Prepared for
Powerlink Queensland
ABN: 82 078 849 233

Chapter 18

Transport and Traffic

Oct-2021
Genex Kidston Connection Project - Ministerial Infrastructure Designation Assessment Report

aecom.com

Delivering a better world

18.0 Transport and Traffic

This chapter describes the potential impact of the Project on existing transport infrastructures including:

- road networks (State-controlled roads and local authority roads)
- aerodromes and flight paths
- railways.

18.1 Methodology

The overall methodology adopted for the impact assessment is listed below.

- Identification of the existing transport infrastructure in the vicinity of or traversed by the Preferred Alignment.
- Assessment of the potential major transport route to the Project.
- Estimation of the project related construction and operational traffic volumes and anticipated vehicle movements.
- Identification of the potential impact and mitigation measures to be implemented during construction and operational phases.

18.1.1 Key assumptions and development principles

During the construction and operational phases, it is understood that the Project will function as defined below.

- Construction work is expected to occur from April 2022 to October 2024 (18 construction months).
- Subject to availability, construction materials (i.e. gravel, concrete, sand etc.) and equipment/machinery will be preferentially sourced from local regional cities or townships such as Townsville and Charters Towers.
- Structure steel, conductors, and hardware will be imported internationally, via Brisbane or Townsville ports.
- All construction materials, equipment and machinery will be delivered to site via the road network.
- For construction of the transmission line, 4 temporary accommodation camps will be provided to accommodate approximately 370 construction personnel. The precise location and scale of the camps is still to be determined but is generally planned to have one camp in the following areas –
    - In Greenvale (approx. 50 beds)
    - Near Mt Fox Switching Station (approx. 40 beds)
    - between Mt Fox and Greenvale (approx. 120 beds)
    - between Greenvale and Kidston (approx. 120 beds).
- The majority of construction personnel will be travelling from Townsville to the Project site or temporary accommodation camps via the road network.
- Construction personnel may be employed locally, i.e. from Greenvale, Ingham, Townsville and Charters Towers.
- Operational phase involves the following:
    - routine inspections and maintenance of the transmission line and switching station
    - easement maintenance (i.e. vegetation clearing).

18.1.2 Limitations

This high-level impact assessment has been prepared based on the available information. The outcomes of this assessment should be read in conjunction with the following limitations and exclusions.

- This transport and traffic impact assessment is a desktop review exercise.
- This assessment does not include intersection assessment (i.e. sight distance checks, SIDRA modelling etc).
- This assessment excluded detailed design of road sections, intersection mitigation works or accesses.
- A site visit has not been undertaken to gauge the existing condition of the relevant transport infrastructures.

It must be noted that the purpose of this assessment, undertaken as part of the assessment report is not to define the exact quantity or nature of the traffic impact, for which further detailed traffic assessment is required. Rather, the purpose of this assessment is to highlight potential transport infrastructure impacts which may require further investigation and discussion with the relevant authorities.

18.2 Existing Environment

Figure 18-1 shows the existing transport infrastructure in the vicinity of or traversed by the Preferred Alignment.

18.2.1 Road networks

The road network in the vicinity of the Preferred Alignment includes both State-controlled roads and local authority roads. The State-controlled roads are under the management of the Department of Transport and Main Roads (DTMR) of three (3) different districts; North West District, Far North District and Northern District. The local authority roads are under the management of Etheridge Shire Council (ESC), Charters Towers Regional Council (CTRC) and Hinchinbrook Shire Council (HSC).

18.2.1.1 State-controlled road networks

The Preferred Alignment for the transmission line intersects the following State-controlled roads as shown in Figure 18-1:

1. Kennedy Developmental Road
2. Gregory Developmental Road.

The section of Kennedy Developmental Road connects Hughenden to the south and Mount Garnet to the north. The section of Gregory Developmental Road connects Charters Towers to the south and Kennedy Developmental Road to the north.

18.2.1.2 Local authority road networks

The Preferred Alignment traverses several locally administered major and minor roads as shown in Table 18-1 and Figure 18-1. These local roads are comprised mainly of unsealed roads and roads that have been gazetted, however unformed or undeveloped. A number of tracks used for property access or maintenance purposes are also traversed by the Preferred Alignment. These tracks are typically soil aggregate construction.

Table 18-1 Local authority roads crossed by the Preferred Alignment (from west to east)

Road Name	Road Characteristics
Etheridge Shire Council	
Gilberton Road	Formed, unsealed
Proposed Road	Undeveloped road reserve
Charters Towers Regional Council	
Unknown Road 1	Formed, unsealed
Greenvale Valley Road	Formed, unsealed
Unknown Road 2	Formed, unsealed
Craiglee Road	Formed, unsealed
Gadara Road	Formed, unsealed
Proposed Road	Undeveloped road reserve
Lava Plains Mount Fox Road	Formed, unsealed
Lava Plains Mount Fox Road	Undeveloped road reserve
Kangaroo Hills Road	Formed, unsealed
Kallanda Road	Formed, unsealed
Ewan Mount Fox Road	Undeveloped road reserve
Hinchinbrook Shire Council	
Furber Road	Formed, unsealed

18.2.2 Rail networks

No railway lines are traversed by the Preferred Alignment. An abandoned railway line (known as The Greenvale Line) was identified in the proximity of the Preferred Alignment near Greenvale township. The abandoned railway line runs southeast from the township of Greenvale to Townsville and connects an old mine to the Queensland Nickel Industries processing plant at Yabulu.

AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

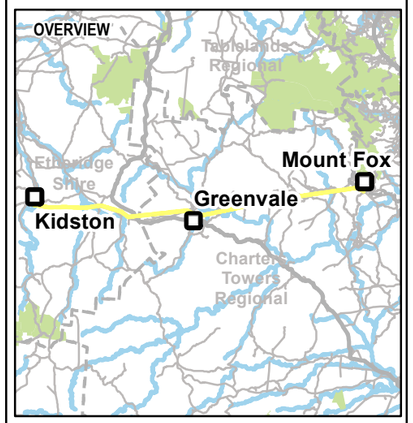
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

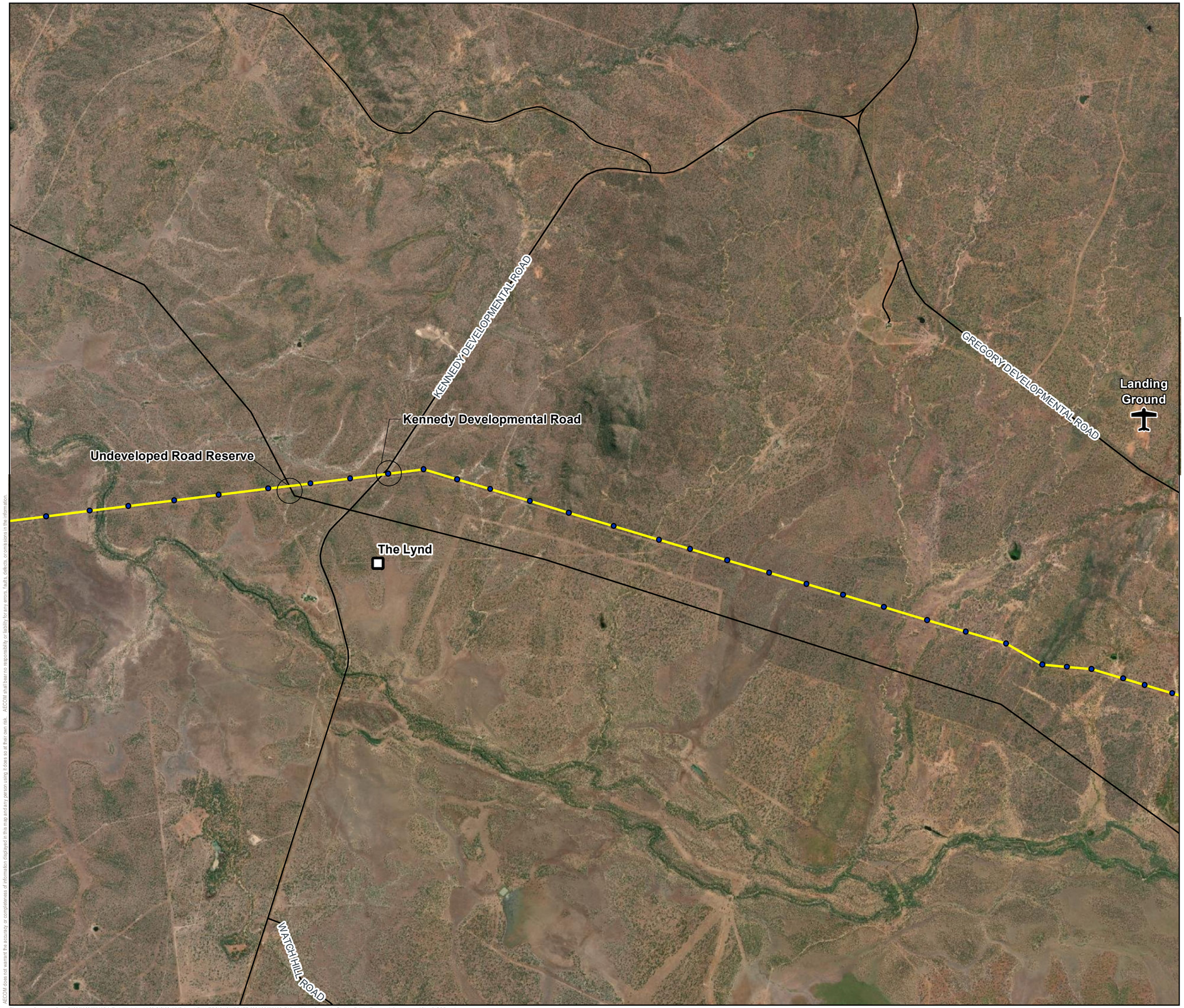
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1A

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

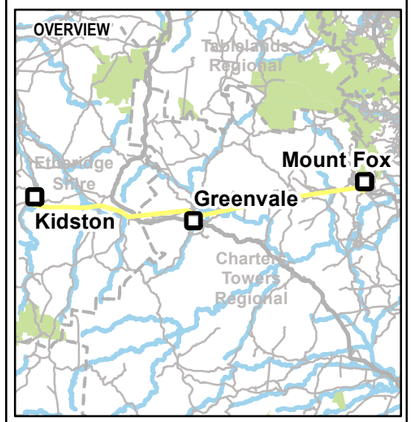
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

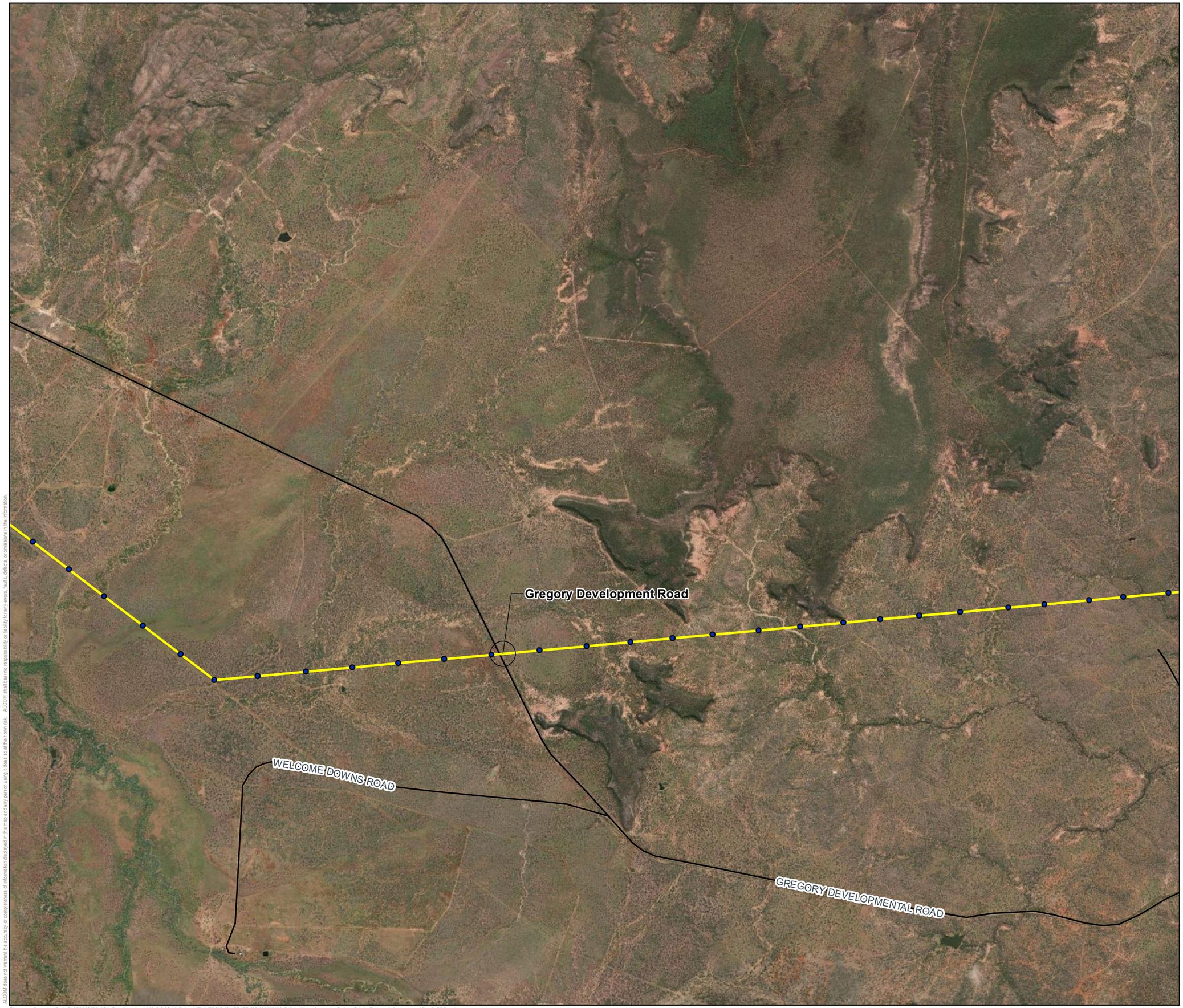
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1B

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 20216057745 6_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

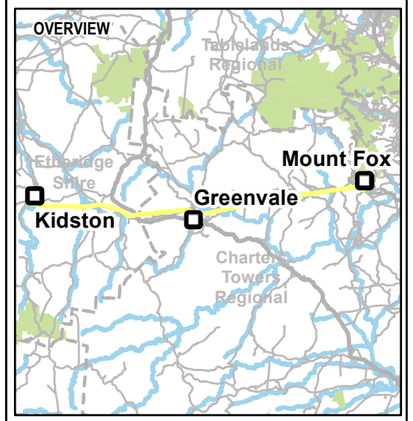
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

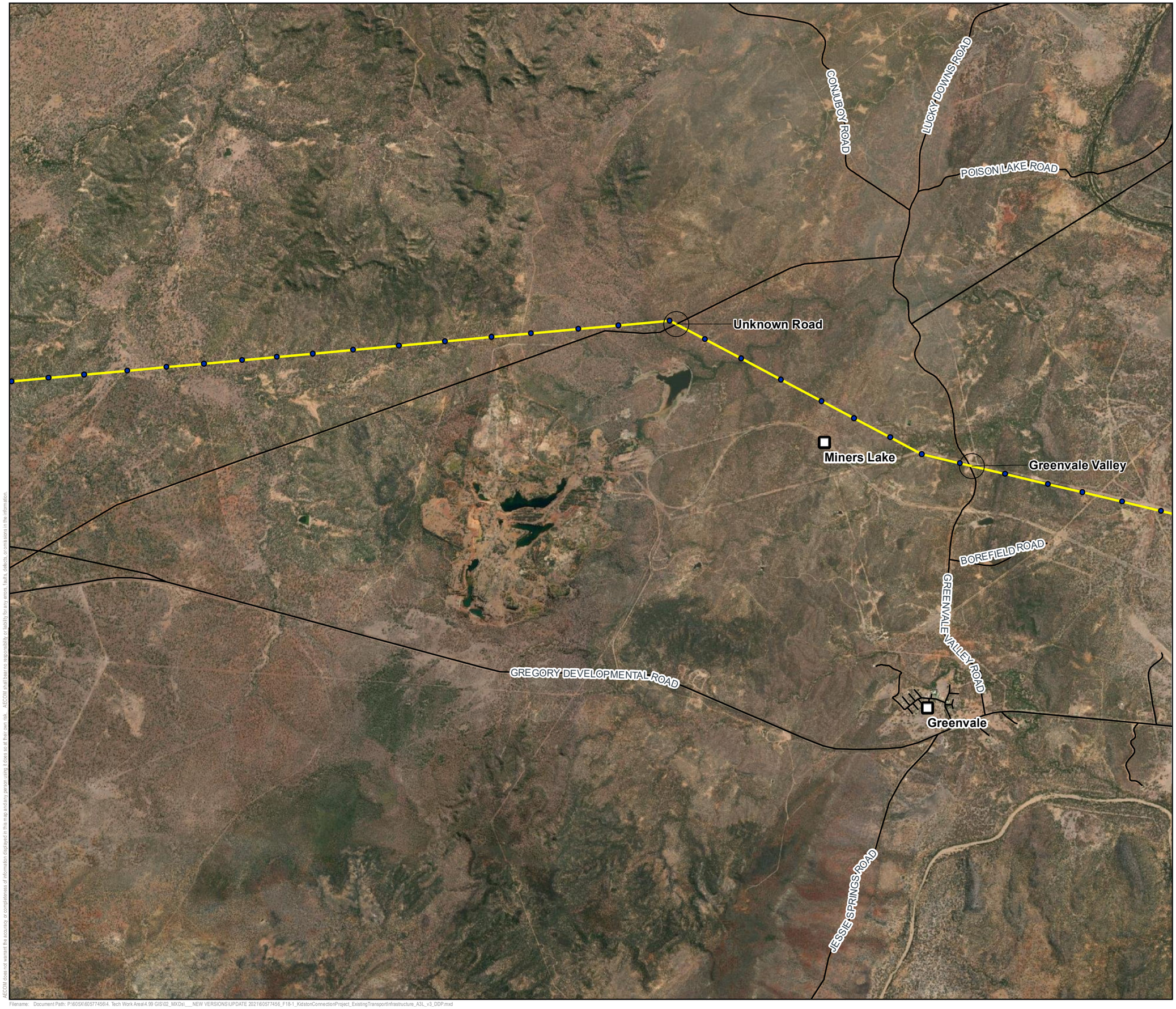
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1C

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. AECOM shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd

AECOM
www.aecom.com

N

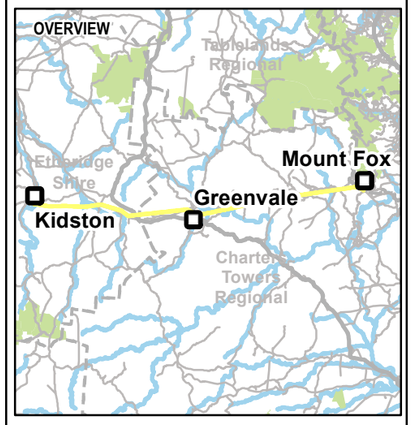
Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

0 750 1,500 2,250 3,000
Meters

1:50,000 (when printed at A3)

Legend

- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

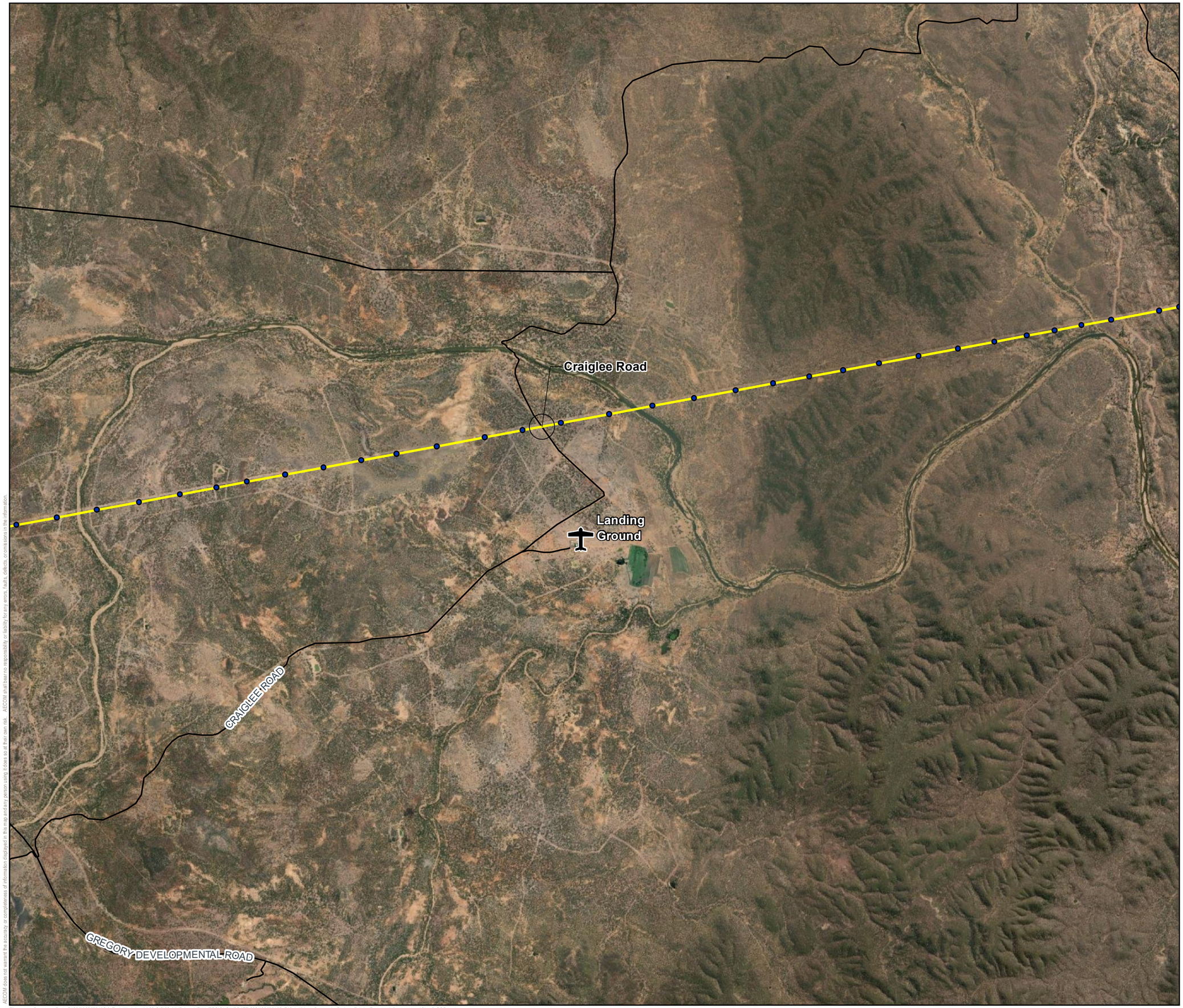
Kidston Connection Project

EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1D

A3 size



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

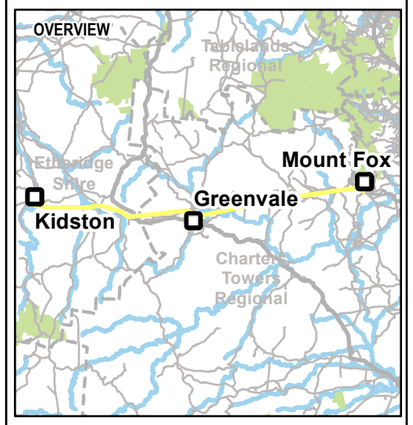
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

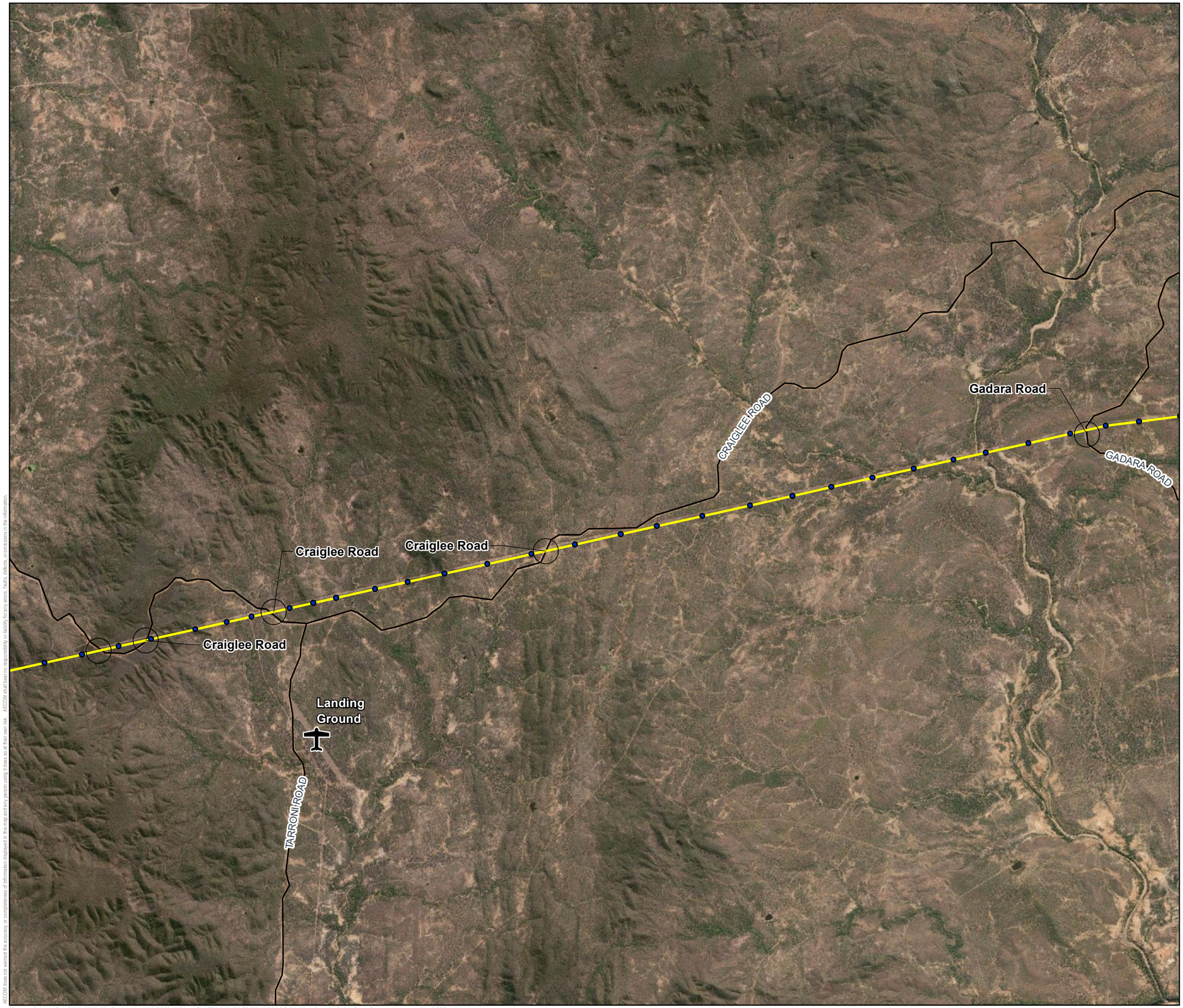
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1E

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

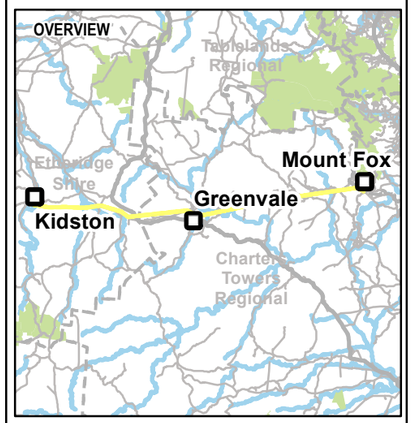
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

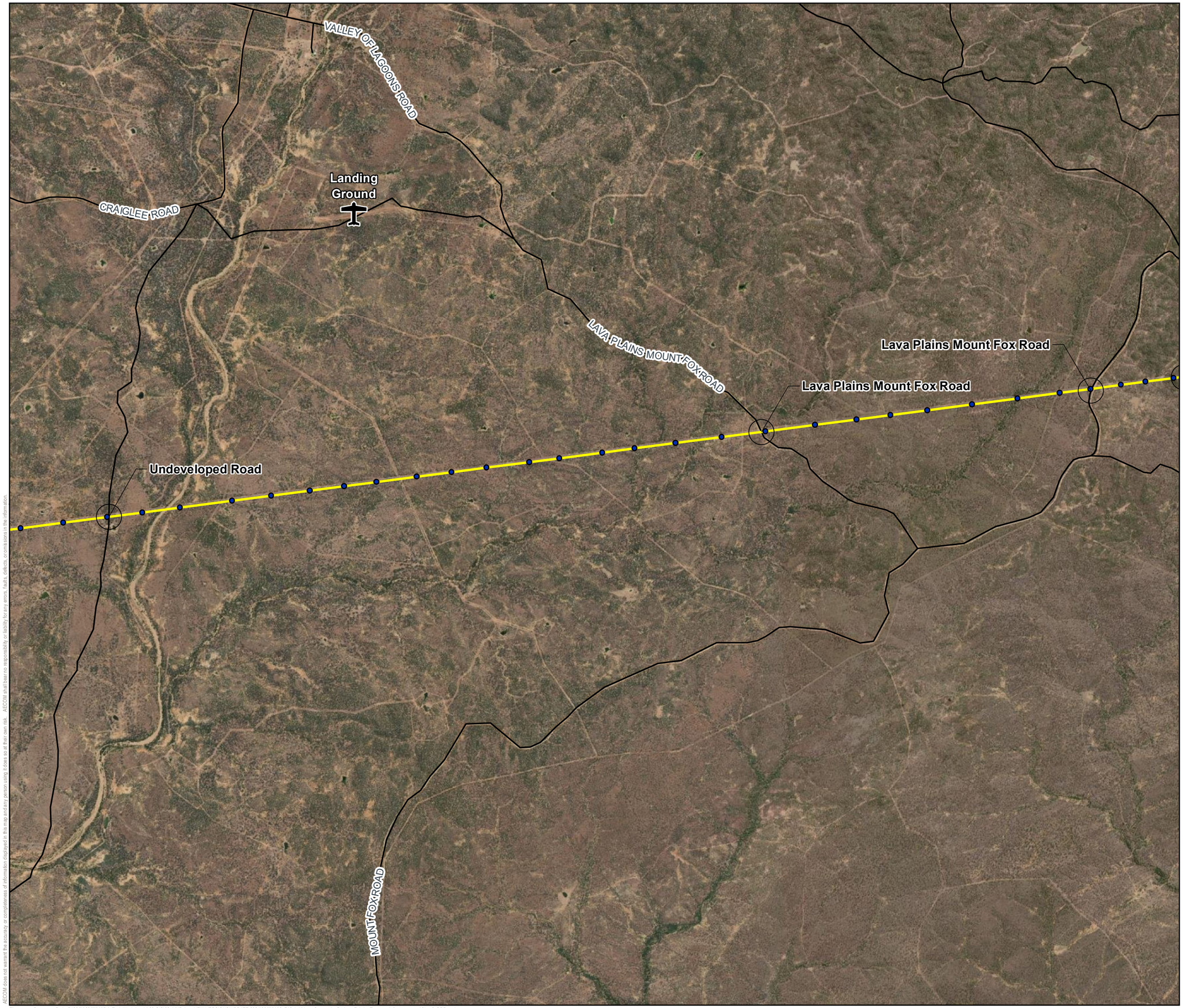
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1F

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

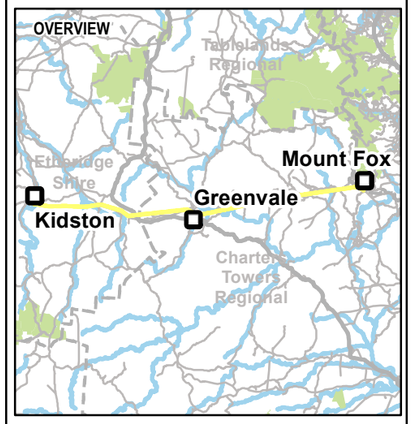
0 750 1,500 2,250 3,000

Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

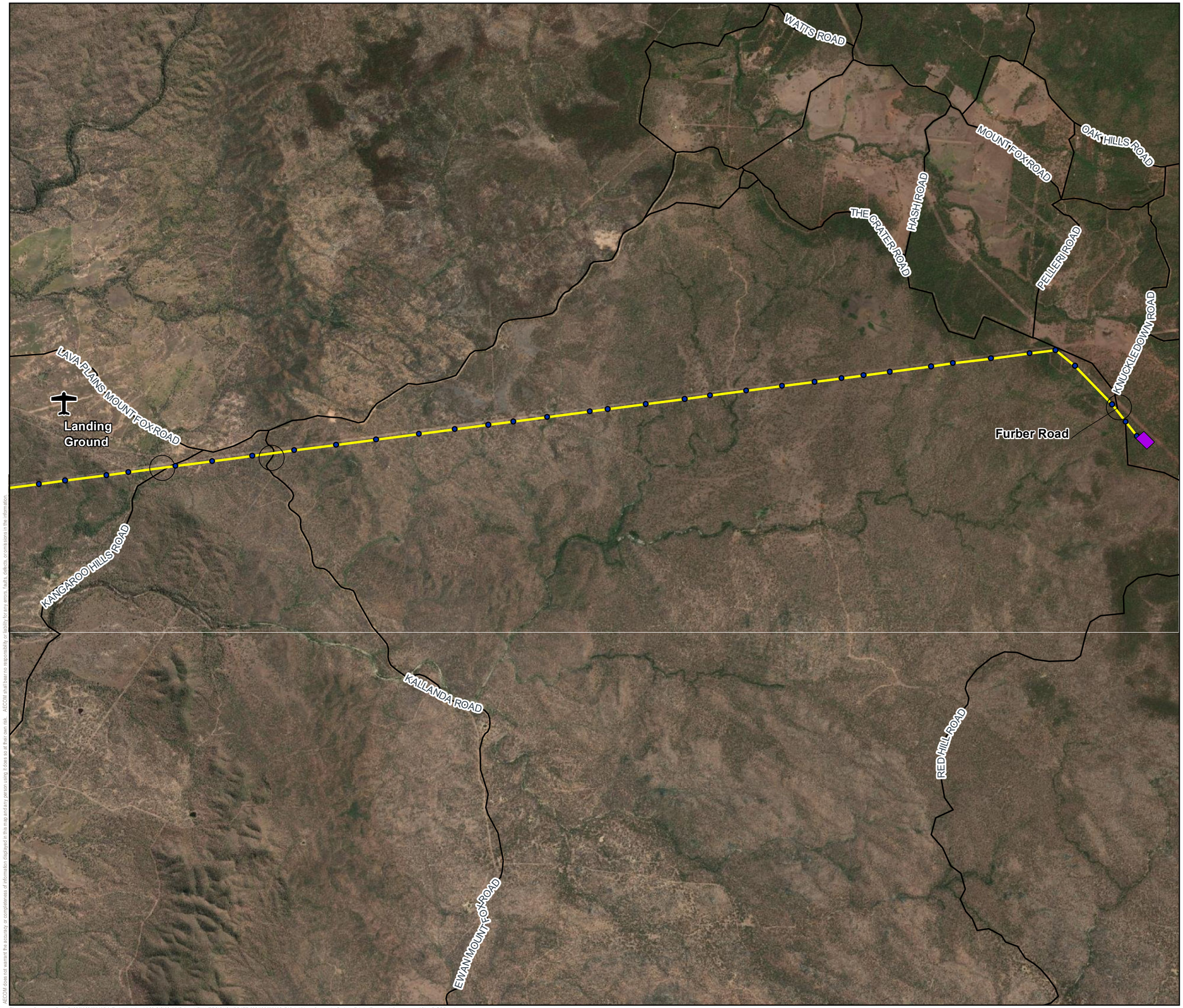
EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1G

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd



AECOM

www.aecom.com

N

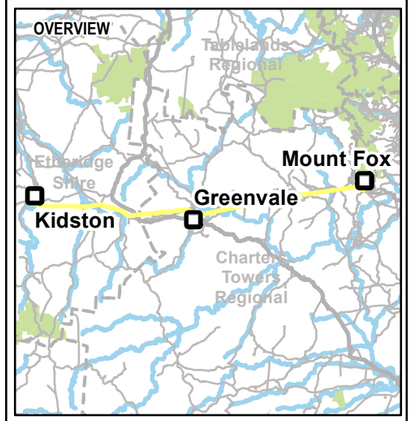
Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

0 750 1,500 2,250 3,000
Meters

1:50,000 (when printed at A3)

Legend

- Airstrip / Landing Grounds
- Existing Transport Infrastructure Intersection
- Indicative Structure Locations
- Roads
- Switching Station
- Preferred Alignment



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

EXISTING TRANSPORT INFRASTRUCTURE

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-1H

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-1_KidstonConnectionProject_ExistingTransportInfrastructure_A3L_v3_DDP.mxd

18.2.3 Aerodromes and flight paths

A search for existing aerodromes and flight paths was conducted via the Queensland Spatial Catalogue (QSpatial) website and Queensland Globe – Transportation. No certified aerodromes were found in close proximity to the Preferred Alignment (Figure 18-1). However, the following airstrips were identified via QSpatial website:

- Kidston airstrip – approximately 3 km north of the Preferred Alignment
- Landing ground – approximately 3 km north of the Preferred Alignment
- Greenvale airstrip – approximately 1.8 km south of the Preferred Alignment
- Landing ground – approximately 7 km north of the Preferred Alignment
- Landing ground – approximately 1.6 km south of the Preferred Alignment
- Landing ground – approximately 1.9 km south of the Preferred Alignment
- Landing ground – approximately 4 km north of the Preferred Alignment
- Landing ground – approximately 1.2 km north of the Preferred Alignment
- Landing ground – approximately 7 km south of the Preferred Alignment
- Landing ground – approximately 7.6 km south of the Preferred Alignment.

In accordance with Queensland Globe – Transportation, no regulated air service routes are in the vicinity of the Preferred Alignment.

Activities such as aerial crop spraying, recreational flying, aerial mustering etc. may exist in close proximity to the Preferred Alignment. This will be confirmed by Powerlink through consultation with the landholders or relevant authority.

18.2.4 Anticipated regional transport routes

It is anticipated that the majority of the traffic travelling to the Project site will originate from Brisbane and Townsville. The generated traffic includes the transportation of machinery, materials, equipment and personnel during both the construction and operation phases.

Through consultation with Powerlink, the major transport routes for access to the Preferred Alignment for construction and operational activities are anticipated to be via the following two routes.

- Route 1 (Brisbane to Project Site) via Port of Brisbane Motorway, Cunningham Highway, Warrego Highway, Carnarvon Highway, Dawson Highway, Gregory Highway, Flinders Highway, Gregory Developmental Road, Greenvale Valley Road, Craiglee Road and newly constructed access tracks.
- Route 2 (Townsville to Project Site) via Hervey Range Road, Gregory Developmental Road, Greenvale Valley Road, Craiglee Road and newly constructed access tracks.
- Route 3 (Townsville to Project site) via Flinders Highway, Gregory Developmental Road, Greenvale Valley Road, Craiglee Road and newly constructed access tracks.

The anticipated major transport routes are illustrated in Figure 18-2 (State-controlled) and Figure 18-3 (local authority roads).

Access to the various work sites for construction materials, plant and personnel will use existing property access tracks where possible. Any new access tracks will be identified in consultation with landholders.

AECOM

www.aecom.com

N

Coordinate System: GCS WGS 1984

0 50 100 150 200

Kilometers

1:3,800,000 (when printed at A3)

Legend

- Places
- Preferred Alignment
- Major Transport Routes
- State-Controlled Roads

Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

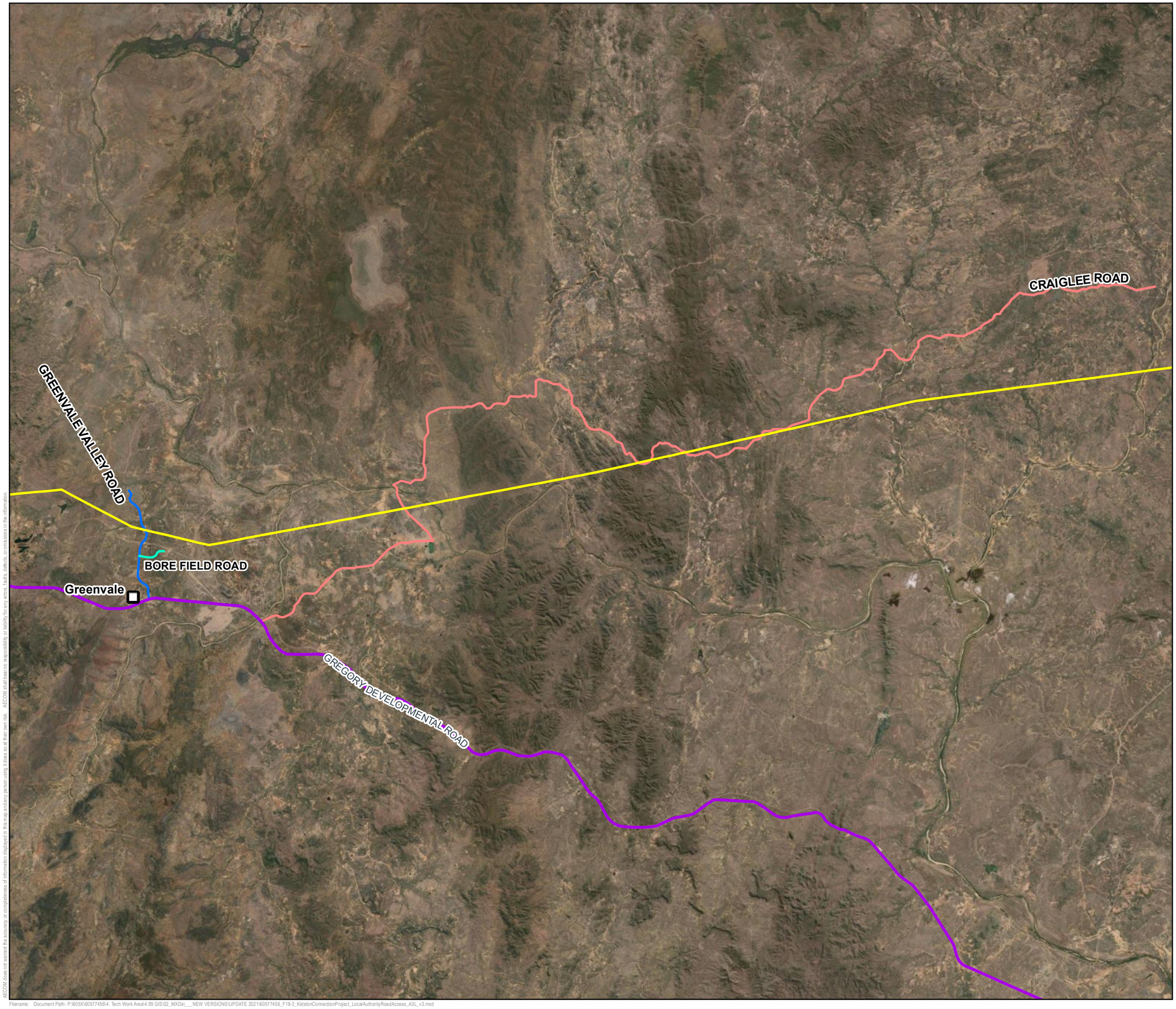
Major Transport Routes State-Controlled

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 22/09/2021
VERSION:	3

Figure F18-2

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-2_KidstonConnectionProject_MajorTransportRoutes_A3L_v3.mxd



AECOM

www.aecom.com

N

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

0 2.5 5 7.5 10

Kilometers

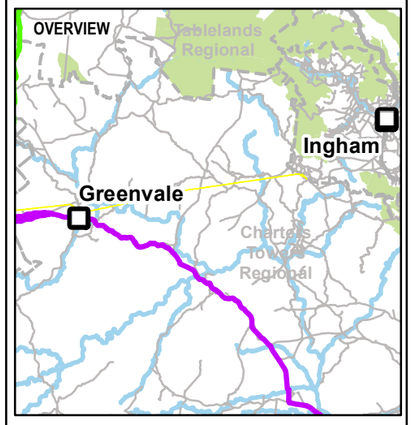
1:180,000 (when printed at A3)

Legend

- Places
- Preferred Alignment
- Craigles Road
- Greenvale Valley Road
- Bore Field Road

State-Controlled Road

- Gregory Developmental Road



Data sources:
DCDB, Roads, Watercourses - DNRM 2017
Site Features and Layout - AECOM 2018
© SISP Imagery 2017

Disclaimer:
While every care is taken to ensure the accuracy of the Information Product, the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or

Kidston Connection Project

Local Authority Roads Access

PROJECT ID:	60577456
CREATED BY:	JB
LAST MODIFIED:	AJS - 16/09/2021
VERSION:	3

Figure F18-3

A3 size

Filename: Document Path: P:\605X\60577456\4. Tech Work Area\4.99 GIS\02_MXDs___NEW VERSIONS\UPDATE 2021\60577456_F18-3_KidstonConnectionProject_LocalAuthorityRoadAccess_A3L_v3.mxd

18.2.4.1 State-controlled roads

The latest traffic census data (2020) for the major state-controlled transport routes was sourced from DTMR, including the Annual Average Daily Traffic (AADT) and percentage of heavy vehicles (HV%). This traffic data is summarised in Table 18-2.

Table 18-2 Major transport routes (State-controlled road) traffic data and road characteristics

Road Name	Section	Traffic count Site	2020 AADT	Percentage of HV
			veh/day	%
Port of Brisbane Motorway	-	136238	10,860	42.21%
Cunningham Highway	Ipswich Motorway	140035 140027 136081	111,895 90,986 100,215	1.11% Not available Not available
Warrego Highway	Ipswich - Toowoomba	135546 135715 135964 10021 30066 30041 30070 32636 37610 32686	58,316 44,195 29,425 29,493 21,619 15,835 19,818 18,191 11,273 9,545	12.43% 16.39% 18.92% 17.36% 20.80% 23.24% Not available 12.35% 13.13% 9.60%
Warrego Highway	Toowoomba - Dalby	30025 32641 32559 30004 30012 32693	12,788 12,303 4,635 5,407 6,944 11,656	20.08% 19.33% 26.19% 28.78% 21.51% 17.71%
Warrego Highway	Dalby - Miles	32633 32647 30040 30076 32654 32648 32048 30020 40047	12,297 4,440 3,103 3,060 3,989 7,093 4,924 2,385 2,921	21.59% 24.55% 31.61% 33.46% 33.49% 22.46% 26.26% 29.18% 26.70%
Warrego Highway	Miles - Roma	40250 40405 40320 40542 40155 40631 40502	3,267 1,538 1,616 1,532 1,896 3,325 4,015	44.23% 51.17% 55.38% 39.69% 31.51% 32.36% 26.77%

Road Name	Section	Traffic count Site	2020 AADT	Percentage of HV
			veh/day	%
Carnarvon Highway	Roma - Injune	40513 40514 40171	2,312 1,538 787	24.09% 36.48% 43.96%
Carnarvon Highway	Injune - Rolleston	40334 150017 159561	674 441 517	50.59% 53.06% 43.52%
Dawson Highway	Rolleston - Springsure	159672 150021 159663 159665	628 782 980 1,244	23.41% 35.55% 32.76% 17.52%
Gregory Highway	Springsure - Emerald	159668 159667 150022 159639 159609	1,244 1,086 1,648 3,109 5,777	11.09% 30.20% 20.08% 18.94% 8.36%
Gregory Highway	Emerald - Clermont	159742 159699 159675 150025 159598 159653 159652 159651 160049	9,506 10,649 4,642 3,077 1,905 2,348 1,628 1,266 1,067	18.40% 10.94% 20.36% 21.06% 32.02% 18.70% 27.27% 26.70% 38.24%
Gregory Highway	Clermont - Belyando Crossing	159536 159640	2,053 1,059	24.45% 30.59%
Gregory Developmental Road	Clermont - Belyando Crossing	159538 150016	520 621	34.04% 45.89%
Gregory Developmental Road	Belyando Crossing - Charters Towers	90020 91701	608 861	38.16% 16.84%
Flinders Highway	Townsville to Charters Towers	92192 90060 91389 91328 91329	1,866 5,998 2,518 2,052 2,839	33.60% 27.09% Not available 28.07% 22.51%
Gregory Developmental Road	Charters Towers to Project site	91298 91327 90087 90002	1,812 3,013 932 247	14.46% 14.01% 26.50% 30.77%

Road Name	Section	Traffic count Site	2020 AADT	Percentage of HV
			veh/day	%
		91702	251	29.08%
Hervey Range Developmental Road	Townsville to Battery	91554 90013 92238 92223 91459 91461 90065 90066 91464 91424	15,689 13,596 11,163 10,615 6,849 4,332 1,035 1,018 196 159	2.32% 3.68% 5.73% 2.91% 4.50% 7.25% 8.41% 16.50% 27.55% 54.09%

In accordance with DTMR's Multi-Combination Routes Maps (Figure 18-4 to Figure 18-9):

- Port of Brisbane Motorway - designated B-doubles route
- Cunningham Highway - designated B-doubles
- Warrego Highway - designated B-doubles / Type 1 Road Train route
- Carnarvon Highway - designated B-doubles / Type 1 Road Train route
- Dawson Highway - designated B-doubles / Type 1 Road Train route
- Gregory Highway - designated B-doubles / Type 1 Road Train route
- Gregory Developmental Road - designated B-doubles / Type 1 and 2 Road Train route
- Hervey Range Road - designated B-doubles / Type 1 Road Train route
- Flinders Highway - designated B-doubles / Type 1 and 2 Road Train route.

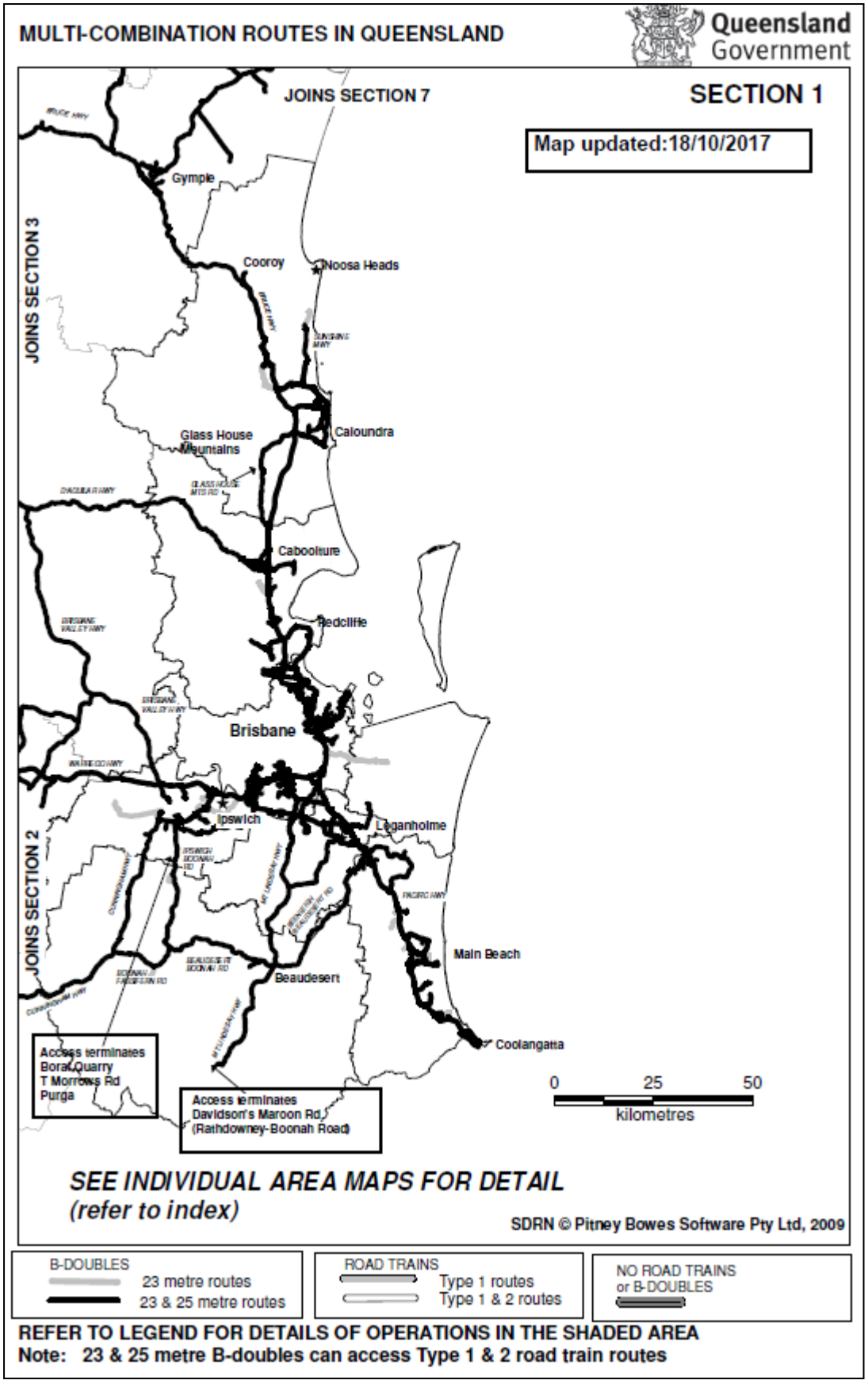


Figure 18-4 DTMR Multi-Combination Route Map (View 1)

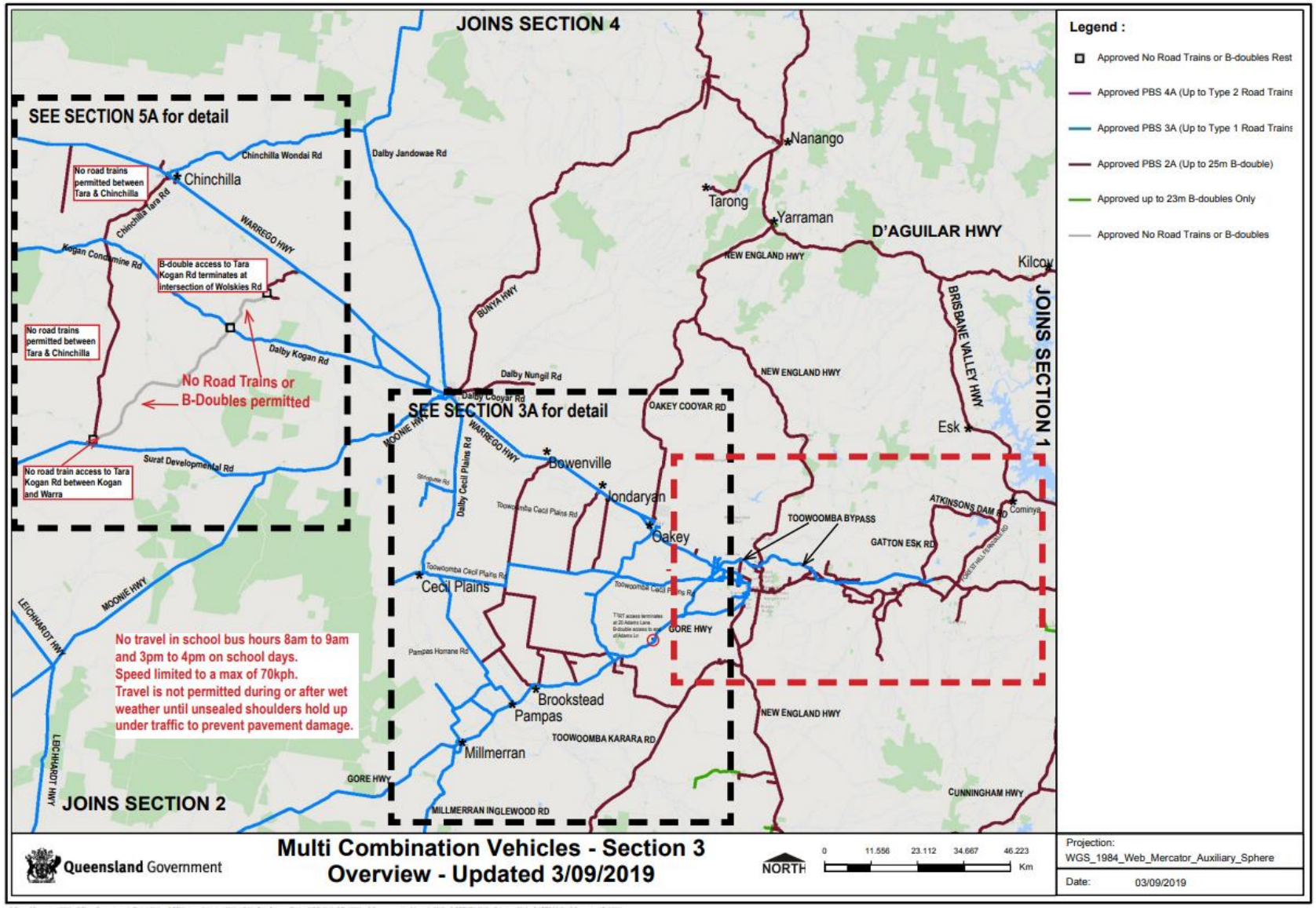


Figure 18-5 DTMR Multi-Combination Route Map (View 2)

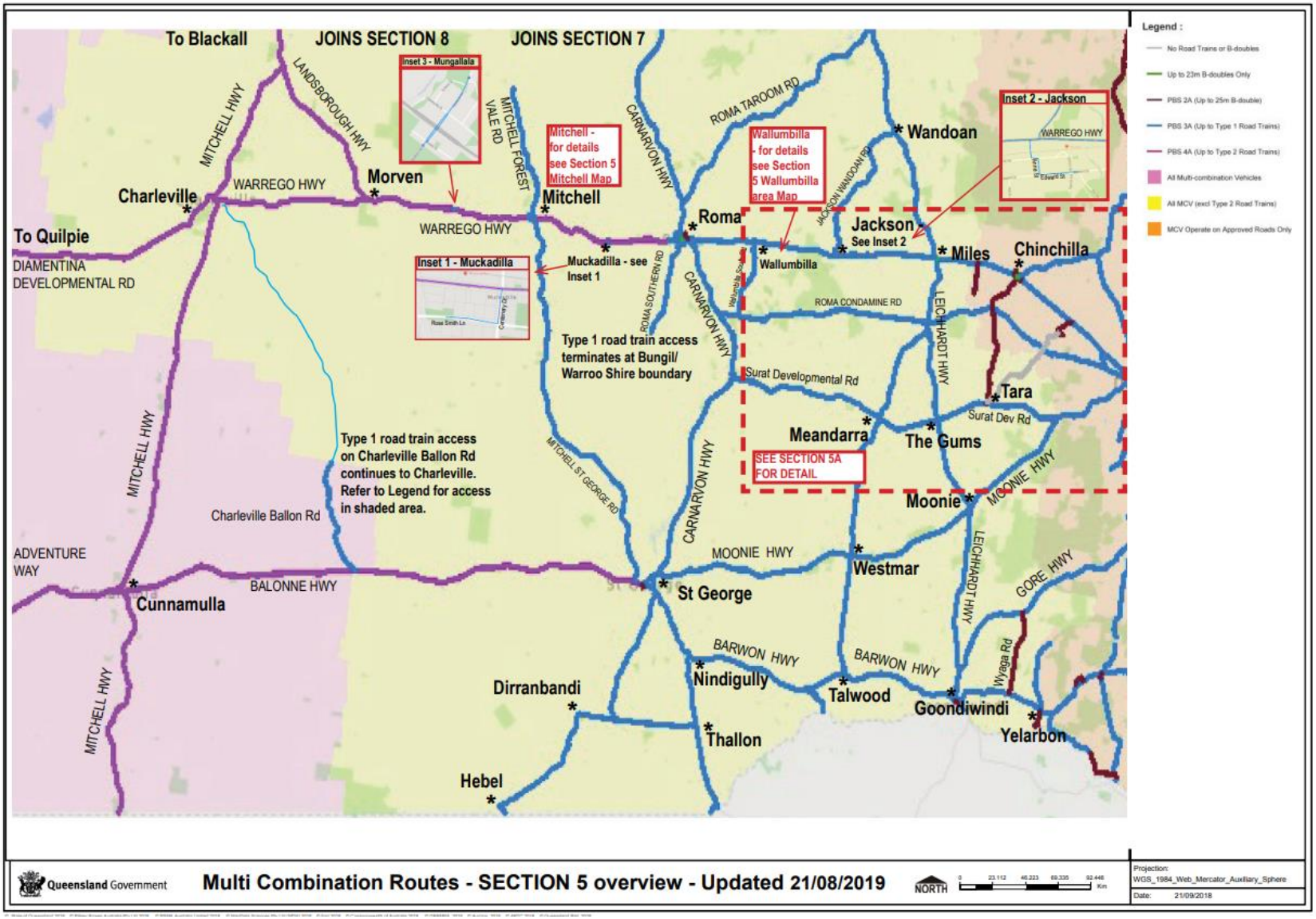


Figure 18-6 DTMR Multi-Combination Route Map (View 3)

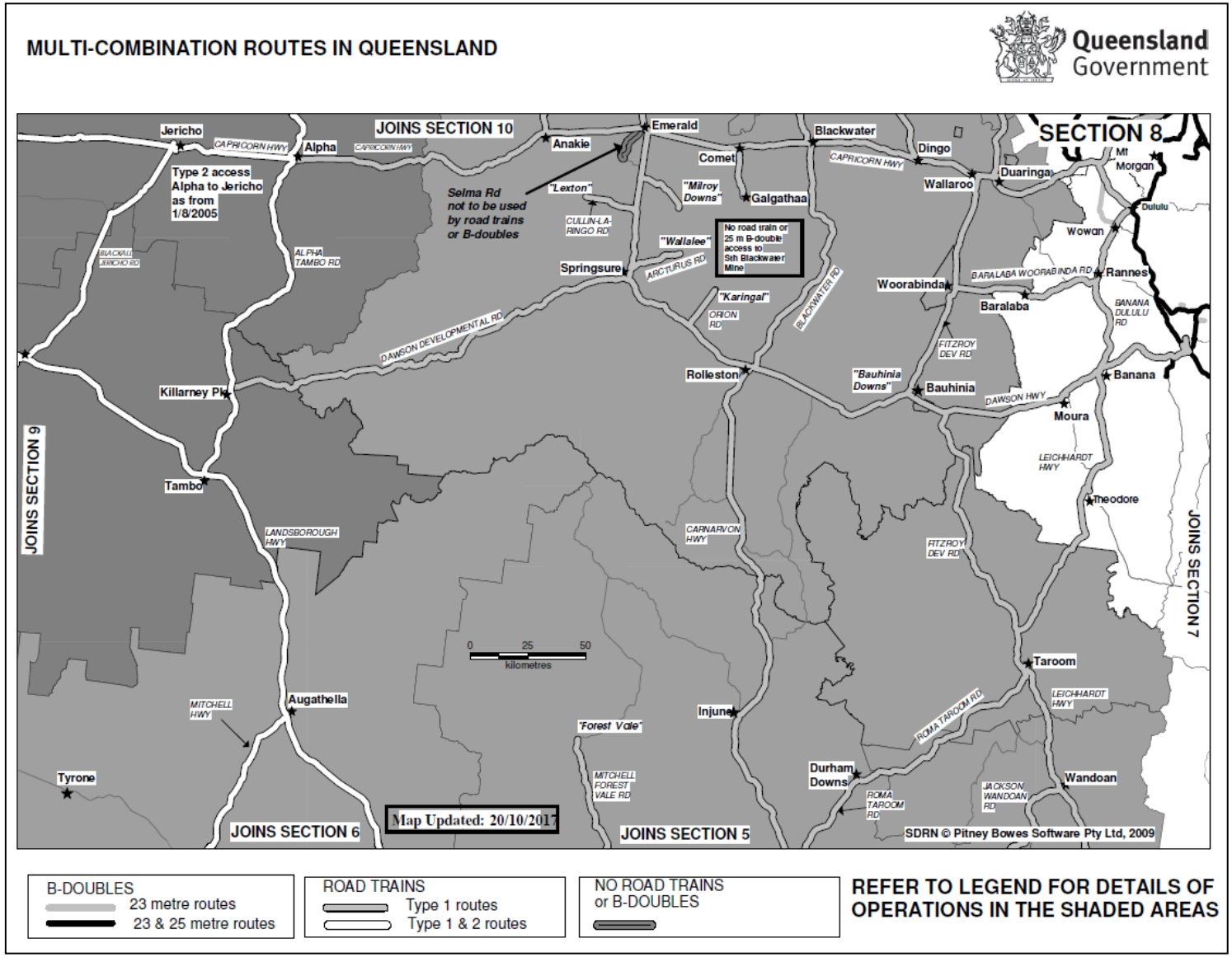


Figure 18-7 DTMR Multi-combination Route Map (View 4)

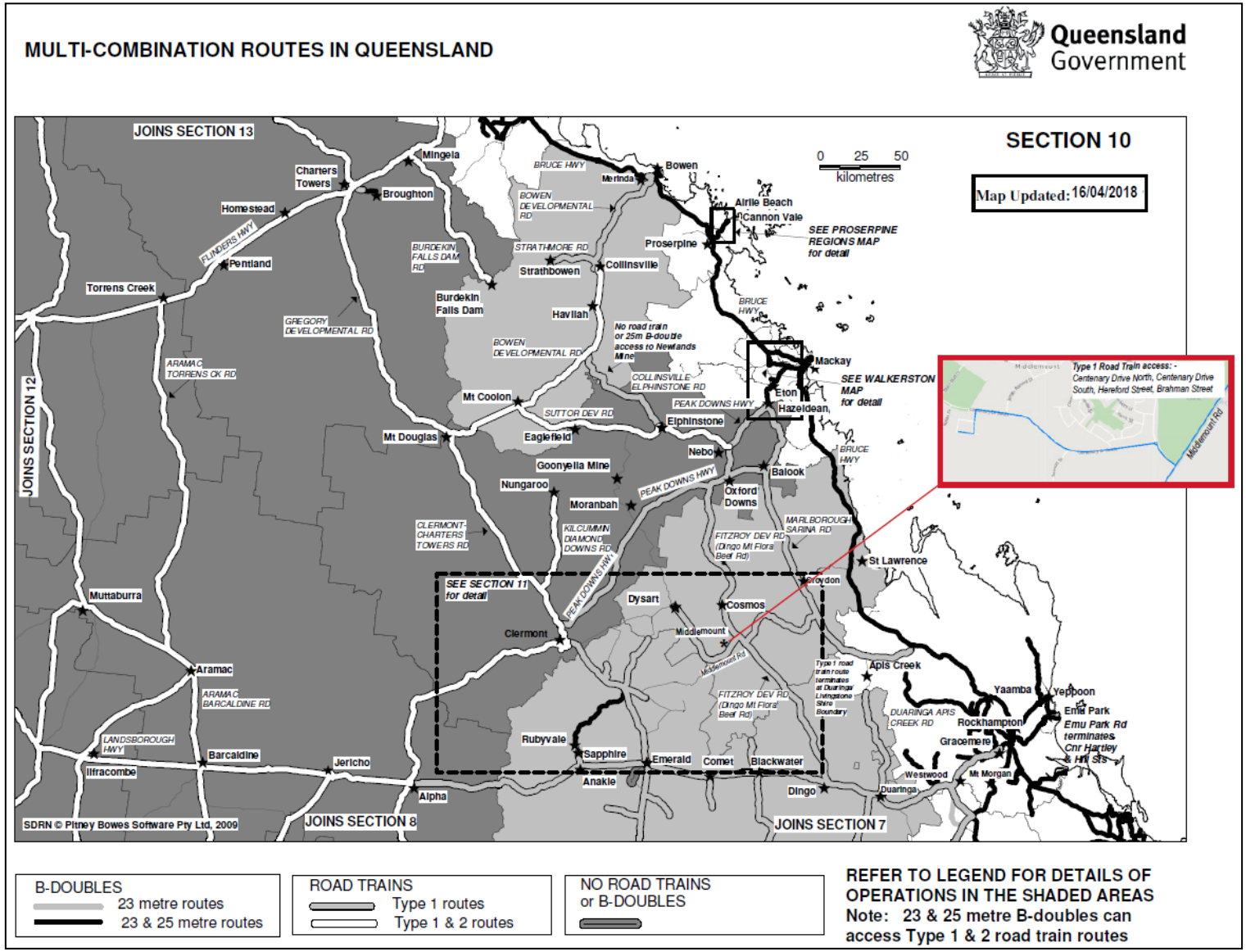


Figure 18-8 DTMR Multi-combination Route Map (View 5)

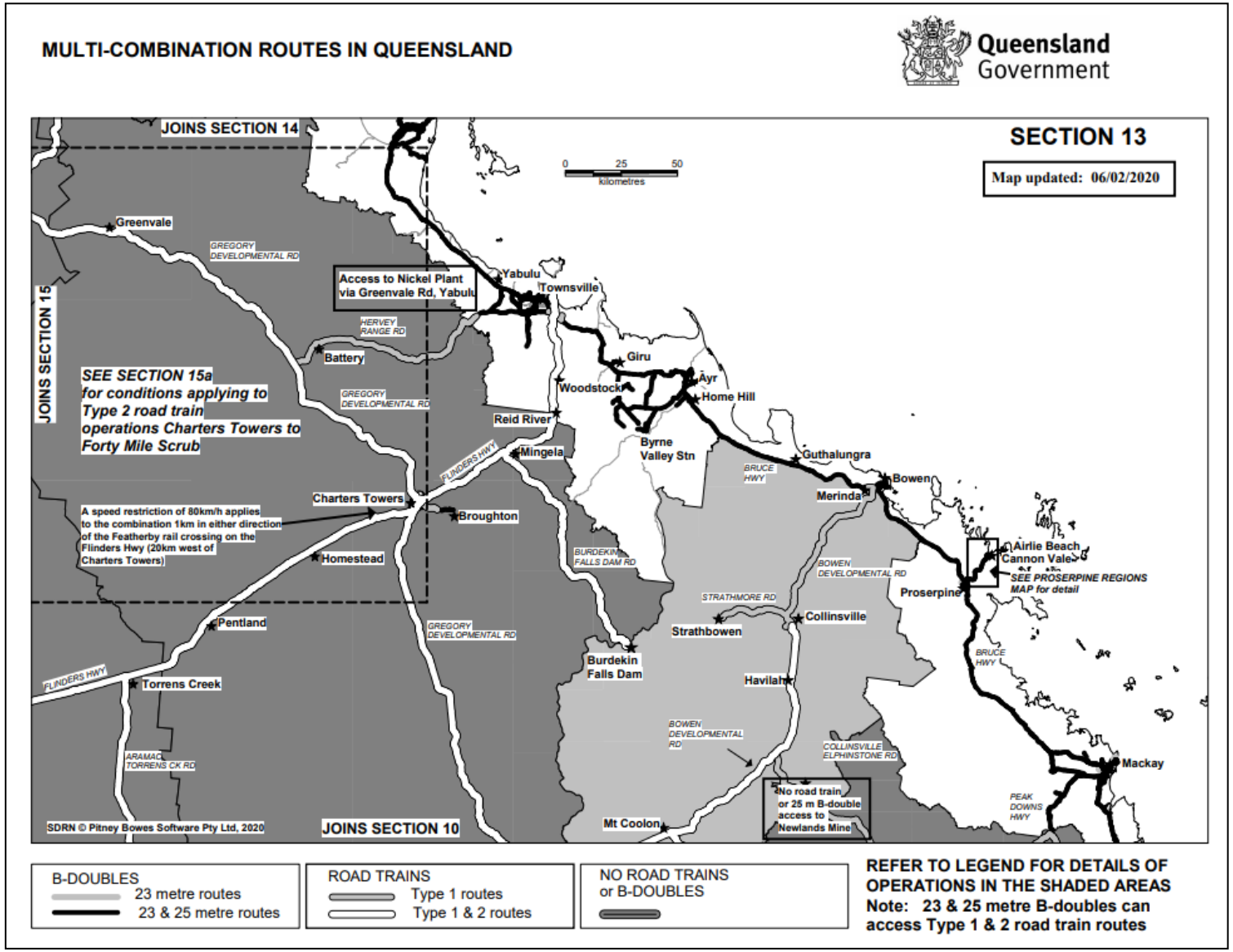


Figure 18-9 DTMR Multi-combination Route Map (View 6)

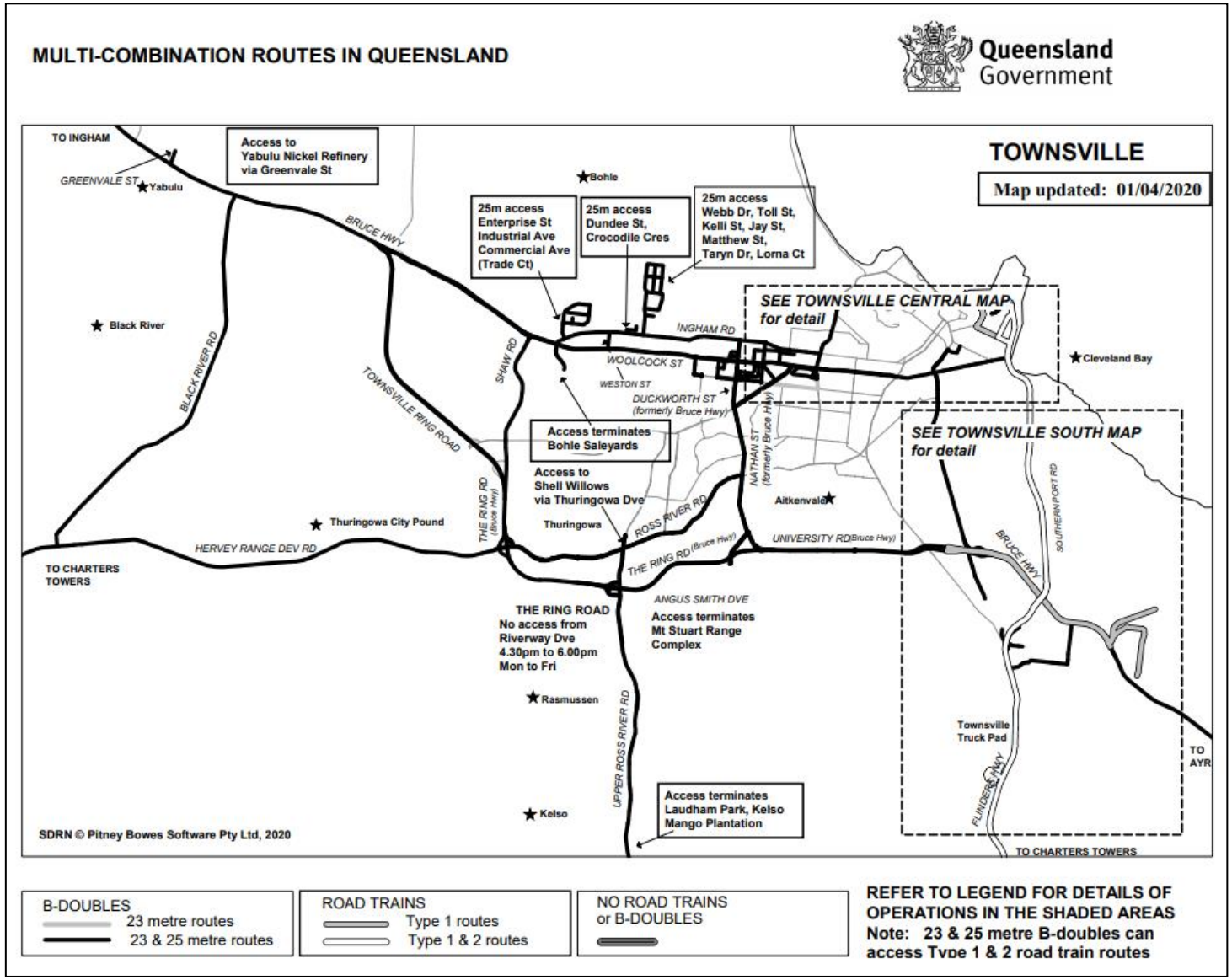


Figure 18-10 DTMR Multi-Combination Route Map (View 7)

It is noted that the following projects are currently underway on the anticipated major State-controlled transport routes.

Gregory Developmental Road (Charters Towers – Lynd), package of works

The works are made up of 3 separate projects. These are:

- $25 million to widen and strengthen 7km of pavement between Marble Creek and Christmas Creek, jointly funded under the Roads Stimulus Package (with the Australian Government contributing $20 million and the Queensland Government contributing $5 million)
- $15.31 million to widen and strengthen 4km of pavement between Airport Drive and Redbank Creek, jointly funded under the Roads of Strategic Importance early works package (with the Australian Government contributing $12.25 million and the Queensland Government contributing $3.06 million)
- $5.1 million culvert upgrade near Porphyry Road, entirely funded by the Queensland Government under the Roads Stimulus Package.

Construction started in mid-2021.

Warrego Highway (Toowoomba – Dalby), Brimblecombe Road, Intersection Upgrade

The works will widen the intersection, providing a turn lane for vehicles turning right into Brimblecombe Road. The addition of the dedicated turn lane will reduce the risk of rear-end crashes, by allowing right turning vehicles to move out of the path of eastbound traffic.

This will improve access and mobility for freight movements along the Warrego Highway. Recent crashes have involved vehicles being hit from the rear while slowing to turn right into Brimblecombe Road. The upgrade will reduce the risk of similar crashes happening in the future. Construction is to begin in September 2021.

18.2.4.2 Local authority roads

Craiglee Road and Greenvale Road are within the proposed main transport routes under CTRC jurisdiction. The average road width of these roads is between 4m to 7m wide (measured off Google Earth). The traffic count data was not available during this assessment. Given that these local roads mainly provide access to local properties, it is anticipated that the traffic volume is relatively low. The daily traffic volume for these roads has been conservatively estimated to be 10 vehicles per day.

18.3 Potential Impacts

18.3.1 Project-related traffic (construction and operational)

18.3.1.1 Construction phase

The construction phase of the Project is currently anticipated to be undertaken over an 18-month period, proposed to commence in April 2022 and be completed in October 2024. It is noted that the dates and timeframes adopted for this assessment are indicative only and subject to change.

The anticipated Project construction traffic volumes will largely depend on the selected construction contractor and Project scheduling. Project-related traffic during construction will mainly comprise of the following.

- Regional movement of materials and equipment that cannot be sourced locally and most likely brought from Brisbane, i.e. insulators, structure steel, conductors, over-dimensioned materials.
- Local movement of construction personnel between Townsville and temporary accommodation camps.
- Local movement of construction material and equipment (i.e. concrete batching plant, construction and earthworks machinery), the majority of which is expected to be sourced from Townsville. Heavy vehicles will remain in position at progressive wok sites either on the contractors lay down or construction camp areas or pre agreed locations with landholders.

A combination of State-controlled and local authority road networks will be used to access construction sites. Section 18.2.3 indicates the key roads which are anticipated to be subject to the Project construction traffic.

1) Regional movement of materials and equipment

Materials and equipment will predominantly be delivered to site from Brisbane, via the western route (Cunningham Highway, Warrego Highway, Carnarvon Highway, Dawson Highway, Gregory Highway, Flinders Highway, Gregory Developmental Road). Based on previous experience on similar transmission line projects Powerlink estimated heavy vehicle traffic may reach up to 16 heavy vehicle and 10 light vehicle movements monthly (two-way trips).

2) Local movement of construction personnel between Townsville and temporary accommodation camps

Based on the information provided by Powerlink, the anticipated number of construction workers on site will be in the order of 370 staff on a 2/1 roster, hence approximately 250 staff on site at any given time. It is understood that all construction staff movements will be made to/from Townsville and the temporary accommodation camps using 50 seat passenger buses. During roster changes staff will be transported via Hervey Range Road and Gregory Developmental Road due to short travel distance. The daily traffic during roster change was estimated to be approximately 10 heavy vehicle (bus) round trip per day.

3) Local movement of construction material and equipment

Heavy vehicles delivering construction materials and equipment to site (i.e. concrete batching plant, construction and earthworks machinery), will be sourced from Townsville, via the Flinders Highway and Gregory Developmental Road. Please note that this traffic will predominantly occur during the mobilisation and demobilisation phases of the construction phase. Hence, the majority of heavy vehicles will reside on site throughout the construction period and operate along the proposed works corridor. Based on our previous experience with similar transmission line projects and through discussion with Powerlink, the estimated heavy vehicle traffic may reach up to 12 heavy vehicle movements daily (two-way trips).

Local authority roads including Craiglee Road and Greenvale Valley Road at Greenvale township, will serve to connect Gregory Development Road to the transmission line alignment.

As mentioned earlier, majority of the anticipated construction traffic movements only occur on an occasional basis and not on a daily basis. Hence, the following daily traffic volumes were conservatively adopted for the impact assessment purposes.

- Regional movement of materials and equipment – 6 heavy vehicle and 6 light vehicle round trip per day.
- Local movement of construction personnel - 10 heavy vehicle round trip per day.
- Local movement of construction material and equipment - 12 heavy vehicle round trip per day.

The movement of construction material and equipment has the potential to disrupt movements of local school buses. This has potential to cause delays to the operation of school buses which will cause issues for the school bus users as the bus will be unable to arrive at the schools on its scheduled time. Therefore, measures will be required to mitigate this potential issue.

Please note that a Principal Contractor has not been appointed for this project, at the time of writing this report and once a contractor is in place, the assumptions contained within this document can be tested and the proposed traffic volumes can be confirmed.

18.3.1.2 Operation and maintenance phase

Vehicle movements during the operational and maintenance phase will generally consist of routine inspections and maintenance of the transmission lines and switching station. The local authority road network will be used via the previously identified major transport routes. These traffic volumes will be considerably lower than those associated with the construction phase, and principally be limited to specific access tracks built for maintaining the transmission lines and switching station. Easement access arrangements will be established with landholders, as required.

An indication of the anticipated operational traffic volumes for the Project is provided in Table 18-3. These figures are based on similar transmission line projects proportionate in scale with that of the Project.

Table 18-3 Indicative vehicle movements generated during operation and maintenance phase

Maintenance Activity	Frequency	Vehicles Required
Transmission Line Maintenance		
Ground patrol	Once every three years	3 x four-wheel drives
Aerial patrol	Once per year	2 x helicopters 2 x fuel trucks
Footing resistance testing	Once every five years	6 x four-wheel drives
Inspection of landing spans	Once every five years	6 x four-wheel drives 3 x elevated work platforms (i.e. cherry-picker)
Insulator testing	Once every five years	6 x four-wheel drives 3 x elevated work platforms (i.e. cherry-picker)
Corrective emergency patrols	(allow) three per year	2 x helicopters 2 x fuel trucks
Corrective maintenance (fault investigation)	(allow) two per year	3 x four-wheel drives
Corrective maintenance (upgrade earthing)	(allow) 10 transmission line structures per year	3 x trench/backhoe 3 x four-wheel drive trucks 3 x four-wheel drives
Corrective maintenance (removal of bird nests)	(allow) 10 transmission line structures per year	6 x four-wheel drives 3 x elevated work platforms (i.e. cherry-picker)
Corrective maintenance (replacement of flashed insulators)	(allow) one string every five years	6 x four-wheel drives 3 x elevated work platforms (i.e. cherry-picker)
Easement Maintenance		
Rural vegetation management (targeted)	Once every six years	3 x four-wheel drive trucks 3 x four-wheel drives
Rural vegetation management (midterm treatment)	Once every six years	3 x four-wheel drive trucks 3 x four-wheel drives
Rural residential/urban vegetation management	Once per year	3 x four-wheel drive trucks 3 x four-wheel drives
Mechanical vegetation management	As required	3 x tractor/slasher 3 x four-wheel drive
Access track maintenance	As required	3 x graders 3 x four-wheel drives
General maintenance (e.g. weed control, rehabilitation works etc)	As required	3 x four-wheel drives
Land management inspections	Once every six months	3 x four-wheel drives

Maintenance Activity	Frequency	Vehicles Required
Switching Station Maintenance		
General maintenance (e.g. weed control)	As required	1 x four-wheel drive
Routine Maintenance	Twice per year	3 x four-wheel drives 1 x elevated work platforms

18.3.2 Road networks

18.3.2.1 Construction phase

State-controlled roads

In accordance with DTMR's Guide to Traffic Impact Assessment, Section 6.4, all road links where development traffic exceeds 5% of the base traffic (background traffic) is deemed to have an impact on the road network. A growth rate of 1% growth per annum has been adopted with a linear growth pattern to project the 2020 AADT to construction commencement year 2022.

The 5% trigger assessment of the Project traffic has been conducted and summarised in Table 1-4.

Table 18-4 Indicative vehicle movements generated during construction phase

Road Name	Section	Background Traffic		Project Traffic			% of Project Traffic to Background Traffic
		Traffic count Site	2022 AADT	Light Vehicle	Heavy Vehicle	Total	
			veh/day	veh/day	veh/day	veh/day	
Port of Brisbane Motorway	-	136238	11,078	6	6	12	0.11%
Cunningham Highway	Ipswich Motorway	140035	114,144	6	6	12	0.01%
		140027	92,815	6	6	12	0.01%
		136081	102,229	6	6	12	0.01%
Warrego Highway	Ipswich - Toowoomba	135546	59,488	6	6	12	0.02%
		135715	45,083	6	6	12	0.03%
		135964	30,016	6	6	12	0.04%
		10021	30,086	6	6	12	0.04%
		30066	22,054	6	6	12	0.05%
		30041	16,153	6	6	12	0.07%
		30070	20,216	6	6	12	0.06%
		32636	18,557	6	6	12	0.06%
		37610	11,500	6	6	12	0.10%
		32686	9,737	6	6	12	0.12%
Warrego Highway	Toowoomba - Dalby	30025	13,045	6	6	12	0.09%
		32641	12,550	6	6	12	0.10%
		32559	4,728	6	6	12	0.25%
		30004	5,516	6	6	12	0.22%
		30012	7,084	6	6	12	0.17%
		32693	11,890	6	6	12	0.10%

Road Name	Section	Background Traffic		Project Traffic			% of Project Traffic to Background Traffic
		Traffic count Site	2022 AADT	Light Vehicle	Heavy Vehicle	Total	
			veh/day	veh/day	veh/day	veh/day	
Warrego Highway	Dalby - Miles	32633	12,544	6	6	12	0.10%
		32647	4,529	6	6	12	0.26%
		30040	3,165	6	6	12	0.38%
		30076	3,122	6	6	12	0.38%
		32654	4,069	6	6	12	0.29%
		32648	7,236	6	6	12	0.17%
		32048	5,023	6	6	12	0.24%
		30020	2,433	6	6	12	0.49%
		40047	2,980	6	6	12	0.40%
Warrego Highway	Miles - Roma	40250	3,333	6	6	12	0.36%
		40405	1,569	6	6	12	0.76%
		40320	1,648	6	6	12	0.73%
		40542	1,563	6	6	12	0.77%
		40155	1,934	6	6	12	0.62%
		40631	3,392	6	6	12	0.35%
		40502	4,096	6	6	12	0.29%
Carnarvon Highway	Roma - Injune	40513	2,358	6	6	12	0.51%
		40514	1,569	6	6	12	0.76%
		40171	803	6	6	12	1.49%
Carnarvon Highway	Injune - Rolleston	40334	688	6	6	12	1.75%
		150017	450	6	6	12	2.67%
		159561	527	6	6	12	2.28%
Dawson Highway	Rolleston - Springsure	159672	641	6	6	12	1.87%
		150021	798	6	6	12	1.50%
		159663	1,000	6	6	12	1.20%
		159665	1,269	6	6	12	0.95%
Gregory Highway	Springsure - Emerald	159668	1,269	6	6	12	0.95%
		159667	1,108	6	6	12	1.08%
		150022	1,681	6	6	12	0.71%
		159639	3,171	6	6	12	0.38%
		159609	5,893	6	6	12	0.20%
Gregory Highway	Emerald - Clermont	159706	9,697	6	6	12	0.12%
		159699	10,863	6	6	12	0.11%
		159675	4,735	6	6	12	0.25%
		150025	3,139	6	6	12	0.38%
		159598	1,943	6	6	12	0.62%
		159653	2,395	6	6	12	0.50%
		159652	1,661	6	6	12	0.72%
		159651	1,291	6	6	12	0.93%

Road Name	Section	Background Traffic		Project Traffic			% of Project Traffic to Background Traffic
		Traffic count Site	2022 AADT	Light Vehicle	Heavy Vehicle	Total	
			veh/day	veh/day	veh/day	veh/day	
		150015	1,088	6	6	12	1.10%
Gregory Highway	Clermont - Belyando Crossing	159536 159640	2,094 1,080	6 6	6 6	12 12	0.57% 1.11%
Gregory Developmental Road	Clermont - Belyando Crossing	159538 150016	530 633	6 6	6 6	12 12	2.26% 1.89%
Gregory Developmental Road	Belyando Crossing - Charters Towers	90020 91701	620 878	6 6	6 6	12 12	1.93% 1.37%
Flinders Highway	Townsville to Charters Towers	92192 90060 91389 91328 91329	1,904 6,119 2,569 2,093 2,896	0 0 0 6 6	12 12 12 18 18	12 12 12 24 24	0.63% 0.20% 0.47% 1.15% 0.83%
Gregory Developmental Road	Charters Towers to Project site	91298 91327 90087 90002 91702	1,848 3,074 951 252 256	6 6 6 6 6	18 18 18 18 26	24 24 24 24 32	1.30% 0.78% 2.52% **9.53%** **12.50%**
Hervey Range Road	Townsville to Gregory Developmental Road	91554 90013 92238 92223 91459 91461 90065 90066 91464 91424	16,004 13,869 11,387 10,828 6,987 4,419 1,056 1,038 200 162	0 0 0 0 0 0 0 0 0 0	10 10 10 10 10 10 10 10 10 10	10 10 10 10 10 10 10 10 10 10	0.06% 0.07% 0.09% 0.09% 0.14% 0.23% 0.95% 0.96% 5.00% **6.17%**

Based on the assessment, the estimated construction traffic volumes will have minimal impact on the proposed route during construction period except Gregory Developmental Road (Charters Towers to Project site) and Hervey Range Road. The estimated construction traffic exceeds 5% of the background traffic on Gregory Developmental Road (Charters Towers to Project site) and Hervey Range Road (Townsville to Gregory Developmental Road). Detailed traffic/pavement impact assessment will be necessary to assess the level of impact on these section roads, in terms of safety, access, intersection delay, road link capacity, pavement, bridges and culverts. Subject to the traffic/pavement impact assessment outcomes, further discussion with DTMR may be required to identify how to best mitigate the impact.

The transport of over dimensioned equipment/material (i.e. transformers) or hazardous/dangerous goods may be required on State-controlled roads. The relevant approvals and permits will be sought from DTMR.

Local Authority Roads

Based on the assessment, the estimated construction traffic volumes exceed 5% of the background traffic on Craiglee Road and Greenvale Road during construction. However, the traffic operation of these roads is unlikely to be impacted by the Project, given the low background traffic volumes and the temporary duration of the construction works.

Powerlink will work with each Council to agree on road use protocols including maintenance and remediation works if damage is caused by project traffic.

Temporary Road Closures

Temporary road closures may be required for safety during certain construction activities, such as conductor stringing. These will generally be for a short duration (2-3 days) (i.e. during aerial stringing) and with appropriate traffic management plans and procedures in place, the traffic flow impacts on State-controlled roads and local authority roads will be minimal. Temporary road closures will not restrict emergency service vehicle movement.

Maintenance activities for the proposed transmission line and switching station are not anticipated to significantly affect the road networks, property accesses or community amenities. Planned maintenance activities involving vegetation (regrowth) clearing to maintain safe electrical clearances and structure inspection will require vehicular access to and along the transmission line easement. The impacts of these maintenance activities will be minimal as they are infrequent, localised and of short duration (refer to frequency information provided in Table 18-3).

18.3.3 Rail networks

No railway lines are traversed by the Preferred Alignment.

18.3.4 Aerodromes and flight paths

As indicated in Section 18.2.2, no certified aerodromes or regulated air service routes (of regional or State significance) are in close proximity to the Preferred Alignment. Ten (10) airstrips were identified within 8 km of the Preferred Alignment.

Powerlink will undertake consultation with the relevant authority or landholder of these airstrips to mitigate and manage any hazards or restrictions potentially created by the Preferred Alignment for landing, aerial spraying or mustering activities etc.

18.4 Mitigation and Management Measures

The following measures have been proposed to minimise the potential impacts from Project construction identified in Section 18.3.

- A detailed Traffic Management Plan for the Project to be developed and implemented prior to construction works commencing.
- Ensure that the movement of major vehicles carrying oversized components (such as transmission structure components) will be outside the times that school bus movements will occur and all key stakeholders are included in the communications regarding changed or impacted bus routes, including school bus operators, school bus committees, schools/parents and local authorities.
- Obtain local authority (i.e. local Council) approval for potential road closures or traffic delays to emergency services and the local community. Any temporary road closures will involve on site traffic management, so that in the event of emergency service vehicles needing to pass through the areas where stringing is occurring, passage will be provided.
- Apply for appropriate approvals and permits under the *Transport Infrastructure Act 1994* from DTMR for any permanent or temporary access to state control roads, including associated roadworks for access, the transport of over dimensioned equipment and materials on state control roads and for ancillary works and encroachments.

- Detailed planning to be undertaken for conductor stringing across State controlled and other regional roads in consultation with DTMR and relevant local authorities. All necessary approvals required from DTMR and local authorities for undertaking these works will be applied for and received prior to works commencing.
- The relevant permits/approvals/consultation will be sourced prior to commencing the project in order to minimise localised congestion and potential safety impact for road users as no night works/transport will occur during the project.
- Dedicate traffic management personnel for traffic management and safety purposes, particularly when construction works are being conducted close to roads or where lane closures are required. If lane closures are required, the landholders and the community will be provided with information regarding the closures that will outline the timing and location of the temporary closures.
- Road upgrade or rectification will be undertaken (as agreed between the relevant local authorities and Powerlink) where mitigation measures are required to address issues associated with the haulage of construction materials such as pavement degradation and insufficient road geometry.
- Consultation with the relevant authority or landholder of local airstrips and risk assessment may be necessary to implement controls to minimise hazards or restrictions created by the Preferred Alignment for landing, aerial spraying or aerial mustering activities etc.
- Consultation with the landholders regarding the mitigation and management of the access tracks will be conducted to ensure the landholders are made aware of the management procedures of the access tracks.

No specific mitigation measures are anticipated to be required for the operation and maintenance phase of the Project.