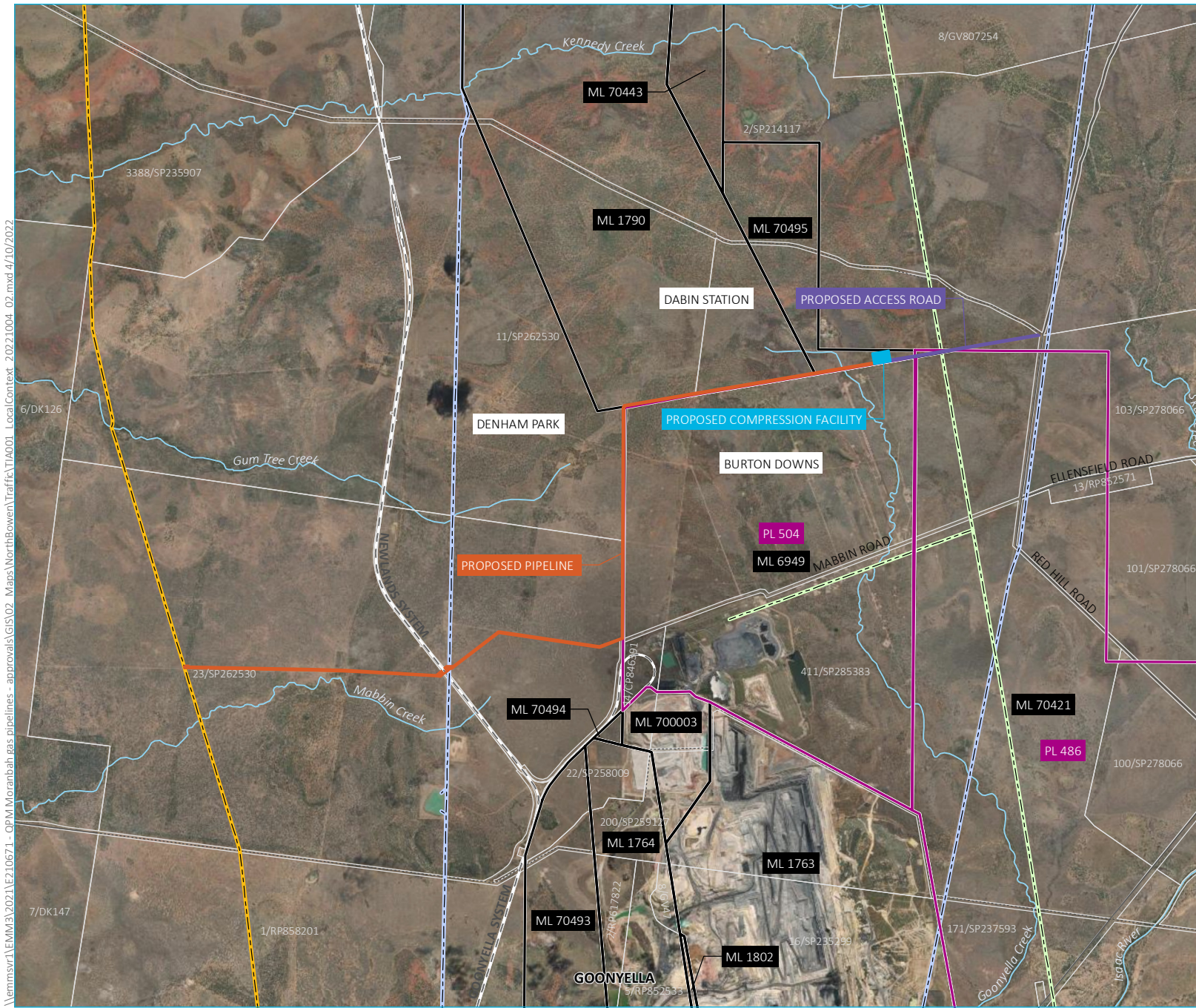
- GCF – 200 metres (m) by 300 m, an area of 6 hectares (ha);
- pipeline – easement initially a 30 m wide construction right of way (an area of 51 ha) which reduces to a 15 m wide operating easement (an area of 25 ha) after the first 3.2 km from the GCF;
- access road – 8 ha being a 30 m wide easement from Red Hill Road to the GCF – a distance of 2.8 km; and
- other incidental/ancillary activities, within the above footprint.

A detailed project description is provided in Section 3 of the Environment Assessment Report (EAR).

For the purposes of this traffic assessment, the study area is the Project footprint and the following access tracks to be used by construction and operational vehicles:

- GCF Access Road between Red Hill Road and GCF;
- Mabbin Road along the top of North Goonyella Mine off Red Hill Road; and
- along the pipeline.

The Project footprint is shown in Figure 1.1.



- KEY**
- Gas compression facility
 - Pipeline
 - Access road
 - Mining lease
 - Petroleum lease
 - Electrical transmission line
 - - - North Queensland Gas Pipeline
 - Water pipeline
 - - - Rail line
 - Minor road
 - · - · - Vehicular track
 - Named watercourse
 - Cadastral boundary
- INSET KEY**
- Main road
 - National park
 - State forest

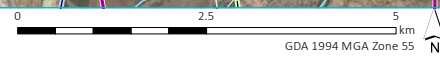
Local context

QPM Energy Project
Traffic
Figure 1.1



\\lemmsvr1\EMM3\2021\E210671 - QPM Moranbah gas pipelines - approvals\GIS\02 - Maps\NorthBowen\Traffic\TIA001 LocalContext_20211004_02.mxd 4/10/2022

Source: EMM (2022); DNRME (2021); DES (2021); GA (2011); ASGC (2006)



2 Project description

2.1 Project overview

The Project involves the design, construction, and operation of a GCF and a high-pressure pipeline that links the proposed GCF to the nearby existing and operational NQGP.

The Project proposes to collect waste coal mine gas at the proposed GCF via waste gas gathering lines located at adjacent coal mines. At the GCF, waste coal mine gas will be dehydrated and filtered, with the remaining clean gas then compressed and transported via high-pressure pipeline to the existing and operational NQGP. The NQGP will then transport the compressed gas north to Townsville, where it will be depressurised and distributed, by a third party, to industrial users, including QPM's TECH Project.

Access to the GCF will be provided via the construction of a 2.8 km all-weather access road from Red Hill Road.

Ancillary activities will also occur within the defined Project footprint.

The Project is proposed 43 km north of Moranbah.

It should be noted that the Project involves capturing and converting methane in waste coal mine gas (a greenhouse gas) into carbon dioxide that would otherwise be released into the atmosphere by the relevant coal mining operator. The Project proposes to capture and convert waste coal mine gas through a process of filtration to remove water slugs and fine coal dust, compression, dehydration to remove water vapour, and flaring, in the event of a shutdown. It does not involve refining natural gas or coal seam methane gas.

For further detail on the Project description refer to Section 3 of the Environmental Assessment Report.

2.2 Key project components

Table 2.1 describes the key components of the Project.

Table 2.1 Project components

Component	Description
Gas Compression Facility	<ul style="list-style-type: none">• Captures and converts waste coal mine gas to clean gas which is then compressed to 15.3 megapascal for transport within the high pressure gas pipeline.• Proposed to be located at Dabin Station on the southern boundary of Lot 2 SP214117 and 2.7 km west of the Red Hill Road reserve.• Sited on a 200 m by 300 m area.• 6 ha disturbance footprint.
High-pressure pipeline	<ul style="list-style-type: none">• High-pressure pipeline to transport clean compressed gas from the GCF to the NQGP.• 16.8 km in length, running along cleared areas, fence lines and fire breaks along property boundaries.• During construction, a 30 m wide construction right of way (disturbance area of 51 ha).• During operations, a 15 m wide operating easement (disturbance area of 25 ha) after the first 3.2 km.
Access road	<ul style="list-style-type: none">• Road to provide all-weather access to the GCF from Red Hill Road reserve.• 2.8 km long and 30 m wide.• 8 ha disturbance footprint.

2.3 Project description influencing traffic matters

2.3.1 Traffic and access

The Project will require the construction of a 2.8 km all access road from Red Hill Road to the GCF within a 30 m easement. The road will need to support heavy vehicle traffic throughout the construction phase of development and will be maintained to cater for operational traffic loads.

Whilst the elevation overall is relatively flat, the proposed track is characterised by rising and falling elevations; typically, around 1 m in 200 m. Surface treatment will be based on compacted crushed rock sourced locally with known performance characteristics.

Two to four buses will transfer employees to site daily. It is expected that 6 to 10 cars will transit to site on a daily basis. A trafficable lane will also be maintained within the pipeline easement to allow access to support personnel for inspection and maintenance purposes.

2.3.2 Construction timing and ramp up

The Project is designed to be constructed in three stages to match the ramp-up in demand for waste coal mine gas. The design process will consider future capacity so that connection can be made with no major safety, constructability, or operability issues.

Construction of Stage 1 is scheduled to commence in Q1 2023, pending relevant approvals. Subsequent stages will be installed to align with ramp-up of QPM's TECH Project and third-party demand. Construction of the high-pressure pipeline and GCF will take approximately nine months, followed by a commissioning phase which may take up to three months.

2.3.3 Workforce

i Construction

Anticipated workforce numbers are included in Table 2.2. The temporary construction workforce is expected to be accommodated in existing regional accommodation camps, with mobilisation and demobilisation of the workforce to and from the region, either via drive-in/drive-out (DIDO) or fly-in/fly-out (FIFO) from Moranbah Airport.

Table 2.2 Anticipated workforce

Entity	Average workforce	Peak workforce
Project team	4	10
Earthworks	10	15
Piling	6	6
Structural Mechanical Piping Electrical Instrumentation Construction	30	40
High-pressure pipeline	12	12
Pre-commissioning and commissioning	12	14

ii Operations

The GCF is expected have one daytime operator for scheduled maintenance, inspection activities and other routine tasks. This role will be supported by three trained staff.

Operating personnel will live in the surrounding area and transfer to site on a roster arrangement.

If local personnel are not available for the permanent operations, DIDO personnel will be employed and accommodated at existing facilities in the region in either mining camps or with local housing. If DIDO personnel are unavailable, FIFO personnel will be hired with similar accommodation arrangements.

Further detail on the project description is provided in the EAR (EMM, 2022) which is the key document supporting the EA application.

3 Legislation, policies, standards and guidelines

The following legislation, policies, standards and guidelines in Table 3.1 are relevant to this traffic assessment.

Table 3.1 Relevant legislation, policies, standards and guidelines to the traffic assessment

Document	Relevance to the assessment
Legislation	
<i>QLD Transport Infrastructure Act 1994 (TI Act)</i>	<p>The TI Act is to provide a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure. For roads this means:</p> <ul style="list-style-type: none"> • those of national and State significance can be effectively planned and efficiently managed; • adequate levels of safety and community access to the road network can be provided; and • that impacts on adjacent developments from environmental emissions generated by SCRs can be addressed.
<i>Land Act 1994 (Land Act)</i>	<p>One of the main purposes of the Land Act is to allocate land for development in the context of the State’s planning framework and applying contemporary best practice in design and land management.</p>
<i>Rail Safety National Law Act 2017 (RSNL Act)</i>	<p>The RSNL Act provides for safe railway operations in Australia by establishing the Office of the National Rail Safety Regulator. This act makes provision for a national system of rail safety and for the effective management of safety risks associated with railway operations.</p>
Policies, standards, guidelines	
<i>Austrroads Guide to Road Design Part 3: Geometric Design</i>	<p>The Guide provides road designers and other practitioners with information about the geometric design of road alignments. Design parameters including speed parameters, and horizontal and vertical alignments should be considered.</p>
<i>Austrroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections</i>	<p>The Guide provides road designers and other practitioners with guidance on the detailed geometric design of all at-grade intersections. It contains information for the design of signalised and unsignalized intersections such as intersection sight distances and turn treatment.</p>
<i>Austrroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments</i>	<p>The Guide provides guidance to planners and engineers in identifying and managing the impacts on the road system arising from a variety of land use developments. It aims to ensure consistency in the assessment and treatment of traffic impacts, while addressing the needs of all road users and the effect on the broader community.</p>
<i>The Guide to Traffic Impact Assessment</i>	<p>The Guide outlines the considerations that need to be documented in a TIA. This includes the impacts the development proposal is likely to have on both local and State-controlled road (SCR) network operations and on transport infrastructure, and recommends measures to avoid, manage and mitigate these impacts.</p>

4 Assessment methodology

4.1 Desktop assessment

Traffic related information, such as Department of Transport and Main Roads (DTMR) SCR and region maps, Queensland Land Use Mapping Program (QLUMP), Queensland Government Open Data Portal, DTMR heavy vehicle route maps and restrictions, Google StreetView, Metromap and Queensland Globe, has been reviewed in preparation of this assessment.

4.2 Impact assessment

Impacts have been assessed utilising traffic volumes, road conditions and publicly available statistics on crashes in the Project vicinity. The impacts have been categorised utilising a risk-based approach.

4.2.1 Assessment criteria

The impacts have been assessed based on the criteria set out in the Guide to Traffic Impact Assessment.

4.3 Risk assessment method

The risk-based approach to hazard assessment and management involved the following key steps:

- Identification: This step identifies the areas of impact, potential hazards and their causes and potential consequences.
- Analysis of inherent risk: This involves developing an understanding of the risks, including the likelihood and consequences of particular events, without considering mitigation measures. The likelihood, consequence and risk scoring criteria are defined in Table 4.1, Table 4.2 and Table 4.3.
- Evaluation: Information from the risk analysis is combined to assess the overall level of risk of an event as demonstrated in Table 9.1. This helps to determine which hazards and risks need treatment or management. It also prioritises treatment.
- Mitigation: This involves identification of relevant and appropriate mitigation measures and how they will be implemented to reduce the risk.
- Analysis of residual risk: Risks are analysed again after the application of mitigation measures.

Likelihood criteria are given in Table 4.1.

Table 4.1 **Likelihood criteria**

Likelihood	Description	Frequency
A) Almost certain	Can be expected to occur in most circumstances	>85%
B) Likely	Will probably occur in most circumstances	40–85%
C) Possible	Might occur at some time	20–40%
D) Unlikely	Could occur at some time	5–20%
E) Rare	May only occur in exceptional circumstances	<5%

Consequence criteria are given in Table 4.2.

Table 4.2 **Consequence criteria**

Rating	Description
5. Severe: <i>Widespread serious permanent effect</i>	Incident is reportable to the regulator, serious permanent/persistent and irreversible damage is caused, significant public interest and media coverage and/or uncontained impacts.
4. Major: <i>Widespread, moderate to long-term effect</i>	Incident is reportable to the regulator and notable damage is caused to an area or asset from which it will take more than 10 years to recover with long-term evidence of the incident resulting, or incident is reportable to the regulator and public concern raised.
3. Moderate: <i>Localised, short-term to moderate effect</i>	Moderate but repairable damage that will take up to 10 years to recover, or incident is reportable to the regulator.
2. Minor: <i>Localised short-term effect</i>	Minor damage to the environment or heritage asset or area that is immediately contained on-site. It will take less than two years for the resource or asset to fully recover or it will only require minor repair, or disturbance to scarce or sensitive environmental or heritage resources.
1. Insignificant: <i>No impact or no lasting effect</i>	Negligible damage that is contained on-site OR The damage is fully recoverable with no permanent effects, taking less than three months to fully recover

The risk assessment matrix in Table 4.3 is used to combine the likelihood and consequence rating, to give a risk assessment score.

Table 4.3 Risk assessment matrix

Likelihood	Consequence				
	1) Insignificant	2) Minor	3) Moderate	4) Major	5) Severe
A) Almost certain	Medium A1	Medium A2	High A3	Extreme A4	Extreme A5
B) Likely	Low B1	Medium B2	High B3	Extreme B4	Extreme B5
C) Possible	Low C1	Low C2	Medium C3	High C4	High C5
D) Unlikely	Low D1	Low D2	Low D3	Medium D4	Medium D5
E) Rare	Low E1	Low E2	Low E3	Low E4	Medium E5

5 Existing environment

5.1 Road network

The DTMR comprises of four administrative classifications in its hierarchy of roads. These are:

- National Highway (NH);
- State Strategic Road (SSR);
- Regional Road (RR); and
- District Road (DR).

The above four classification are SCRs. The local roads are managed by local Councils.

5.1.1 Red Hill Road

Red Hill Road is a local road of regional significance and connects Suttor Developmental Road to the north and Goonyella Road to the south. The road is a two-lane two-way road generally with a width of 7 m under the care and control of Isaac Regional Council.

The road crosses the Goonyella System rail line at two locations.

Currently there is a seasonally-locked gate at the Red Hill Road/Mabbin Road/Ellensfield Road intersection. Gate access or relocation will be required from the current intersection at Ellensfield Road to the Proposed Access Road Intersection.

A cattle grid may be required at the turn-off to the GCF access road, subsequently replaced by a locked gate on completion of construction.

5.1.2 GCF Access Road

The GCF Access Road commences at the intersection of Red Hill Road and an unconstructed easement for a proposed road.

The 30 m wide road easement follows the existing fence line between Dabin Station and Burton Downs and will upgrade existing formed farm tracks along a fenceline.

Whilst the elevation overall is relatively flat, the proposed track is characterised by rising and falling elevation – typically around 1 m in 200 m.

5.1.3 Mabbin Road

Mabbin Road is a two-lane, two-way local road with a width of 7 m and provides access to North Goonyella Mine off Red Hill Road at the intersection of Ellensfield Road.

5.2 Key intersections

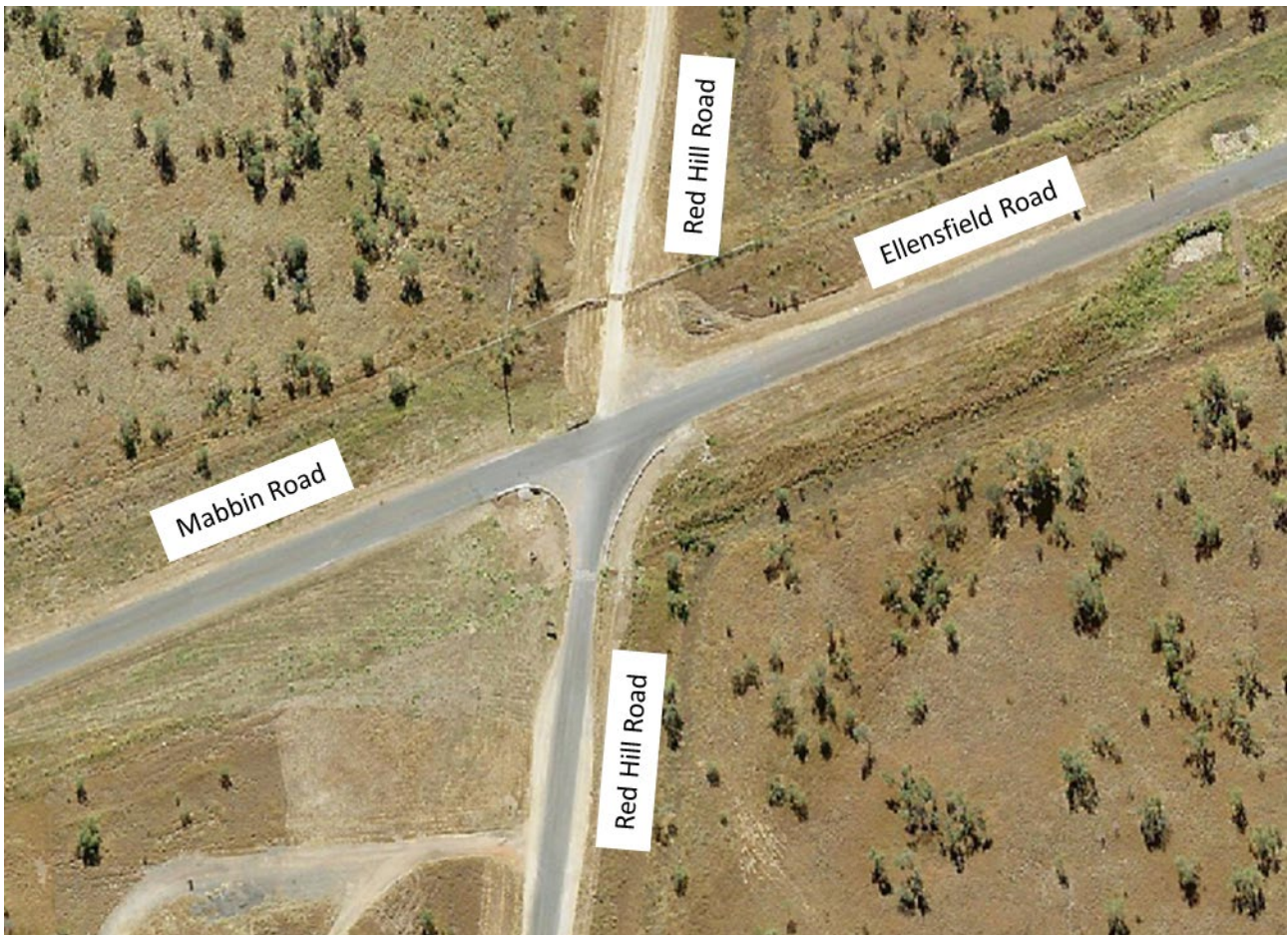
The key intersections are as follows:

- Road Hill Road/GCF Access Road; and
- Red Hill Road/Mabbin Road/Ellensfield Road.



Source: Queensland Globe

Figure 5.1 Red Hill Road/Proposed GCF Access Road



Source: Queensland Globe

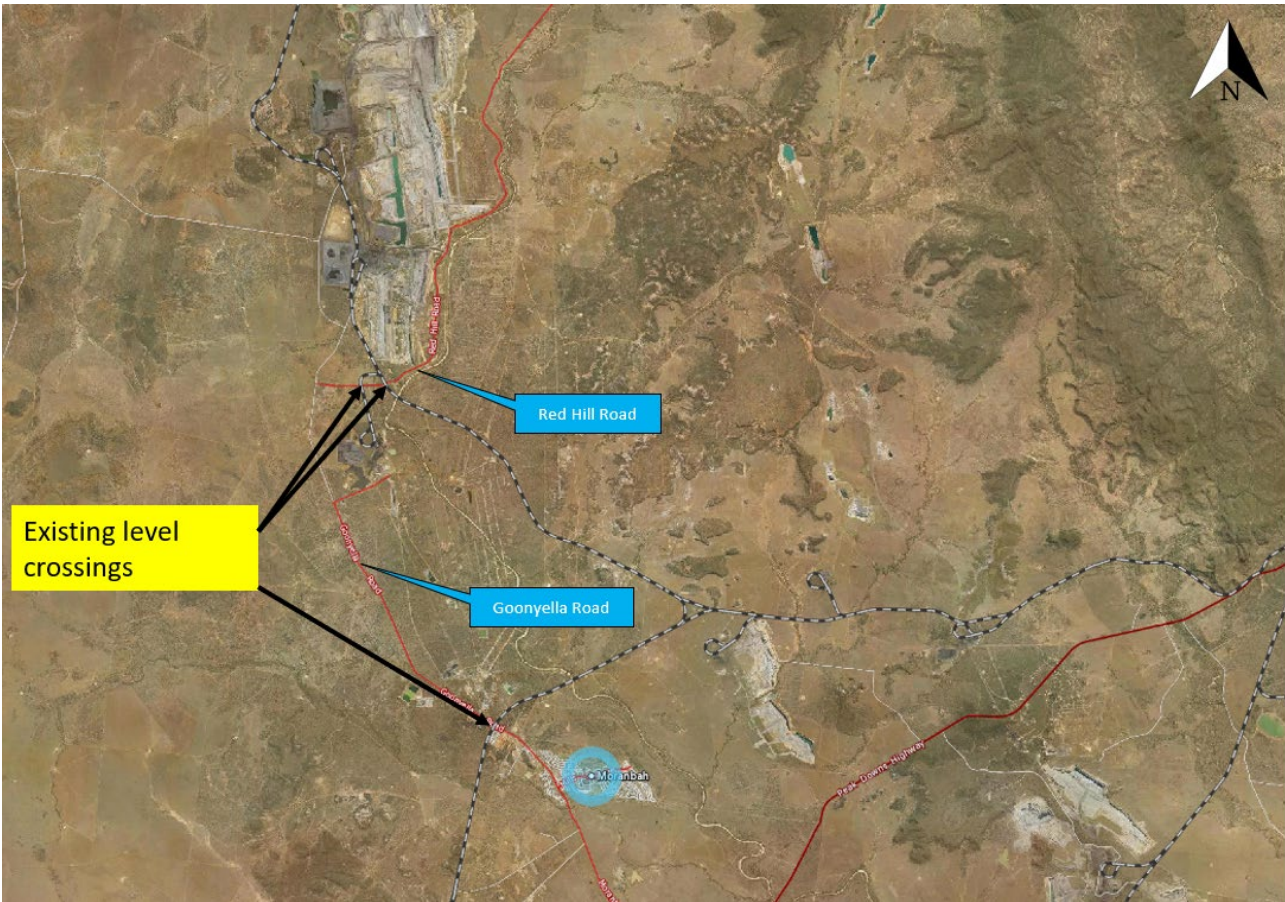
Figure 5.2 Red Hill Road/Mabbin Road/Ellensfield Road

The above figures show that the intersections are priority-controlled intersections where the main throughfare obtains the priority over the minor approaches.

5.3 Level crossing

The railway lines around Moranbah are part of a coal rail network called the Goonyella System, which is owned, managed and operated by the private freight rail company 'Aurizon'. There does not appear to be any passenger services on this network. Documents from Aurizon suggest that they use ViziRail to plan and keep track of train schedules, but none of this information appears to be available to public.

The proposed haulage route for the construction traffic will potentially pass three level crossings in total where two of them have overpasses (Figure 5.3).



Source: Queensland Globe

Figure 5.3 Existing rail line intersecting Goonyella Road and Red Hill Road

5.4 Crash analysis

The Queensland Government Open Data portal provides road crash locations and characteristics of crashes within Queensland, for all reported Road Traffic Crashes 1 January 2001 to 30 June 2021.

The road crash data beyond 2021 is not available at the time of preparation of this report. There has been one recorded road crash within 5 km of the Project footprint. The crash which occurred in 2015 resulted in one injury which was medically treated but no fatality.

One recorded crash in five-year window is considered to be minor and does not raise any road safety concern.

6 Development traffic

6.1 Construction phase

6.1.1 Description

The pipeline will be installed 11 m from one side of the 30 m wide construction easement (right of way (ROW)). Post-construction, the easement will reduce to a 15 m operating width after the first 3.2 km which comprises the 11 m to the pipeline centreline. This section typically includes a farm track alongside a fence line plus 4 m to the other side of the pipeline to allow rehabilitation of the pipeline corridor.

Construction of the GCF will take approximately nine months, followed by the commissioning stage, which will take approximately three months.

6.1.2 Traffic generation

It is estimated that there will be a total of 14,477 truck trips over the 12-month construction and commissioning period (a daily average of 40 heavy vehicle trips). These include delivery of equipment and materials, water truck movements, and delivery of quarry products.

Construction will take place from 7.00 am to 6.00 pm, seven days a week (average hourly heavy vehicle traffic volumes of 3.6 trips or 7.2 two-way movements). These traffic volumes are considered minor. However, consultation with Isaac Regional Council and DTMR will be required in terms of new road construction and maintenance within the construction window and beyond. A pre and post road dilapidation survey may be requested by the road authorities.

The anticipated workforce is estimated to be on average 40 workers, with a peak of around 80 personnel. Workers' roles are assumed to be on a DIDO or FIFO basis, and workers will be based at either nearby regional camps or in Moranbah. The anticipated roster is three weeks on, followed by one week off.

Construction of GCF will be largely from prefabricated modules including compressor units that require oversize vehicle for delivery. Some of the larger construction plant may also require oversize vehicle for delivery. These will be submitted to National Heavy Vehicle Regulator (NVHR) separately for approval.

6.1.3 Haulage route

It is anticipated that most of the construction materials will be transported from Moranbah township which is located approximately 43 km to the south. The likely haulage route will be Goonyella Road – Red Hill Road – North Goonyella Mine Access Road. This will be detailed in the Construction Traffic Management Plan (CTMP) to be prepared prior to commencing construction activities.

6.1.4 Air transport of construction worker

Moranbah Airport is located 6 km south of the Moranbah township and is approximately 62 km from the Red Hill Road/Mabbin Road/Ellensfield Road intersection nearby to the site. The airport averages 40 QantasLink and 7 Alliance flights from this terminal each week. All flights are to/from Brisbane.

Due to the relatively long distance between the site and the closest airport, it is likely that shuttle bus operations will be required to transfer workers from the site to/ from Moranbah airport. Shuttle bus operation will be detailed in the CTMP.

6.2 Construction vehicle types

The development will require the removal and delivery of mixed materials. Deliveries will be generally using rigid trucks or semi-trailers or other prime movers. Vehicles and machinery that may be used as part of the construction of the Project include:

- semi-trailers;
- truck and dog trailers;
- side tippers;
- prime mover and floats;
- loaders;
- bulldozers;
- excavators;
- front end loaders;
- a pile driving rig;
- water carts;
- backhoes;
- pipelayers;
- 3 tonne (t) and 8 t Hiab trucks; and
- a 25 t Franna cranes.

6.3 Operational phase

The manning philosophy for the operating compression facility is based on unmanned facility and automated operations. However, this facility is expected have an operator daytime for scheduled maintenance, inspection activities and other routine operation tasks.

Operating personnel will live in the surrounding area (Moranbah) and transfer to site on a roster arrangement.

If local personnel are not available for the permanent operations, DIDO personnel will be employed and accommodated at existing facilities in the region either mining camps or with local housing. If drive-in/drive-out personnel are unavailable, FIFO personnel will be hired with similar accommodation arrangements.

Once complete, the compressor stations will have an average design life of approximately 25 years as is the pipeline. It is expected that the gas compression facility and pipeline life would be extended through integrity management.

6.4 Decommissioning and rehabilitation

The operating team will continue to monitor the condition of equipment up to and beyond the end of life to ensure equipment is sound and fit for further service. Continued operation beyond the nominal design life will be subject to specific equipment condition and plant fitness assessments. The compressor station will be decommissioned when there is no further economic potential to continued use.

7 Traffic impact assessment

7.1 Impacts on the road network

Most of the impacts to the adjoining road network will occur during the construction stage, as operational traffic volumes used during the maintenance of the gas pipeline is expected to be minimal. Due to the rural nature of the township, and the existing operations of nearby sites, the additional traffic volumes generated by the Project on the road local road network is considered to be low. However, appropriate discussion will be required with Isaac Regional Council for any road maintenance strategy, existing road safety issues or community concerns.

In order to construct the 2.8 km long private GCF Access Road, relevant ¹ Austroads road design standard must be met eg lane and shoulder widths, crossfall, pavement condition, speed limit, roadside drainage, sight distance etc.

The Isaac Regional Council's guidelines for works on the connection to Red Hill road corridor must be followed.

7.2 Impacts on the intersections

Due to the low volumes of it is expected that the impacts on the priority-controlled intersections will be minor. As previously mentioned, the average hourly movements expected at the intersection will be around 3.6 return trips (7.2 one-way movements). The low volume of additional movements would result in negligible impacts to the flow and operations of the existing intersections.

The new intersection connecting the Project site to Red Hill Road will need to be designed to allow for unimpeded flow along Red Hill Road and will need to accommodate turning of the largest vehicles.

7.2.1 Oversize Over Mass (OSOM) delivery

As stated earlier, any OSOM delivery will need to be approved by NHVR. NHVR will contact the relevant stakeholders eg DTMR, Isaac Regional Council as part of the approval process. All costs associated with NHVR applications are to be borne by the proponent.

Swept path assessments may be required to determine the adequacy of the road network and key intersections that will be affected.

7.2.2 Level crossing assessment

Any affected rail haulage is subject to an at grade level crossing assessment at one location (Figure 5.3). However, due to the rural nature of the site and low traffic volumes, existing rail operation is not expected to have to any significant impact to the operation of the road network. Assuming upon arrival of a train, there is existing boom gate control management in place at the at grade crossing, there may be slight delays to vehicles accessing site due to arriving or departing trains, however, this is not expected to result in any unacceptable queuing along the existing road network.

If necessary, consultation should occur Aurizon for construction vehicle scheduling and ensuring its safety.

¹ Austroads Guide to Road Design Part 3: Geometric Design, Guide to Road Design Part 6B: Roadside Environment, Guide to Road Design Part 5A Drainage – Road Surface, Networks, Basins and subsurface

7.3 Pedestrian access

To provide segregation and protection for pedestrians, site fencing will be provided to define all boundaries of the works site.

The risk of pedestrian activity in the locality is considered negligible due to the distance (40 km typically) from the nearest urban areas.

8 Other mitigation measures

8.1 Stakeholder consultation

The relevant State and council transport agency stakeholders will be informed of the Project and possible impacts.

8.1.1 Drivers' code of conduct

To avoid driver fatigue particularly during the construction period, driver's code of conduct is to be developed, implemented and followed, effectiveness of the measures will be reviewed regularly.

The Driver's Code of Conduct will be sent to all relevant personnel prior to their arrival at site. The Driver's Code of Conduct will be required to be read and signed by all light and heavy vehicle drivers prior to operation of vehicles. This will be in addition to regular safety briefings and updates. The Driver's Code of Conduct will address all relevant site and locality road safety and traffic management measures including:

- compliance with all road rules and regulations;
- commuter traffic routes;
- vehicle speeds;
- driving to local road conditions;
- driver behaviour near schools, residential and shopping areas;
- courtesy to other road users;
- fatigue management;
- dangers of mobile phone use while driving;
- checking vehicles and covering loads;
- the appropriate use of compression braking; and
- safety procedures for accidents and breakdowns.

The Driver's Code of Conduct will also include a single page summary detailing the site access, primary and OSOM transport routes and other key aspects of light and heavy vehicle related compliance.

8.1.2 Construction Traffic Management Plan (CTMP)

A detailed CTMP would also need to be prepared to mitigate the risk associated to the operation of the construction vehicles. A site plan showing the site access from the public roads will show the heavy vehicle manoeuvrability to/from and within the site. Documentation on management of the debris on the road during the construction, by enforcing the use of wheel wash and load covering prior to leaving the site will be detailed.

As stated in Section 5.1.1, gate and cattle grid relocation will be detailed in the CTMP.

8.2 Traffic control plan and intersection swept path drawings

A Traffic Control Plan (TCP) will be developed by the contractor in accordance with the Australian Standards and relevant DTMR guidelines. The TCP will be lodged separately along with any necessary application and submitted to the relevant authorities, prior to the commencement of construction.

8.3 Inspection and monitoring

The proponent will undertake weekly visual inspections of affected public roads to ensure it is retained in a safe and serviceable condition.

8.4 Incident and non-compliance notification and complaints management

Incidents will be reported internally in accordance with the approval conditions.

QPM Energy will respond to complaints received from the administering authority within 14 days of completion of the investigation or receipt of the monitoring results.

The complaints management system will document:

- name of person receiving complaint;
- name of person making the complaint;
- date and time of complaint;
- nature of the complaint;
- actions taken to rectify;
- actions to minimise risk of reoccurrence; and
- name of person(s) responsible for undertaking the required actions.

8.5 Occupational health & safety

Any personnel required to undertake works or traffic control within the public domain shall be suitably trained and covered by appropriate insurances. If any traffic controllers are used, they must be DTMR accredited.

8.6 Works site security

All site access gates will be securely locked when the site is unoccupied, or construction activities are not in progress.

8.7 Assessment of the dangerous goods

For any transportation of dangerous goods, necessary approval will be sought from *National Heavy Vehicle Regular* (NHVR). The NHVR website stipulates that it is a legislative requirement that all road tank vehicles intended to transport dangerous goods must meet the requirements set out in Chapter 6.9 of the *Australian Dangerous Goods Code*. Operators must obtain a PBS vehicle approval from the NHVR and approval from the Competent Authority in the jurisdiction they wish to operate for the carriage of dangerous goods. PBS vehicles carrying dangerous goods describes the requirements for PBS approved tankers carrying dangerous goods.

9 Risk assessment

Table 9.1 identifies the potential traffic risks to the Project, and presents a risk assessment prior to implementation of mitigation measures, and then with the implantation of mitigation measures.

All risks have been reduced to a low residual risk, with the exception of ‘increased risk of vehicle collision due to driver fatigue’ which remains a medium residual risk.

Table 9.1 Risk assessment table

Risk	Description	Mitigation	Phase	Without mitigation			With mitigation		
				L	C	R	L	C	R
Delay and safety	Increased through traffic on the road network resulting in additional delays and potential for vehicle collision.	No action	Construction	D	2	L	D	2	L
			Operation	E	2	L	E	2	L
Congestion	Increased traffic at intersections causing congestion for motorists.	No action	Construction	D	1	L	D	1	L
			Operation	E	1	L	E	1	L
Fatigue	Increased risk of vehicle collision due to driver fatigue.	Driver’s code of conduct to be implemented and followed, effectiveness of the measures will be reviewed regularly.	Construction	C	4	H	D	4	M
			Operation	E	5	M	E	5	M
Debris	Debris/haulage material on roads during the construction and operations stages.	Traffic management plan will be prepared to mitigate the risk such as load covering and wheel wash.	Construction	B	2	M	D	2	L
			Operation	E	2	L	E	2	L
Hazardous and dangerous material	Transportation of hazardous and dangerous materials during the construction and operations stages.	Transportation of hazardous and dangerous goods to comply with Australian Dangerous Goods Code.	Construction	D	5	M	D	2	L
			Operation	E	5	M	E	2	L

Key:
(L) Likelihood (C) Consequence (R) Risk

10 Conclusion

The QPM Energy Project (the Project) involves the design, construction and operation of a GCF and a high-pressure pipeline that links a proposed GCF to the nearby existing NQGP.

The Project proposes to collect waste coal mine gas at the proposed GCF via third party coal mine waste gas gathering lines located on adjacent Coal Mines. At the GCF, waste coal mine gas will be dehydrated and filtered, with the remaining clean gas then compressed and transported via high-pressure pipeline to the existing and operational NQGP. The NQGP will then transport the compressed gas north to Townsville, where in turn it will be depressurised and distributed, by a third party, to industrial users, including the QPM TECH Project.

The results of the traffic and transport assessment are summarised below:

- the traffic generation due to the Project is expected to have minimal impact to the existing road network. However, further discussion will be required with Isaac Regional Council in terms of road maintenance strategy during the construction period;
- any OSOM vehicle accessibility is subject to NHVR approval for the Project;
- a CTMP will be prepared, associated with necessary TCP which will minimise any potential risks generated by construction vehicles in the locality;
- the appointed construction contractor will implement Drivers Code of Conduct to ensure safety to all road users; and
- stakeholder consultation will be undertaken in due course and appropriate community complaint management strategy will be in place.

11 References

EMM. (2022). QPM Energy Project - Environmental Assessment Report. Brisbane: EMM Consulting Pty Ltd.

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