# PROJECT CHINA STONE

Traffic and Transport **19** 

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# 19 TRAFFIC AND TRANSPORT

# 19.1 INTRODUCTION

This section provides a summary of the impacts of Project China Stone (the project) on road traffic, and rail, port and air transport. A detailed Road Impact Assessment (RIA) was undertaken by Cardno (Qld) Pty Ltd and is presented in the *Road Impact Assessment Report* (Appendix O).

# 19.2 ROAD TRAFFIC

The project site is located approximately 270 km south of Townsville and 300 km west of Mackay in Central Queensland (Figure 19-1). The site is remote, with the closest townships being Charters Towers, approximately 285 km by road to the north, and Clermont, approximately 260 km by road to the south-east. The project site, covering an area of approximately 20,000 ha, is at the north-western limit of the Isaac Regional Council (IRC) Local Government Area (LGA), and adjacent to the southern boundary of the Charters Towers Regional Council (CTRC) LGA. The road network relevant to the project is identified in Figure 19-1.

Access to the project site is via the Gregory Developmental Road and local council roads. A new mine access road will connect the project site to the Moray-Carmichael Road. The exact location of the access road is not finalised at this point in time and separate approval applications for this infrastructure will be lodged in the future. An indicative alignment of the access road is shown on Figure 19-1. As shown in Figure 19-1, there are no public roads within the project site.

The EIS RIA was carried out in accordance with the Department of Transport and Main Roads' (TMR) *Guidelines for Assessment of Road Impacts of Development*. The impacts assessed include those affecting the operation of external intersections, road pavement performance and road safety. Traffic operation impacts were assessed up to the ten-year design horizon following commencement of mining operations.

For the purpose of the RIA, an inspection of the existing road network was undertaken by the project team. In addition, existing road condition data was sourced from TMR, CTRC and IRC. This includes data relating to traffic volumes, crashes and school bus routes, as well as information pertaining to future planning for the road network. Information in relation to the likely traffic generation of the project was sourced from the proponent.

# 19.2.1 Existing Road Network

The key roads that will be used by the project traffic are the Flinders Highway, Gregory Developmental Road, Moray-Carmichael Road and Elgin-Moray Road (Figure 19-1). The Peak Downs Highway will be used to a much lesser extent, but has been included for completeness. The key characteristics of each road is summarised in Table 19-1.

ROAD	AUTHORITY	TYPICAL FORM	STOCK ROUTE	MULTI-COMBINATION VEHICLE ALLOWANCES
Flinders Highway	TMR	2 lane sealed, undivided	Partial	B-triples, Type 1 and 2 Road trains, 23 & 25 m B-doubles
Gregory Developmental Road	TMR	2 lane sealed, undivided	Partial	B-triples, Type 1 and 2 Road trains, 23 & 25 m B-doubles
Peak Downs Highway	TMR	2 lane sealed, undivided	Partial	B-triples, Type 1 Road trains, 23 & 25 m B-doubles
Moray-Carmichael Road	IRC/ CTRC	2 lane unsealed, undivided	Partial	B-triples, Type 1 and 2 Road trains, 23 & 25 m B-doubles
Elgin-Moray Road	IRC	2 lane unsealed, undivided	Partial	B-triples, Type 1 and 2 Road trains, 23 & 25 m B-doubles

Table 19-1	Existing Ro	ad Network	<b>Characteristics</b>
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Source: Qld Government (2013)

# Road Authority Network Planning

TMR's *Queensland Transport and Roads Investment Program 2014-2015 to 2017-2018* (QTRIP) has allocated approximately \$6.4 million to improvements along sections of the Flinders Highway and Peak Downs Highway that may be utilised by traffic associated with the project. These planned works are summarised in Table 19-2.

#### Table 19-2 QTRIP Summary

PROJECT NAME	LOCATION DESCRIPTION	INDICATIVE TIMING	WORK DESCRIPTION
Flinders Highway (14A: Townsville to Charters Towers)	Southern Port Road	2014-15	Relocate hazardous objects close to road/s
Flinders Highway (14A: Townsville to Charters Towers)	Section: 122.00 – 124.80km	2014-15	Rehabilitate pavement
Flinders Highway (14B: Charters Towers to Hughenden)	Section: 0 – 139.40km	2014-15	Relocate hazardous objects close to road/s
Peak Downs Highway (33A: Clermont to Nebo)	Section: 96.00 – 151.00km	2014-15	Undertake transport project planning

Source: TMR (2014)

Table 19-2 identifies that only planning, pavement and safety works are planned to be undertaken on the road network utilised by project traffic. As these works are unlikely to add additional operational capacity to the road network these improvements have not been specifically considered when assessing the potential impact of project traffic. This approach is considered conservative as the project's impacts have been identified in the absence of these planned network improvements.

# 19.2.2 Existing (Baseline) Traffic Volumes

Existing traffic volume estimates have been obtained from a variety of sources including permanent count site data supplied by TMR, traffic counts undertaken by Austraffic, in addition to data and information contained in road assessment reports prepared for the Carmichael Coal Mine & Rail Project (CCM&RP).

#### **Background Traffic Volumes**

Table 19-3 and Table 19-4, respectively, summarise the daily and peak hour traffic volume data utilised as part of the RIA.

ROAD	COUNT SITE	SITE REFERENCE	YEAR	AADT (VPD)	GROWTH	PERIOD (YEARS)	SOURCE
Flinders Highway	91329	300m East of Rainbow Road	2012	2,932	3.70%	10	TMR
	91701	Weigh In Motion Site Leyshon	2012	763	5.91%	5	
Gregory Developmental Road	150016	Gregory Developmental Road 70m North of Kilcummin-Diamond Downs Road	2013	434	6.06%	10	TMR
Peak Downs Highway	150013	Peak Downs Highway 150013 West of Wuthung Turnout		650	4.53%	10	TMR
Moray-Carmichael Road	n/a	n/a	2012	20	-	-	Brown Consulting

#### Table 19-3 Daily Traffic Volumes

#### Table 19-4 Peak Hour Traffic Volumes

INTERSECTION	TIME	DATE	PEAK HOUR	VOLUME	SOURCE
Flinders Highway/Gregory	Morning	10 Oct 2013	7.00AM – 8.00AM	174	A 1 55
Developmental Road	Afternoon	10 Oct 2013	3.00PM – 4.00PM	225	Austraffic

# Background Traffic Growth

Background traffic growth was forecast utilising historic traffic growth information sourced from TMR to develop a network-wide growth rate. To generally achieve comparable annual traffic volume increases across the extents of the assessed road network, a 3% per annum linear global growth rate was adopted.

#### **Cumulative Road Traffic Impacts**

The adjacent CCM&RP involves the construction of a 60 Mtpa open cut and underground greenfield coal mine and a 189 km greenfield rail line connection adjacent to the project site to the south. Associated road network improvements required to be implemented by the CCM&RP proponent have been considered, where relevant, in the Project China Stone RIA. The baseline traffic volume forecasts also include the traffic volumes associated with the CCM&RP as estimated in their road impact assessment to present a comprehensive cumulative assessment of traffic volumes on the road network.

The Moray Power Project (MPP) involves the construction and operation of a new thermal and diesel power station with a generating capacity of 150 MW. The MPP site is located immediately east of the proposed Carmichael Coal Mine site and will be accessed from Moray-Carmichael Road. A Change a Use of Land application for the MPP was lodged in November 2014. The potential for cumulative road traffic impacts with the MPP has been assessed in the Project China Stone RIA. The assessment concluded that any potential cumulative traffic impacts with the MPP have been effectively taken into account by the global traffic growth rate

assumption for the affected road network. The assumed conservative global traffic growth rate of 3% per annum more than adequately covers the relatively minor increase in traffic generated by the MPP.

# 19.2.3 Construction Phase Traffic Volumes

The project's construction phase is expected to commence in 2016 (Project Year 1). The vehicle movements generated during the construction phase are anticipated to be predominately associated with the delivery of construction equipment, materials and consumables, the removal of wastes and workforce transportation (prior to completion of the Project China Stone airstrip).

### Workforce

The peak workforce during the construction phase will be approximately 3,900 staff in Project Year 4. However, worst case impacts on the road network have been considered for Project Year 1 with a workforce of 1,304 prior to the completion of the Project China Stone airstrip. Prior to the airstrip completion, the majority of mine workforce will commute to the site on a Bus-In Bus-Out basis on a fortnightly roster. The RIA makes allowance for a conservative level of Drive-In Drive-Out activity in order to present a worst-case assessment.

#### Materials

The material movements generated during the construction phase are anticipated to be primarily associated with construction material delivery. It is expected that the majority of material movements will be via the Flinders Highway, Gregory Developmental Road, Moray-Elgin Road and Moray-Carmichael Road to access the project site. Table 19-5 details the anticipated volume of materials during the peak year of the construction phase.

IATERIAL QUANTITY		ORIGIN/ DESTINATION	TYPICAL VEHICLE	
Inputs				
Concrete 47,422 m <sup>3</sup>		Local Quarries / Project Site	Concrete Mixer	
Gravel	663,153	t	Local Quarries / Project Site	6-axle articulated
Stool	7,830	t	Townsville / Project Site	6-axle articulated
Steel	1,957	t	Moranbah / Project Site	6-axle articulated
	7,290	t	Townsville / Project Site	Low Loader
Oversize Equipment	7,290	t	Moranbah / Project Site	Low Loader
	567	t	Townsville / Project Site	6-axle articulated
Plant and Equipment	567	t	Moranbah / Project Site	6-axle articulated
	161	t	Townsville / Project Site	6-axle articulated
Electrical cable	28	t	Moranbah / Project Site	6-axle articulated
	1,859	t	Townsville / Project Site	6-axle articulated
Electrical poles	465	t	Moranbah / Project Site	6-axle articulated
<b>D</b> '	3,950	t	Townsville / Project Site	6-axle articulated
Pipe	988	t	Moranbah / Project Site	6-axle articulated
	292	t	Townsville / Project Site	4-axle truck
Conveyor belt	32	t	Moranbah / Project Site	4-axle truck

#### Table 19-5 Peak Annual Construction Activities Material Requirements

MATERIAL QUANTITY		ORIGIN/ DESTINATION	TYPICAL VEHICLE	
Miscellaneous	737	t	Townsville / Project Site	6-axle articulated
Fuel and Oil	18,500	kL	Townsville / Project Site	B-double tanker
	1,417	items	Townsville / Project Site	5-axle articulated
Prefabricated buildings	607	items	Moranbah / Project Site	5-axle articulated
Service Providers	1,825	veh	Charters Towers / Project Site	4-axle truck
Outputs				
Scrap metal	189	t	Project Site / Townsville	6-axle articulated
General waste	260	t	Project Site / Townsville	6-axle articulated
Hazardous & regulated waste	13	kL	Project Site / Townsville	B-double tanker
Waste oil, sludge & grease	24	kL	Project Site / Townsville	B-double tanker

Source: MacMines

# **Over Dimensional Vehicles**

A number of deliveries to the project site during the construction phase will be of large indivisible equipment and materials which will require an escort. The proponent will obtain all relevant permits from the Queensland Police Service (QPS) in accordance with the requirements of the *Transport Operations (Road Use Management – Mass, Dimensions and Loading) Regulation 2005* and the *Transport Operations (Road Use Management) Act 1995*. All loads will be subject to the permitting requirements of TMR and other regulatory bodies as required. The proponent will provide a detailed schedule regarding the number and size of these loads and their timing in order to facilitate QPS planning once detailed construction planning has commenced.

# 19.2.4 Operations Phase Traffic Volumes

The project will be fully operational by Project Year 6. The vehicle movements generated during the operations phase are anticipated to be predominately associated with the delivery of equipment and consumables and removal of wastes.

#### Workforce

During the operations phase there will be a peak workforce of approximately 3,400 personnel in Project Year 8. The workforce strategy envisages close to 100% of staff will commute to the site on a Fly-In Fly-Out basis from the mine airstrip. The RIA, however, makes allowance for a conservative level of Drive-In Drive-Out activity in order to present a worst-case assessment.

#### Materials

The material movements generated during the operations phase are anticipated to be primarily associated with materials and equipment required for mining operations, as well as for waste removal from site. It is expected that the majority of material movements will travel via the Flinders Highway, Gregory Developmental Road, Moray-Elgin Road and Moray-Carmichael Road to access the project site. Table 19-6 details the anticipated volume of materials during the peak year of the operations phase.

MATERIAL	QUANTITY		ORIGIN/ DESTINATION	TYPICAL VEHICLE
Inputs				
Concrete	3,044	m <sup>3</sup>	Local Quarries / Project Site	Concrete Mixer
Gravel	20,398	t	Local Quarries / Project Site	6-axle articulated
o	142	t	Townsville / Project Site	6-axle articulated
Steel	36	t	Moranbah / Project Site	6-axle articulated
Pipe	2,510	t	Townsville / Project Site	6-axle articulated
Conveyor belt	253	t	Moranbah / Project Site	4-axle truck
Explosive	43,500	t	Townsville / Project Site	4-axle truck
Miscellaneous	15,353	t	Townsville / Project Site	6-axle articulated
Fuel and oil	106,644	kL	Townsville / Project Site	B-double Tanker
Service Providers	1,825	veh	Charters Towers / Project Site	4-axle truck
Outputs				
General waste	1,232	t	Project Site / Townsville	6-axle articulated
Hazardous and regulated waste	62	kL	Project Site / Townsville	B-double Tanker
Waste oil, sludge and grease	5,658	kL	Project Site / Townsville	B-double Tanker

#### Table 19-6 Peak Annual Operations Activities Material Requirements

Source: MacMines

# 19.2.5 Impact on Intersections

The significance of the project's potential traffic volume impact on intersections has been considered at the following intersections:

- Flinders Highway/Gregory Developmental Road intersection;
- Gregory Developmental Road/Elgin-Moray Road intersection (point of access to the State-controlled road network); and
- Proposed Moray-Carmichael Road/Project China Stone Mine Access Road intersection.

Detailed analysis was undertaken using SIDRA Intersection, which is an industry recognised analysis tool for estimating the capacity and performance of intersections. The appropriateness of the intersection forms were also considered using Austroads' turn warrants which consider the relative safety of turn treatments.

# Flinders Highway/Gregory Developmental Road Intersection

The operational and safety assessment established that the existing form of the Flinders Highway/Gregory Developmental Road intersection will continue to meet industry standard performance thresholds and will continue to provide an appropriate level of safety irrespective of the presence of project traffic demands. This finding is generally consistent with the finding of the CCM&RP traffic assessment which identified that the subject intersection had sufficient spare capacity to readily accommodate increased traffic demands.

# Gregory Developmental Road/Elgin-Moray Road Intersection

The operational assessment has established that the existing form of the Gregory Developmental Road/Elgin-Moray Road intersection will continue to meet industry standard performance thresholds irrespective of the presence of project traffic demands.

The safety assessment has however established that improved turn treatments should be provided at the intersection to safely accommodate future traffic volumes. It is noted that upgrade of the intersection to include protected turn lane treatments is required as part of the development of the CCM&RP which is anticipated to precede Project China Stone.

### Moray-Carmichael Road/Project China Stone Mine Access Road Intersection

The operational assessment and safety assessment has established that provision of a basic right turn treatment and a basic left turn treatment at the new mine access road intersection would provide an appropriate level of safety and operational performance. These turn treatments will be provided at the access intersection following resolution of the access road alignment.

# 19.2.6 Impact on Link Level of Service

The significance of the project's potential traffic volume impact on link performance has been considered for the following road sections:

- 14A: Flinders Highway (Charters Towers to Gregory Developmental Road);
- 98B: Gregory Developmental Road (Flinders Highway to Elgin-Moray Road);
- 98A: Gregory Developmental Road (Elgin-Moray Road to Peak Downs Highway);
- 27C: Gregory Highway (Peak Downs Highway to Clermont); and
- 33A: Peak Downs Highway (Clermont to Moranbah).

The link level of service assessment identified that the additional traffic demands associated with the project are not anticipated to significantly impact the operations of any of the assessed links. The analysis identifies that the level of service afforded by the assessed links will be the same irrespective of the presence of traffic demands associated with the project. No upgrades by the proponent are therefore warranted.

# 19.2.7 Impact on Road Pavements

#### Significance Assessment

The following roads were considered to determine if the project was likely to have an impact defined as significant on pavement performance:

- 14A: Flinders Highway (Townsville to Charters Towers);
- 14B: Flinders Highway (Charters Towers to Gregory Developmental Road);
- 98B: Gregory Developmental Road (Belyando Crossing to Charters Towers);
- 98A: Gregory Developmental Road (Clermont to Belyando Crossing);
- 27C: Gregory Highway (Clermont to Gregory Developmental Road);
- 33A: Peak Downs Highway (Clermont to Nebo); and
- 841: Townsville Port Road.

The pavement impact assessment accounts for a linear increase in baseline traffic as discussed in Section 19.2.2. Due to the limited information available on the potential future pavement loadings associated with the CCM&RP, the baseline was not adjusted to account for this project. This has resulted in a conservative assessment of potential pavement impacts as any increase in baseline traffic, over and above the assumed linear increase, would reduce the proportionate contribution of project traffic to any cumulative pavement impacts.

#### **Pavement Rehabilitation Impacts**

Potentially significant impacts on pavement rehabilitation were identified on sections of the Flinders Highway and Gregory Developmental Road during the construction and operations phases (Section 9.2.2 of the *Road Impact Assessment,* Appendix O). In accordance with TMR's guideline, the project is defined as having a significant impact on the timing of pavement rehabilitation only where the acceleration time exceeds one year and if the mitigation works are required within the 10 year mitigation timeframe.

The project's pavement rehabilitation impact will need to be recalculated prior to the commencement of construction based on confirmed pavement loadings associated with the CCM&RP. This will enable the accurate quantification of any monetary contribution towards pavement rehabilitation activities in accordance with the TMR guideline.

### **Pavement Maintenance Impacts**

The impact of project pavement loadings on routine maintenance activity has been identified based on the percentage increase in ESAs on each road segment as a result of the project. Potentially significant increases in pavement maintenance impacts have been identified on the Townsville Port Road, Flinders Highway, Gregory Developmental Road and the Peak Downs Highway (Section 9.2.3 of the *Road Impact Assessment,* Appendix O). It is noted that in many cases the duration of significant impact is limited to the construction phase only.

The project's pavement maintenance impact will need to be recalculated prior to the commencement of construction based on confirmed traffic estimates from the CCM&RP RIA, which is required to be submitted to TMR prior to the commencement of construction. This will enable the accurate quantification of any monetary contribution towards pavement maintenance activities in accordance with the TMR guideline.

# 19.2.8 Impact on Road Safety

#### Road Crash Data

Crash data has been sourced from TMR for the road network surrounding the project site for the following time periods and is classified by crash severity:

- Fatal crashes: 1 January 2007 30 April 2014;
- Hospitalisation crashes: 1 January 2007 31 December 2013;
- Medical Treatment, and Minor Injury crashes: 1 January 2007 31 December 2011; and
- Property Damage crashes: 1 January 2007 31 December 2010.

The supplied data indicates that a total of 96 crashes were recorded during the assessed time periods along the Gregory Developmental Road. Importantly, the reported crash data did not include any crashes within proximity to the proposed project site access location on Moray-Carmichael Road or in the immediate proximity of the point of access to the State-controlled road network. A summary of the related crashes is presented in Table 19-7 and is graphically shown on Figure 19-2.

CRASH SEVERITY	GREGORY DEVELOPMENTAL ROAD - NORTH OF ELGIN- MORAY ROAD	GREGORY DEVELOPMENTAL ROAD - SOUTH OF ELGIN- MORAY ROAD	TOTAL
Fatal	4	2	6
Hospitalisation	20	17	37
Medical Treatment	13	3	16
Minor Injury	5	8	13
Property Damage	14	10	24
Total	56	40	96

#### Table 19-7 Crash Data Summary

# 19.2.9 Impact on Public Transport

The impact of the project on both long distance scheduled bus services and school bus services has been considered.

#### **Public Bus Services**

The long distance scheduled public bus routes currently operating on the road network considered for the RIA are summarised in Table 19-8. It is noted that no services utilise the Gregory Developmental Road, which minimises the potential impact of project traffic. The project is therefore not anticipated to significantly affect the safety or efficiency of these services.

#### Table 19-8 Long Distance Scheduled Bus Services

BUS OPERATOR	FREQUENCY	ROUTE
Mackay Transit Coaches	Once daily	Emerald – Clermont – Mackay
Mackay Transit Coaches	Once daily	Mackay – Clermont – Emerald
Douglas Coaches	Once daily	Charters Towers – Townsville
Douglas Coaches	Once daily	Townsville – Charters Towers
Greyhound Australia	Once every two days	Mount Isa – Charters Towers – Townsville
Greyhound Australia	Once every two days	Townsville – Charters Towers – Mount Isa

Source: Mackay Transit Coaches, Douglas Coaches, Greyhound Australia

#### School Bus Services

The school bus routes that currently operate along sections of the road network potentially utilised by project traffic are summarised in Table 19-9. The identified bus routes operate on the Flinders Highway, Peak Downs Highway and sections of the Gregory Developmental Road. As the school bus services typically operate outside the road network peak hours associated with the project, the project is not anticipated to significantly affect the safety or efficiency of these services.

#### Table 19-9 School Bus Services

ROUTE	SCHOOLS	ROADS TRAVELLED
Mingela to Richmond Hill State School (SS) (P308)	Richmond Hill SS, Charters Towers State High School (SHS)	Flinders Highway
Mt Leyshon to Charters Towers SHS (S830)	Charters Towers SHS, Millchester SS, Charters Towers Central SS	Gregory Developmental Road, Rocky Creek Road
Kilcummin to Kilcummin SS (P1253)	Kilcummin SS	Kilcummin-Diamond Downs Road
Gemini Mountains to Clermont SS (P706)	Clermont SS, Clermont SHS, St Josephs	Peak Downs Highway, Gregory Highway

Source: Qld Government (2014)

# 19.2.10 Impact on Other Modes of Transportation

There is limited alternative road transport infrastructure, such as pedestrian and cycling pathways, in the vicinity of the project site due to its remote location. Therefore, the project will not have a significant impact on any other modes of road transport.

# 19.2.11 Consultation Process

Data for this study was sourced through consultation with the TMR. This includes data relating to traffic volumes, crashes and school bus routes, as well as information pertaining to future plans for the road network.

The proponent will continue consultation with the relevant road authorities and stakeholders including TMR, IRC, CTRC and QPS, as appropriate, during the project planning and implementation phases of the project. Further consultation will be conducted with the TMR in relation to the management of traffic impacts on the state-controlled road network. Consultation will be conducted with the IRC in relation to the new mine access road and the location and design of the intersection of the access road with Moray-Carmichael Road.

# 19.3 RAIL TRAFFIC

The project includes an on-site rail loop and train loading facility (Figure 4-24). The on-site rail will connect to a future off-site rail spur connecting the mine site to a future rail line from the Galilee Basin to the Abbot Point Coal Terminal. The rail line connecting the Galilee Basin to the Abbot Point Coal Terminal will be developed by another party. The proponent will be responsible for developing the off-site rail spur connection. However, the alignment of the preferred rail line from the Galilee Basin to the Abbot Point Coal Terminal is not certain at this stage and consequently it is not possible to confirm the location of the off-site rail spur connection at this stage. The off-site rail spur would be subject to a separate environmental impact assessment and approvals. These will be progressed once the alignment of the rail spur can be determined.

At its peak production capacity, the project will be serviced by an average of 6 coal trains per day, up to a peak of 8 trains per day. Each train will have a capacity of 20,000 to 25,000 tonnes with 4 diesel locomotives.

The future Galilee Basin rail system is likely to be a dedicated coal transport system and is not likely to be used for passenger services. Environmental management, and the scheduling and control of trains that utilise the Galilee rail system will be the responsibility of the owners and operators of the system.

# 19.4 PORT TRAFFIC

The proponent is proposing to obtain access to export capacity at the Abbot Point Coal Terminal via a port access agreement with a third party. The proponent will not be directly involved in any port development for the purposes of the project. Any development of export capacity at the Abbot Point Coal Terminal necessary for the project will be developed by others and would be subject to separate environmental impact assessment and approvals, to be obtained by others.

North Queensland Bulk Ports Corporation Limited is the port authority responsible for the Abbot Point Coal Terminal. Environmental management at the port is the responsibility of the owner and operator of the terminal.

# 19.5 AIR TRAFFIC

A private airstrip will be constructed in the south-eastern part of the project site, for the transport of mine workforce and materials. Construction of the airstrip is scheduled to be completed prior to the end of Project Year 1. The airstrip facilities will include baggage handling and passenger security.

The airstrip will be designed to cater for a range of aircraft, including Boeing 737s, Airbus 320s and Bombardiers. Current planning estimates approximately 40 flights per week will be required during operations from a range of potential coastal centres including Brisbane, Gold Coast, Wide Bay, Townsville and Cairns.

The airstrip will be designed, constructed and operated in accordance with the Civil Aviation Safety Authority regulations and guidelines. Project air traffic control will be coordinated with the airports at the workforce source locations. Project air traffic control will also be coordinated with the Carmichael Coal Mine airstrip.

# FIGURES



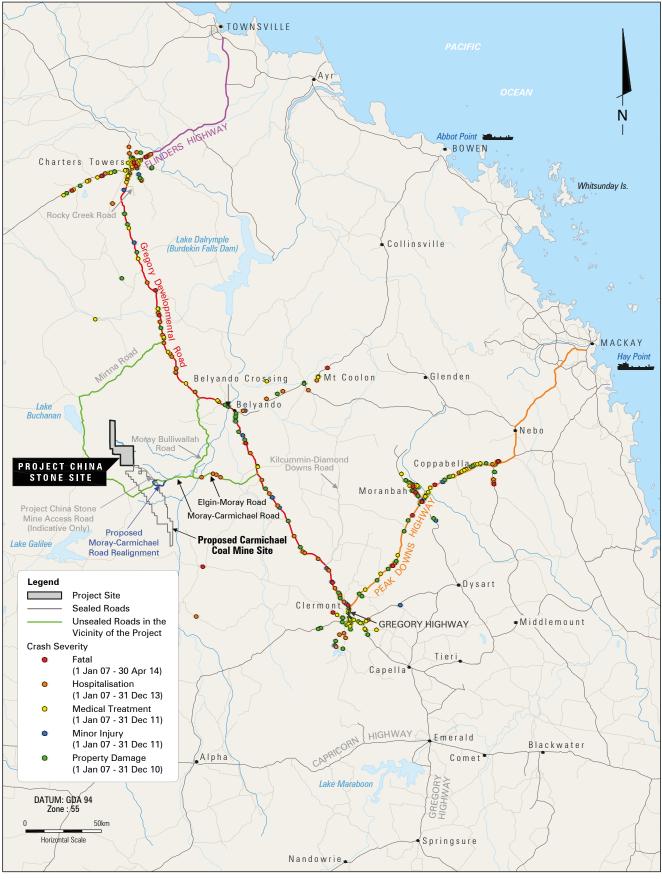


Hansen Bailey

PROJECT CHINA STONE

Regional Road Network

# FIGURE 19-1



PROJECT CHINA STONE

**Recorded Crash Sites** 



Hansen Beiley Environmental consultants

FIGURE 19-2