INLAND RAIL

APPENDIX K

Matters of National Environmental Significance Technical Report

PART 3 OF 4

Appendix G

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

IR_1381

ARTC

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

APPENDIX

K

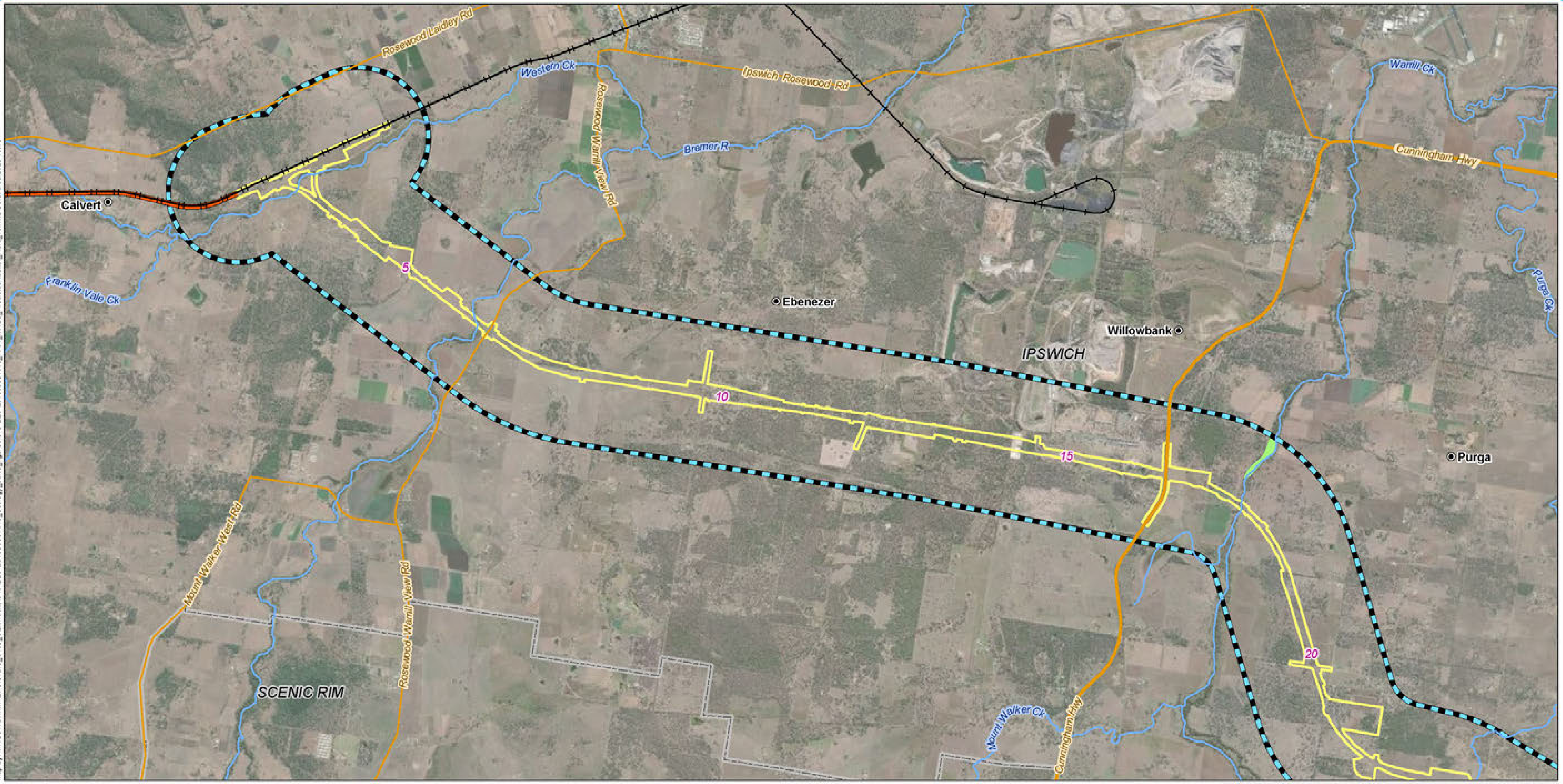
Matters of National Environmental Significance Technical Report

Appendix G Predicted Habitat and TEC mapping

CALVERT TO KAGARU ENVIRONMENTAL IMPACT STATEMENT

IR_1381

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

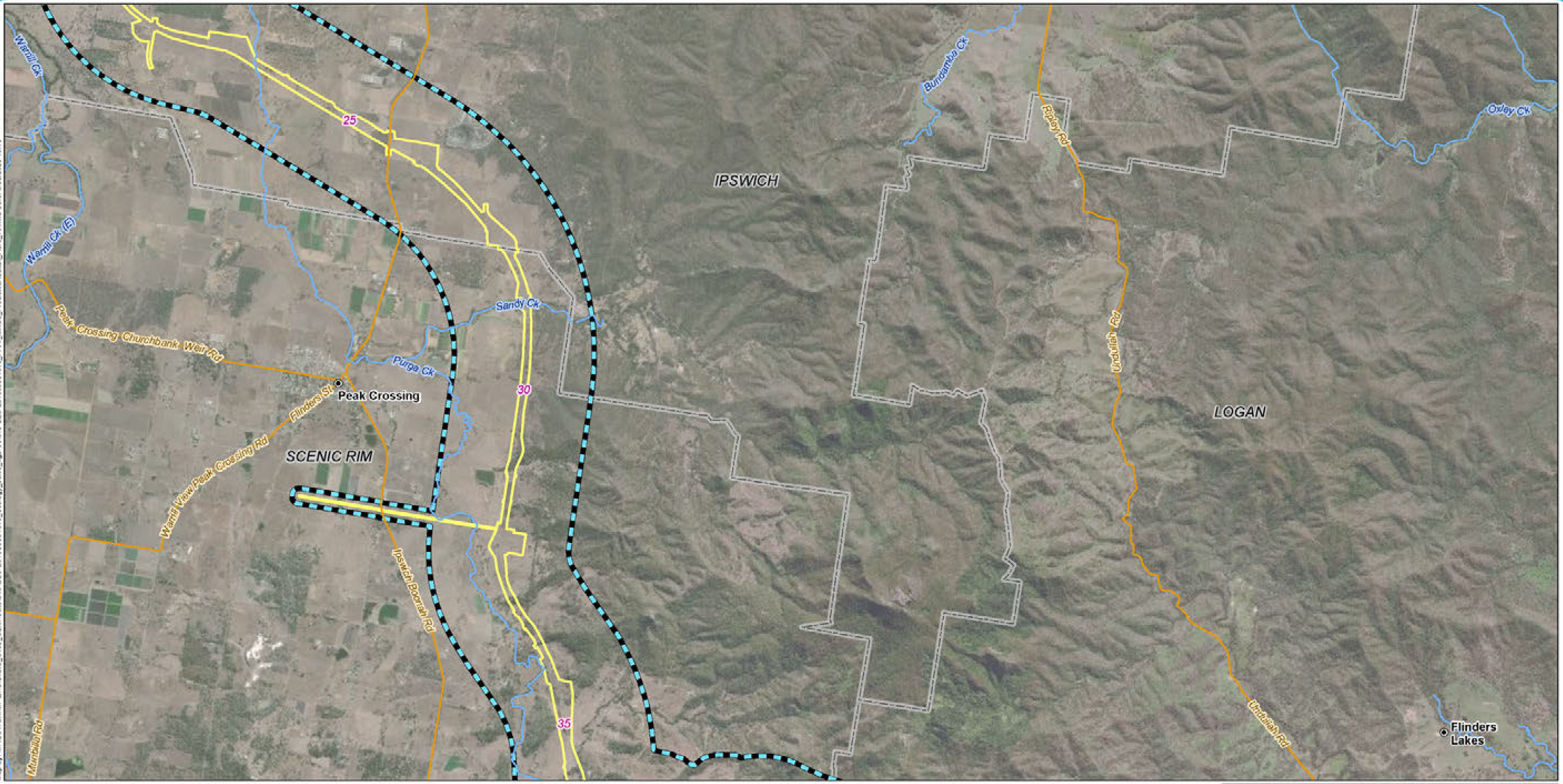
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Arthraxon hispidus* (Hairy joint grass)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Map by: MF/LCT/ON/MF Z:\GIS\GIS_3400_C2K\Tasks\340-EEC-201905081615_ecology_cales_figures\340-EEC-201905081615_FFJV_MNES_PredictedHabitat_Flora_v5.mxd Date: 3/09/2020 15:18

Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

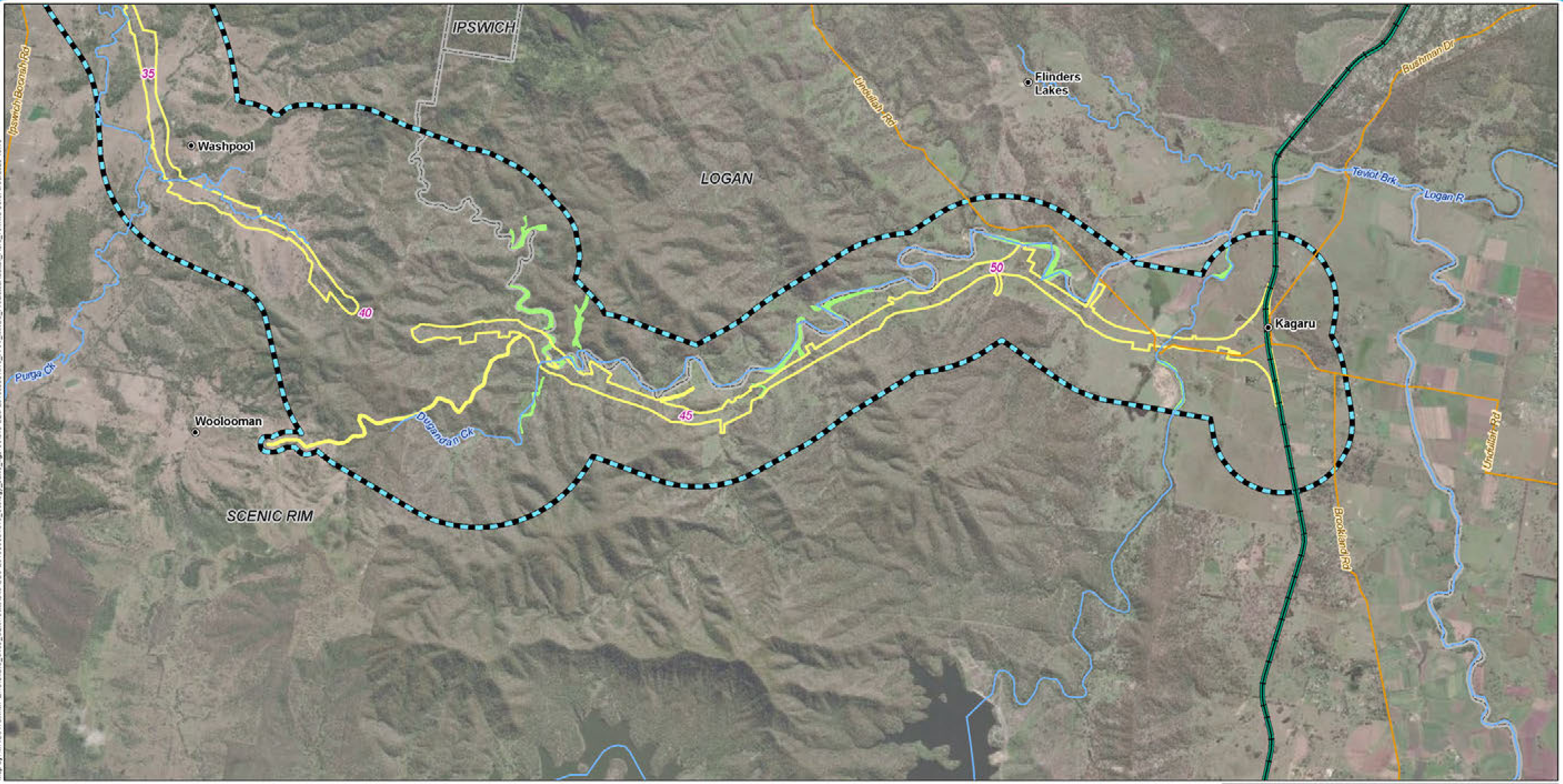
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Arthraxon hispidus* (Hairy joint grass)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

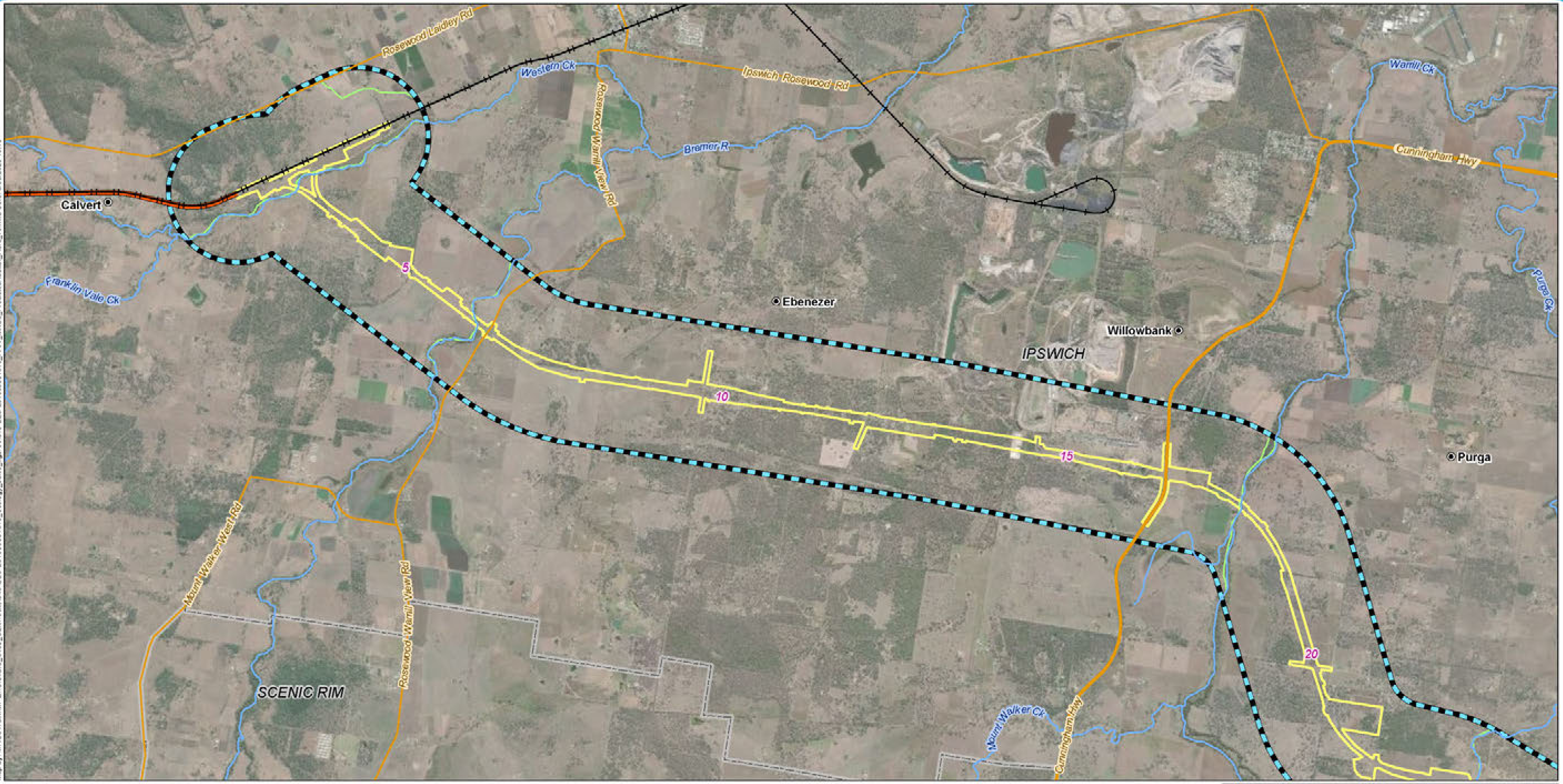
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Arthraxon hispidus* (Hairy joint grass)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

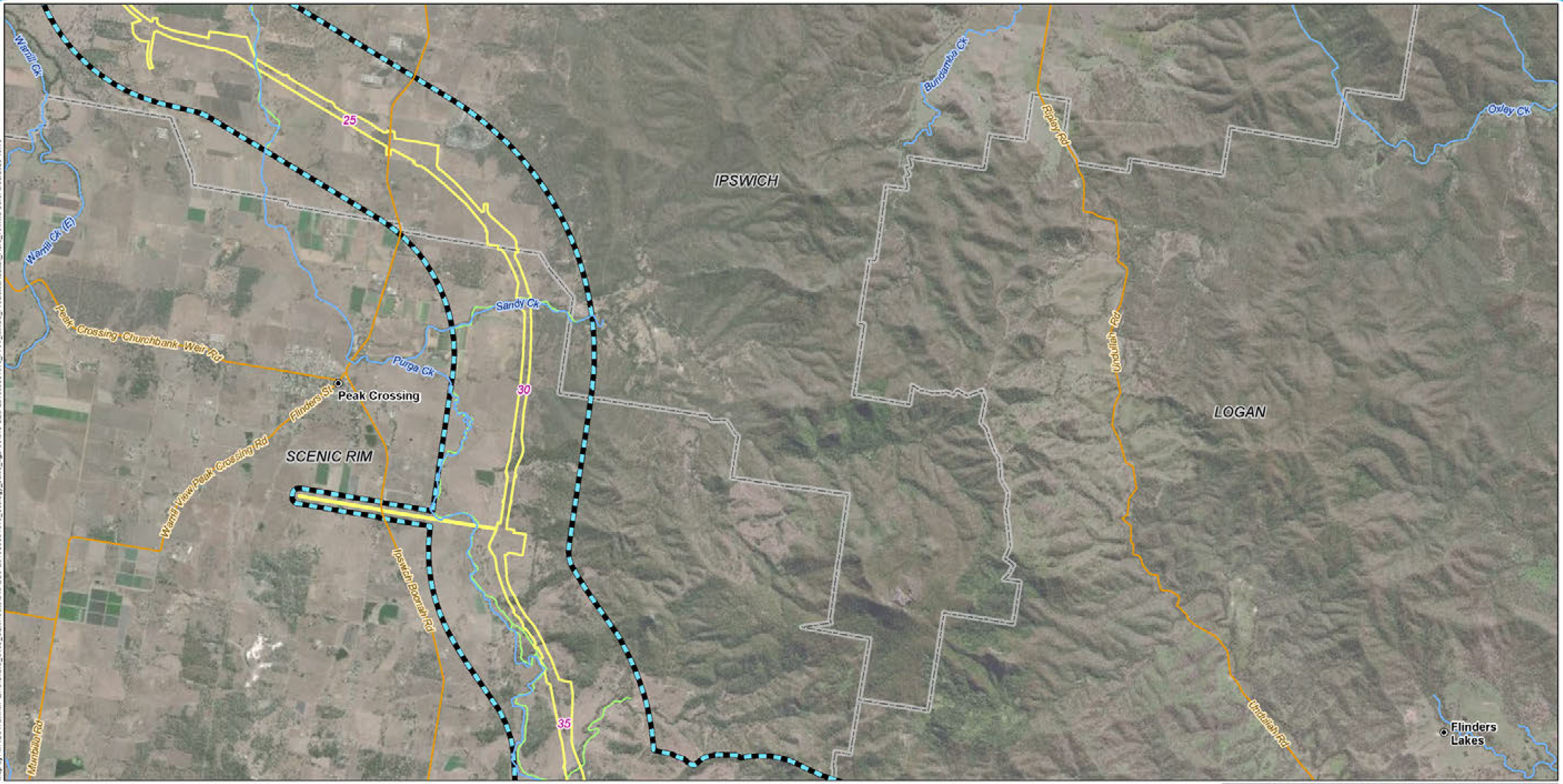
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Lychnothamnus barbatus* (A green algae)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Map by: MF/LCT/CN/MF Z:\GIS\GIS_3400_C2K\Tasks\340-EEC-201905081615_ecology_cales_figs\rev1\340-EEC-201905081615_FFJV_MNES_PredictedHabitat_Flora_v6.mxd Date: 3/09/2020 15:18

Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

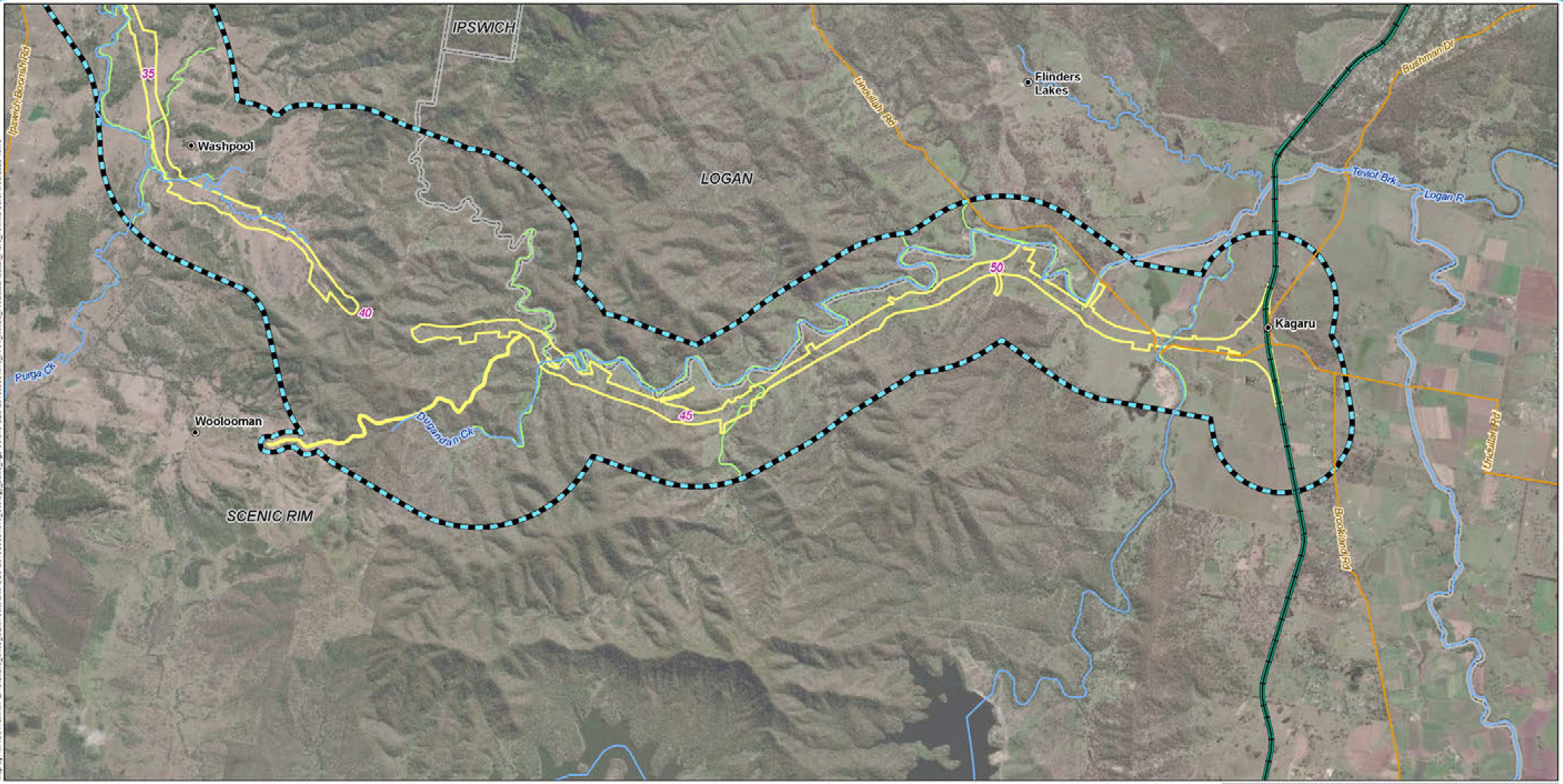
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Lychnothamnus barbatus* (A green algae)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

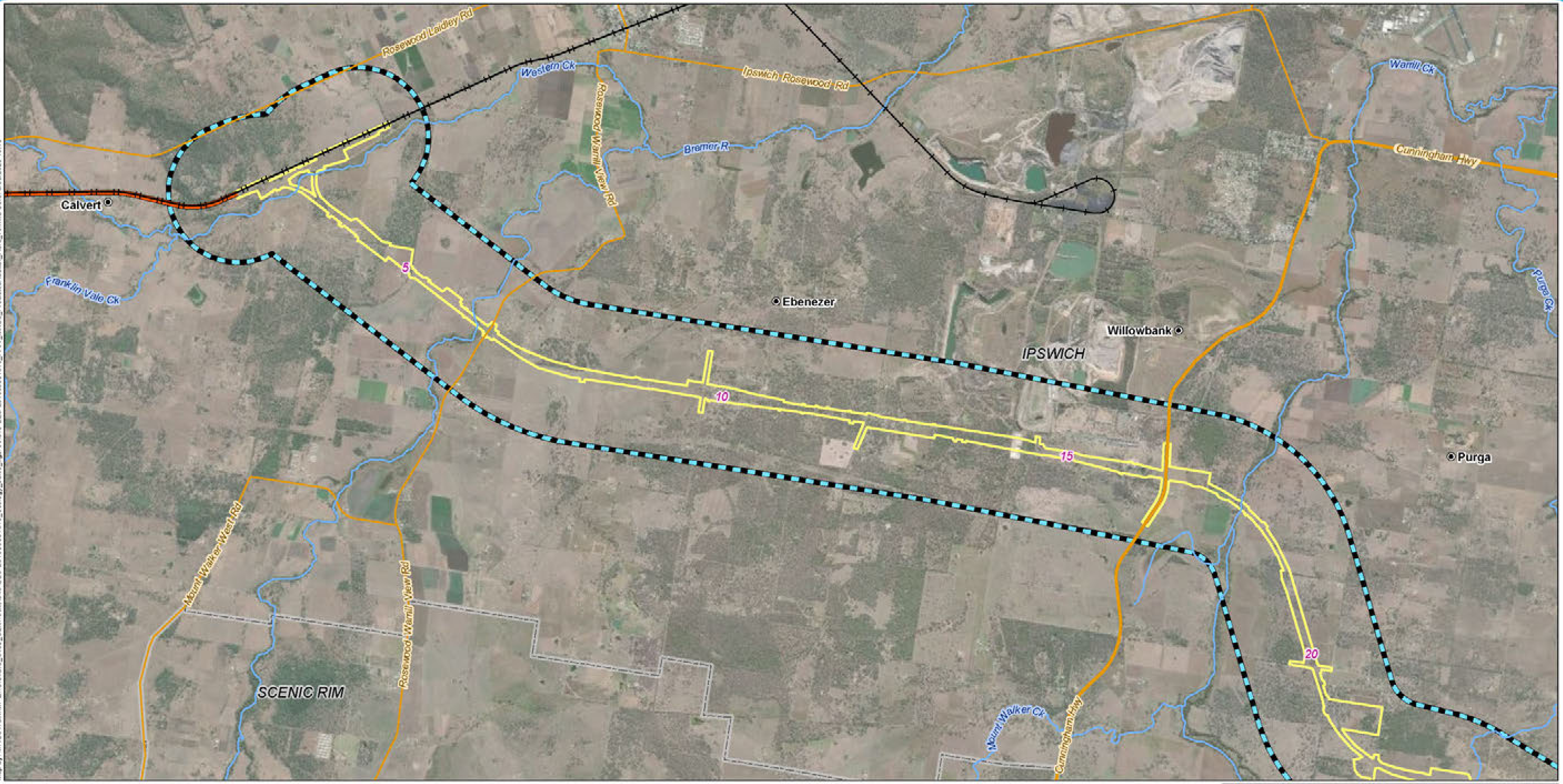
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Lychnothamnus barbatus* (A green algae)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

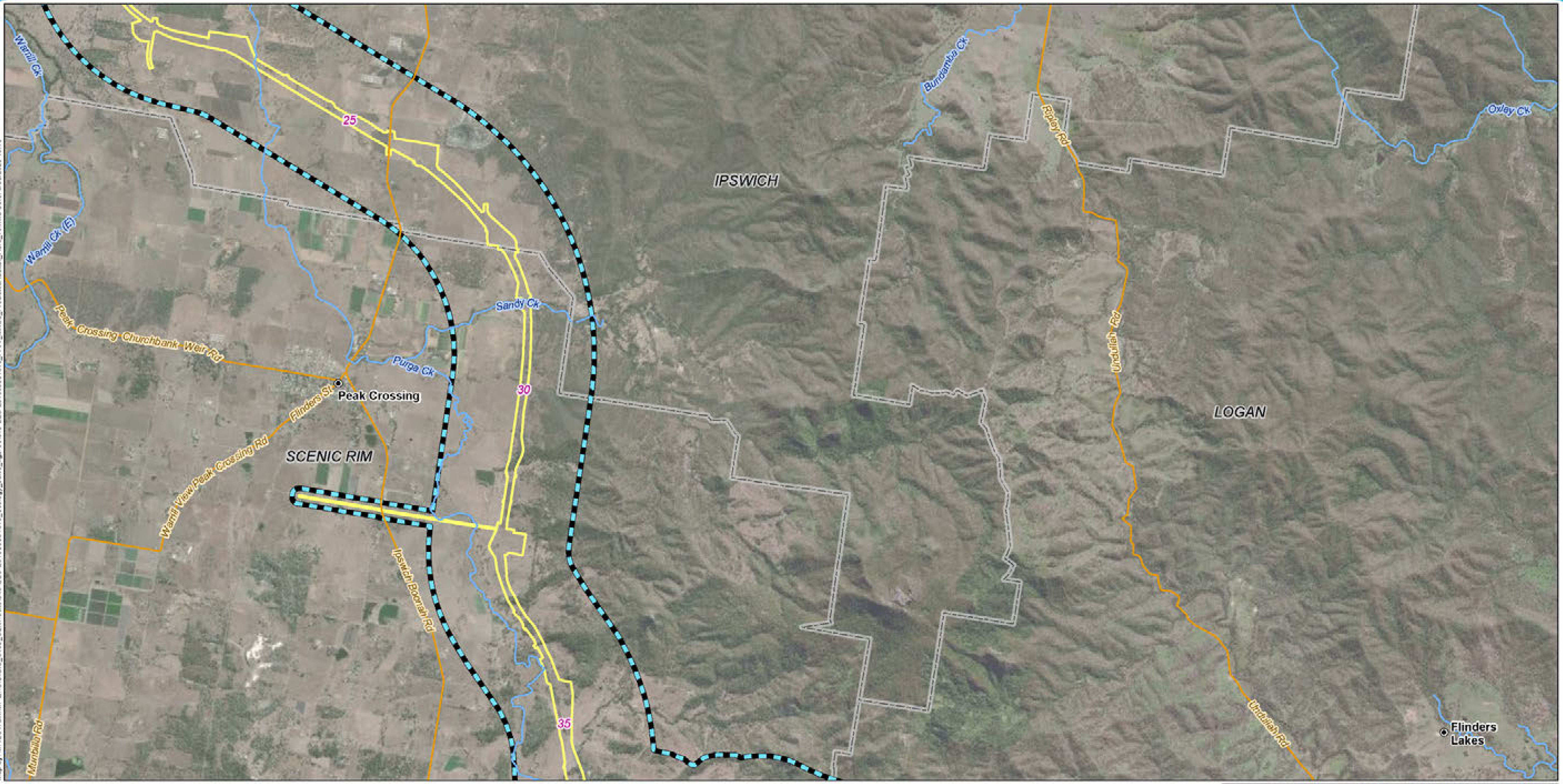
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea ipsviciensis* (Cooneana olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

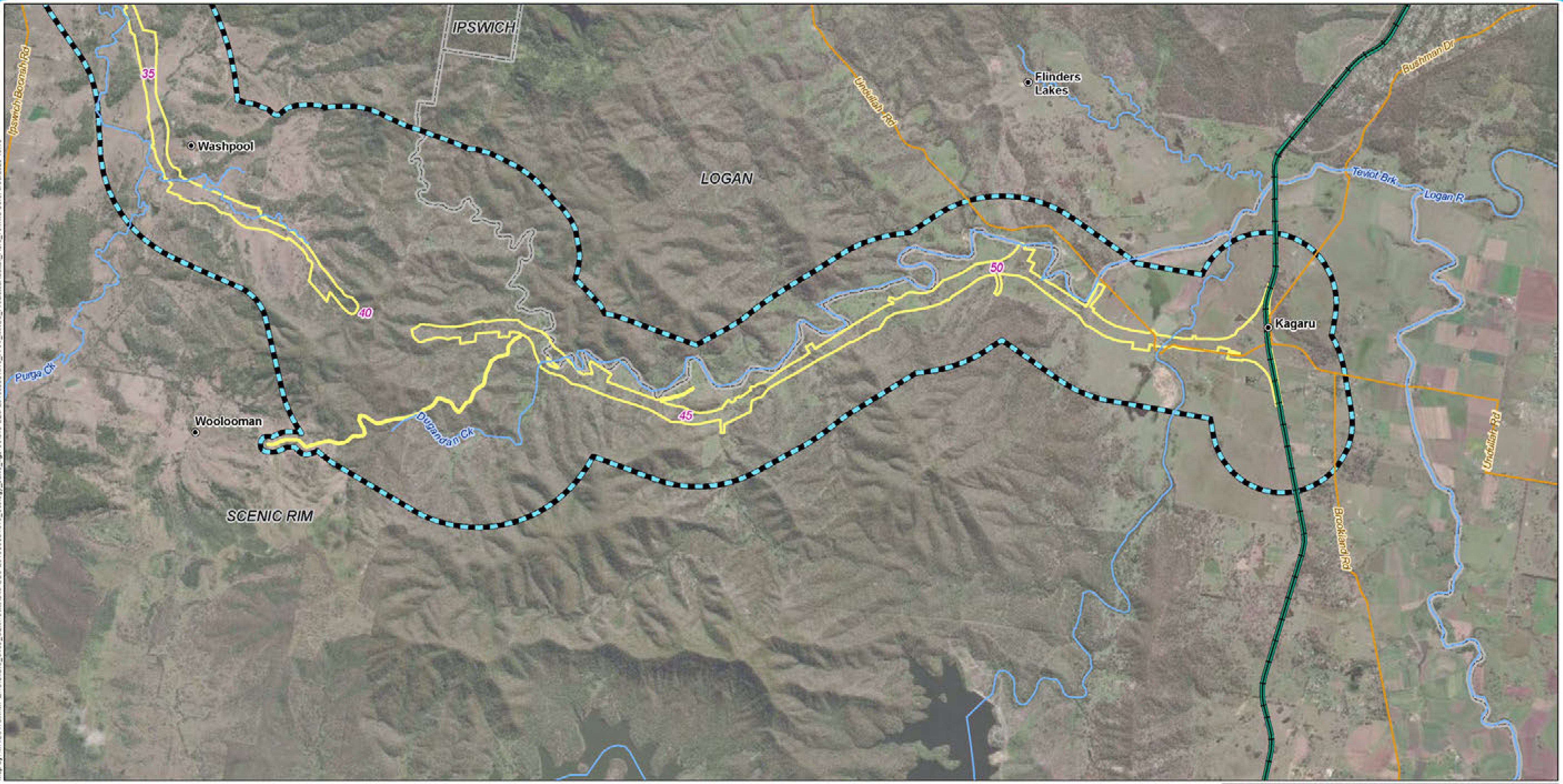
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea ipsviciensis* (Cooneana olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

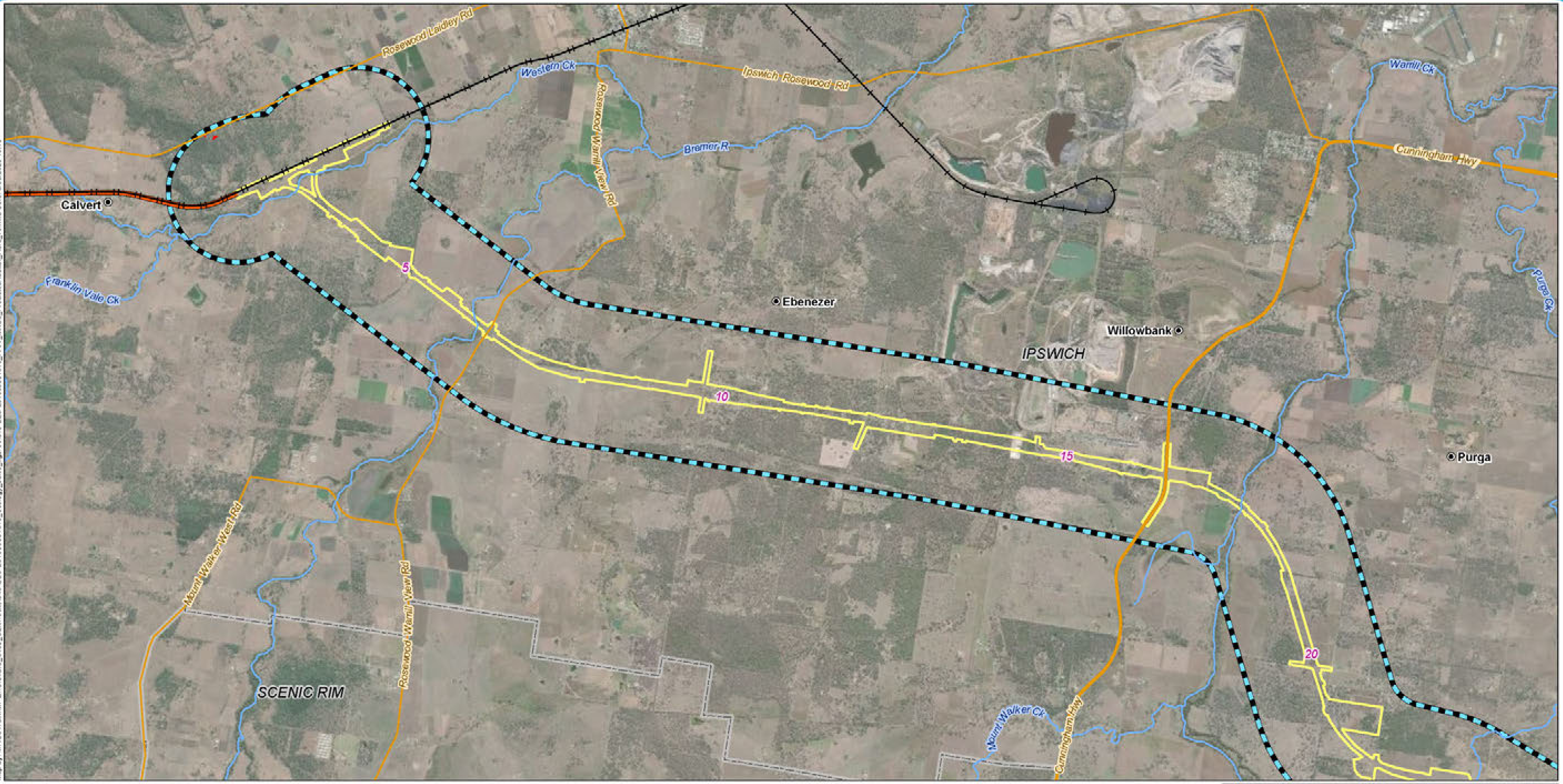
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea ipsviciensis* (Cooneana olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Habitat critical to the survival of the species

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

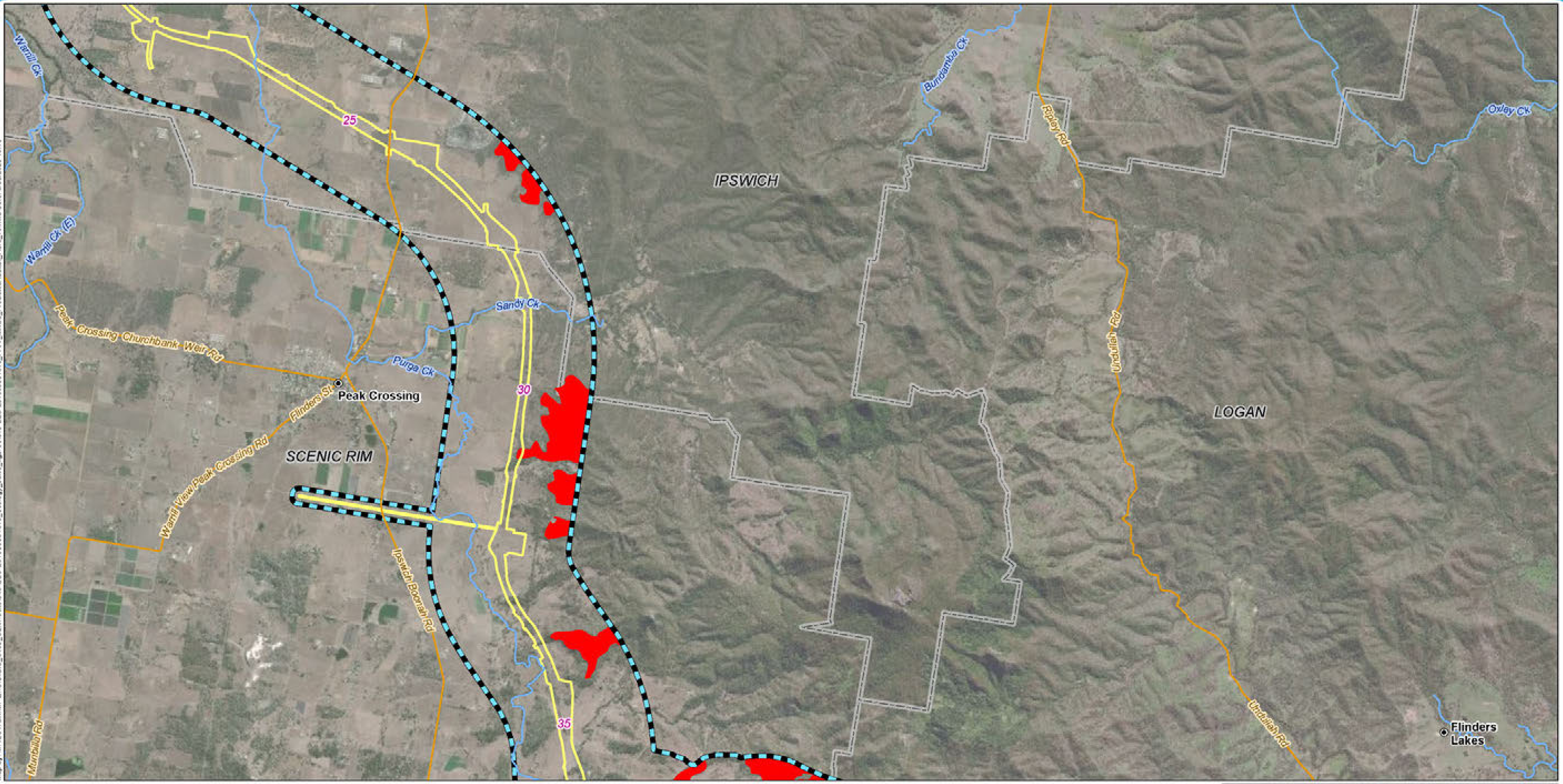
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea lloydii* (Lloyd's olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Habitat critical to the survival of the species

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

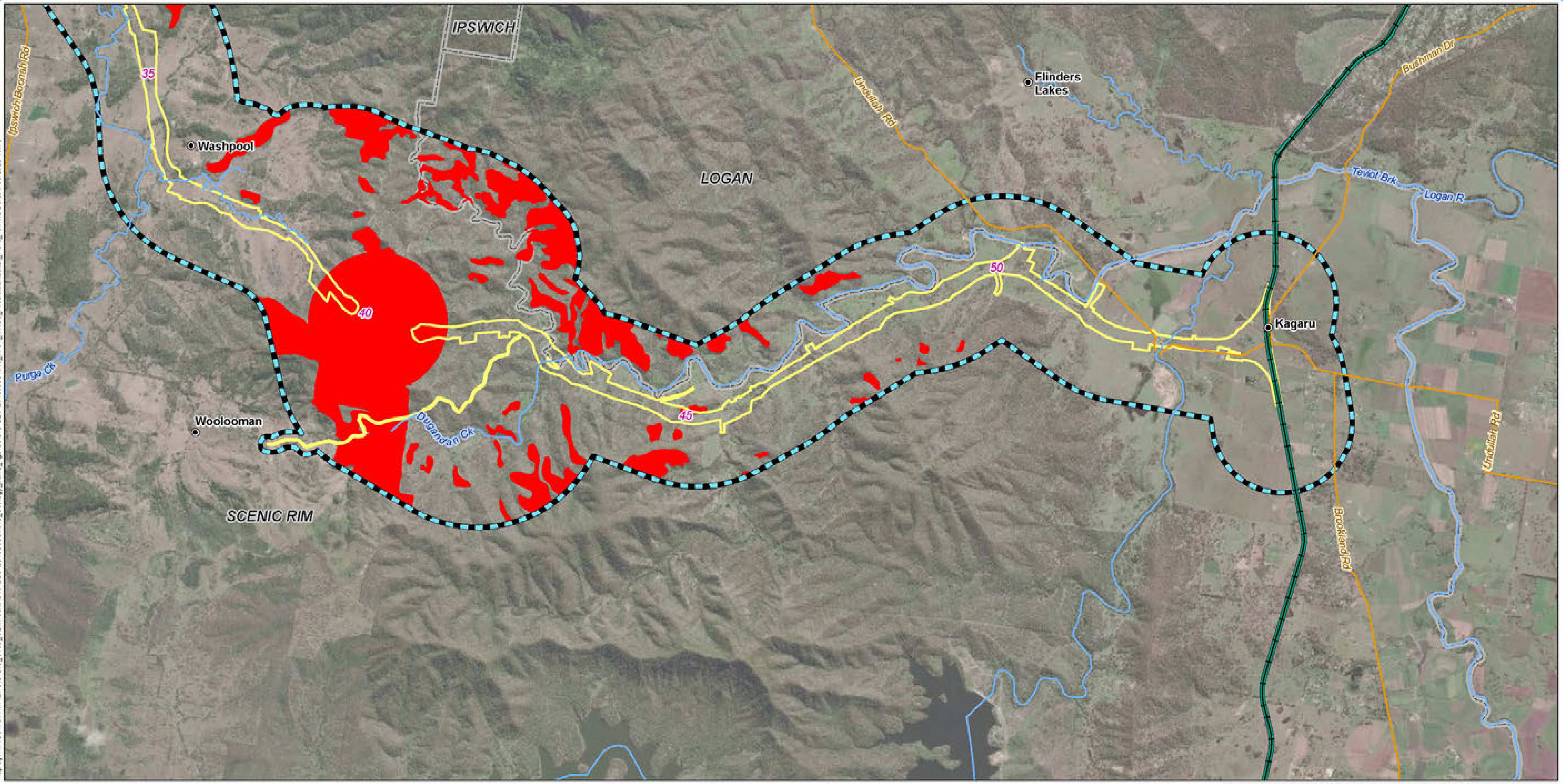
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea lloydii* (Lloyd's olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Habitat critical to the survival of the species

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

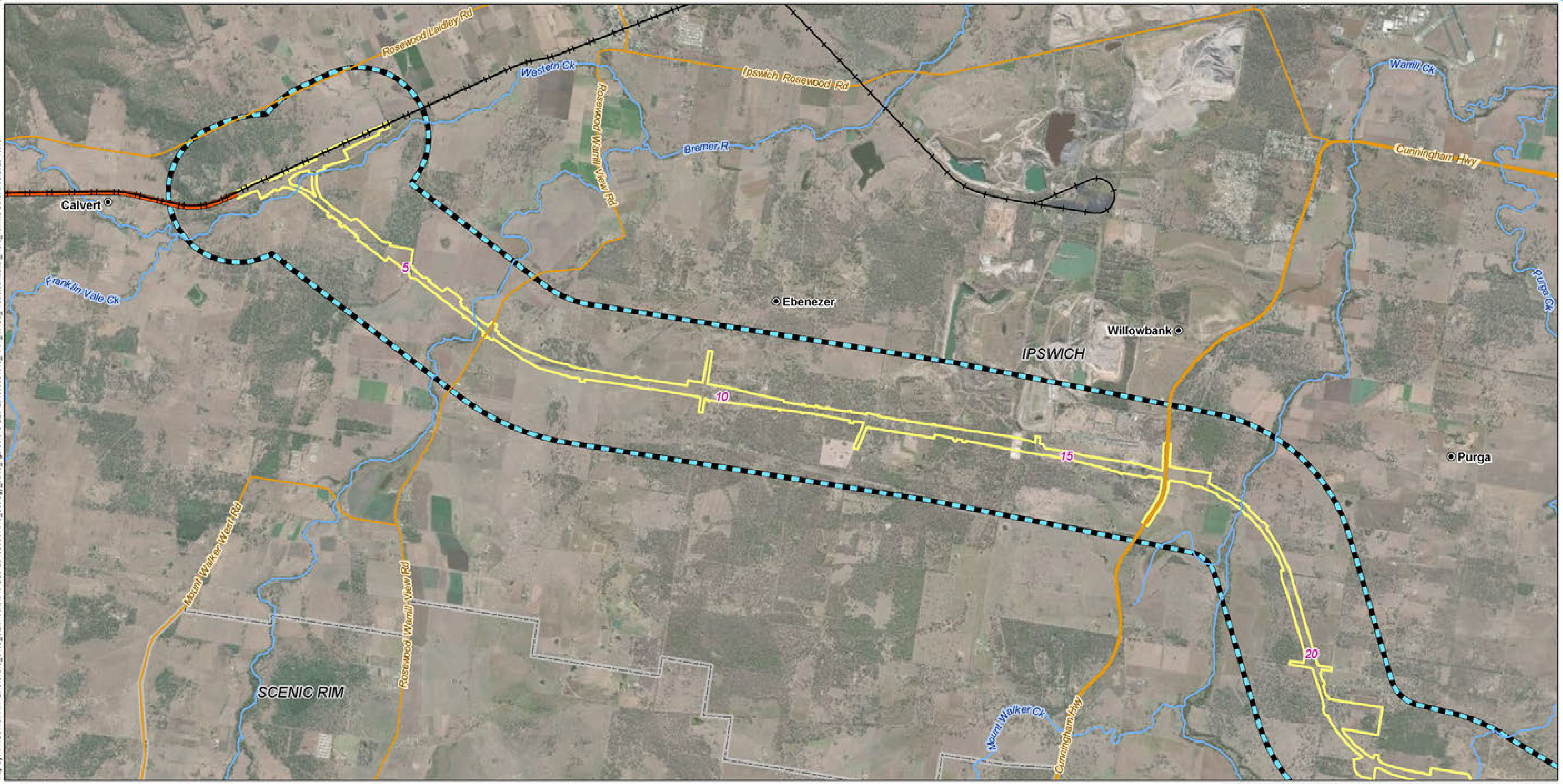
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Notelaea lloydii* (Lloyd's olive)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

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- Localities
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- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

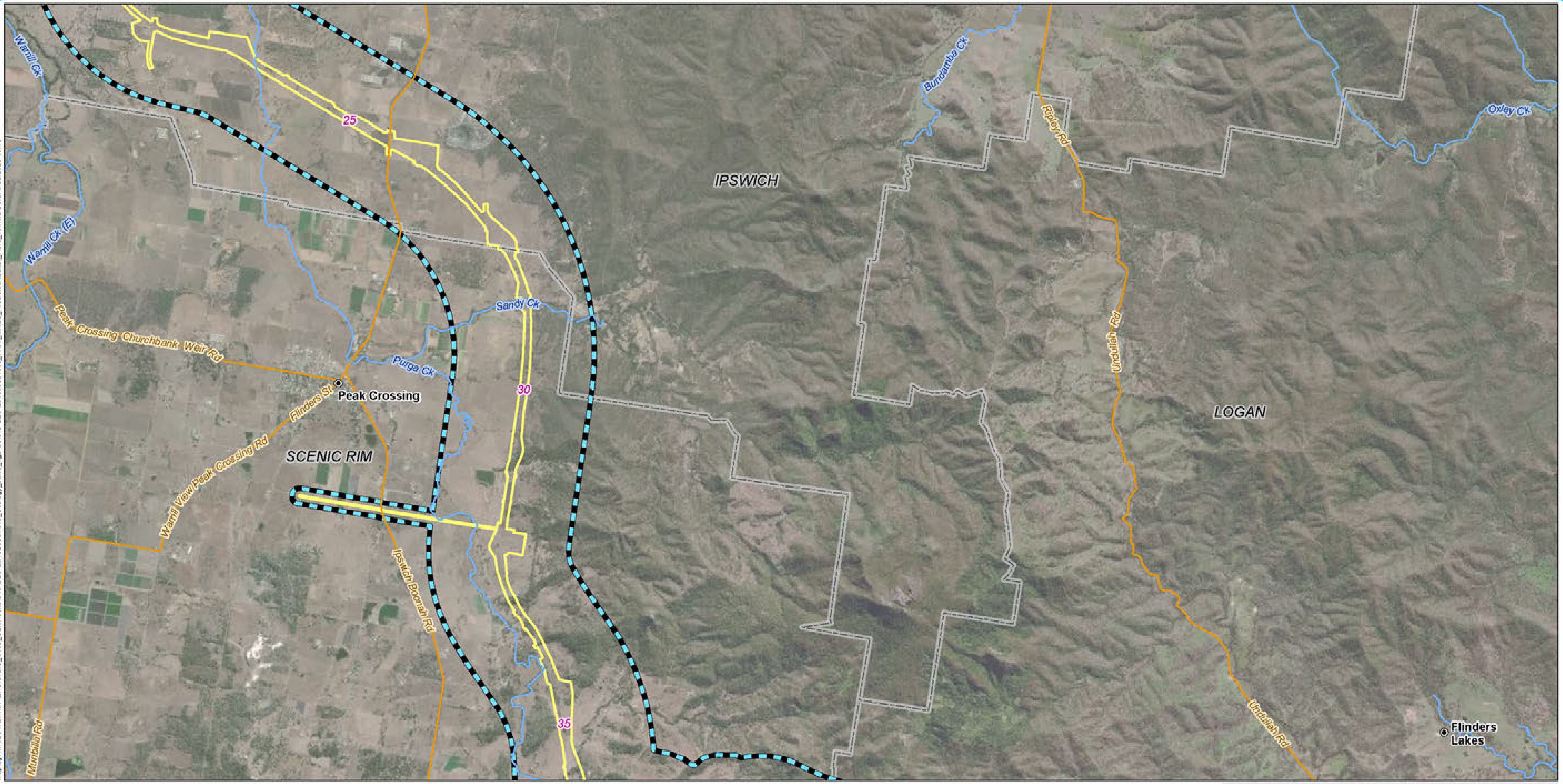
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Planchonella eerwah* (Shiny leaved condoo)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

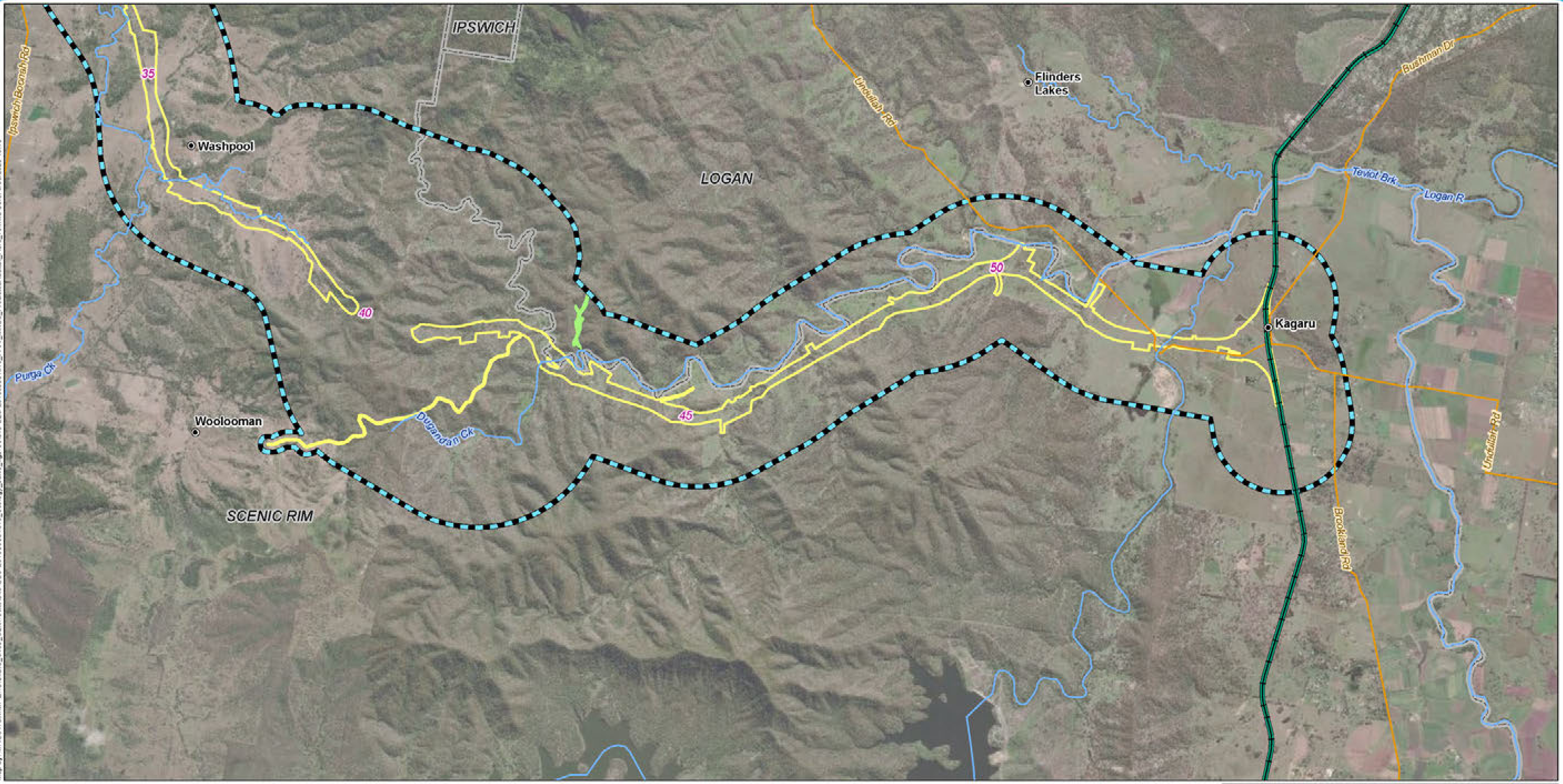
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Planchonella eerwah* (Shiny leaved condoo)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas

Predicted Habitat

- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

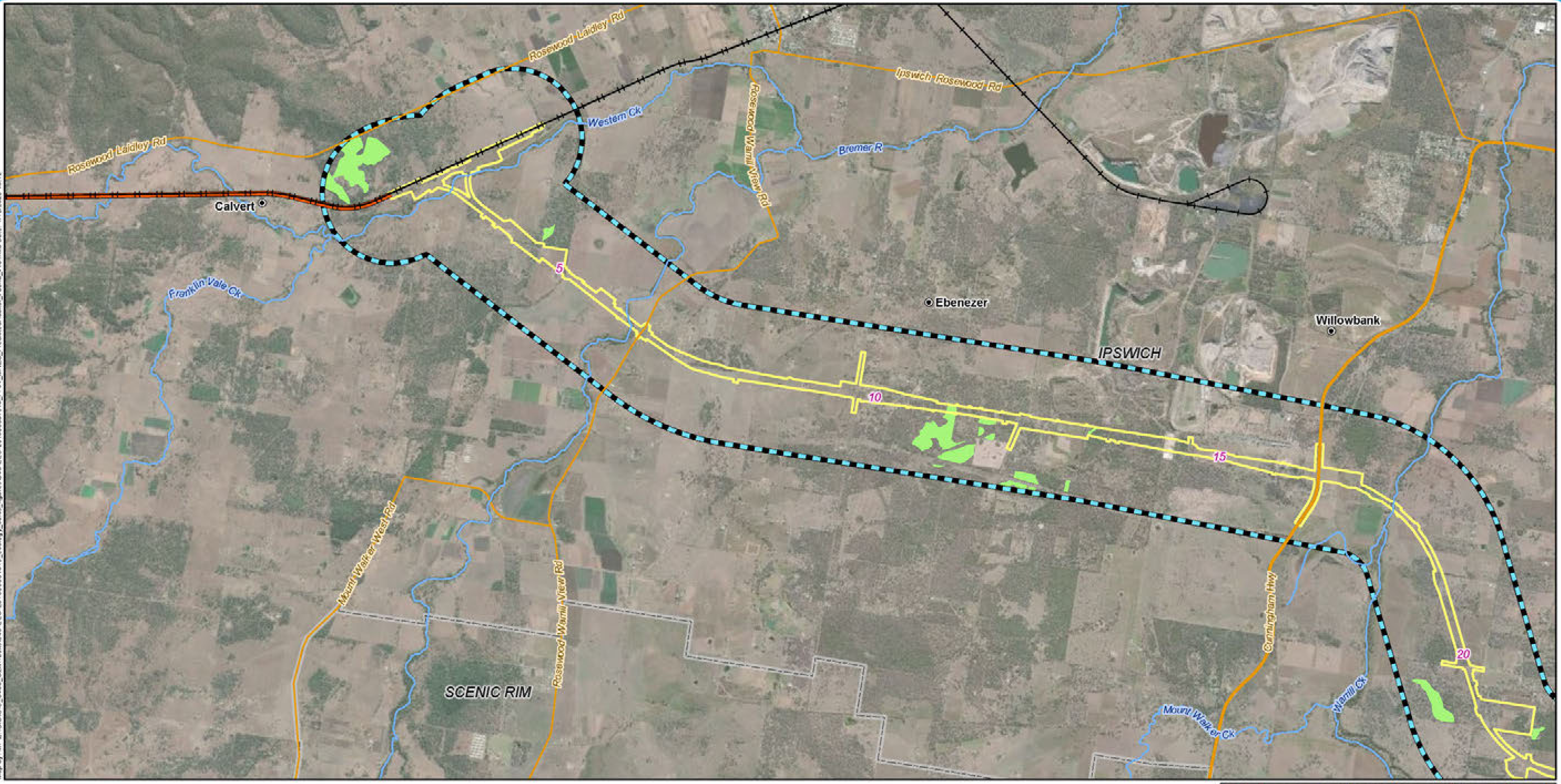
Future Freight
Integrating Community, Environment and Engineering

Issue date: 03/09/2020 Version: 5
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: *Planchonella eerwah* (Shiny leaved condoo)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

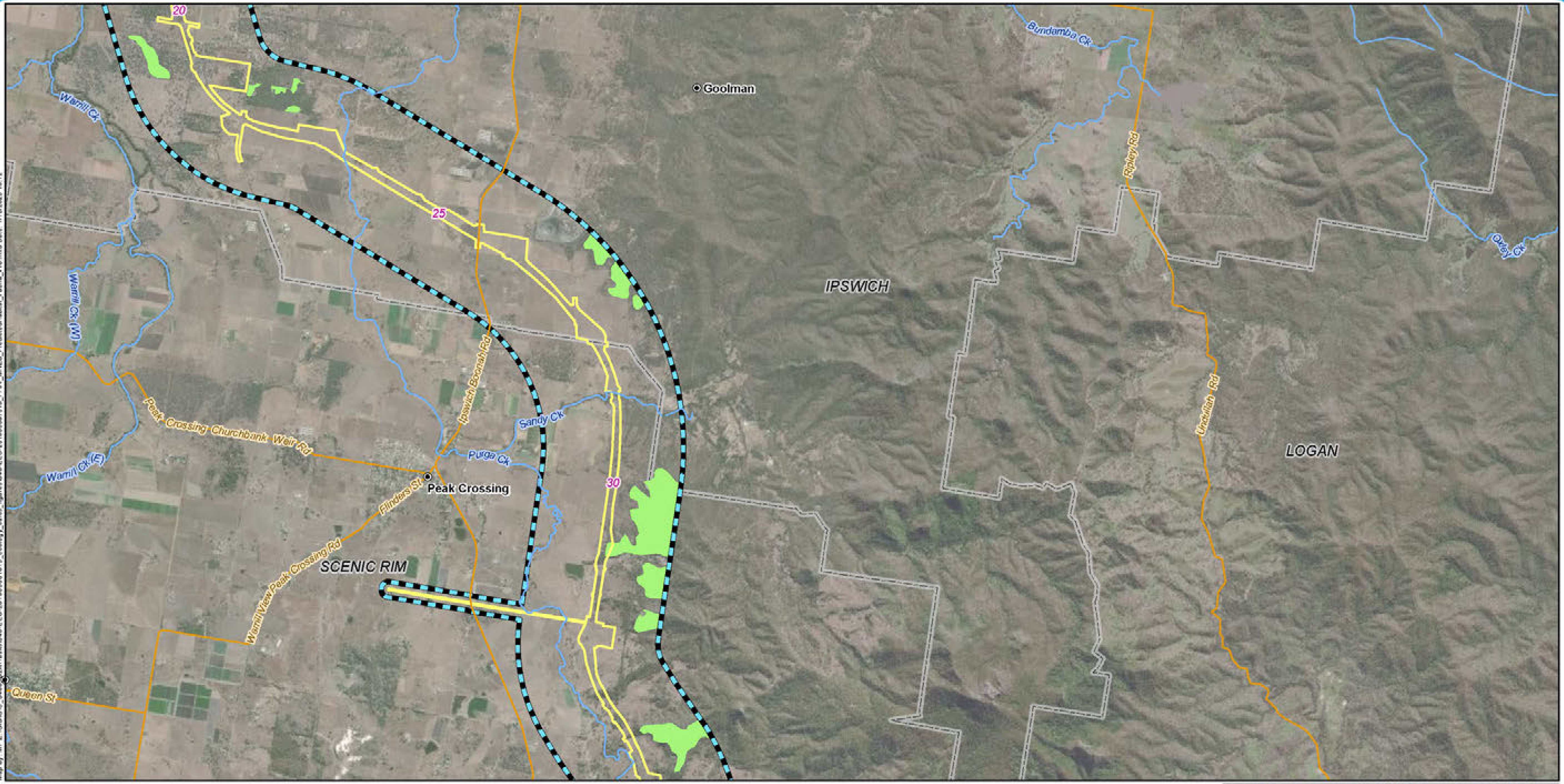
Future Freight
Integrating Community, Environment and Engineering

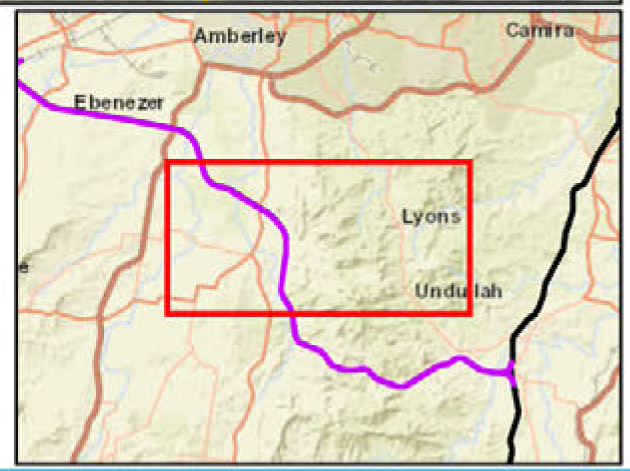
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Regent honeyeater (*Anthochaera phrygia*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

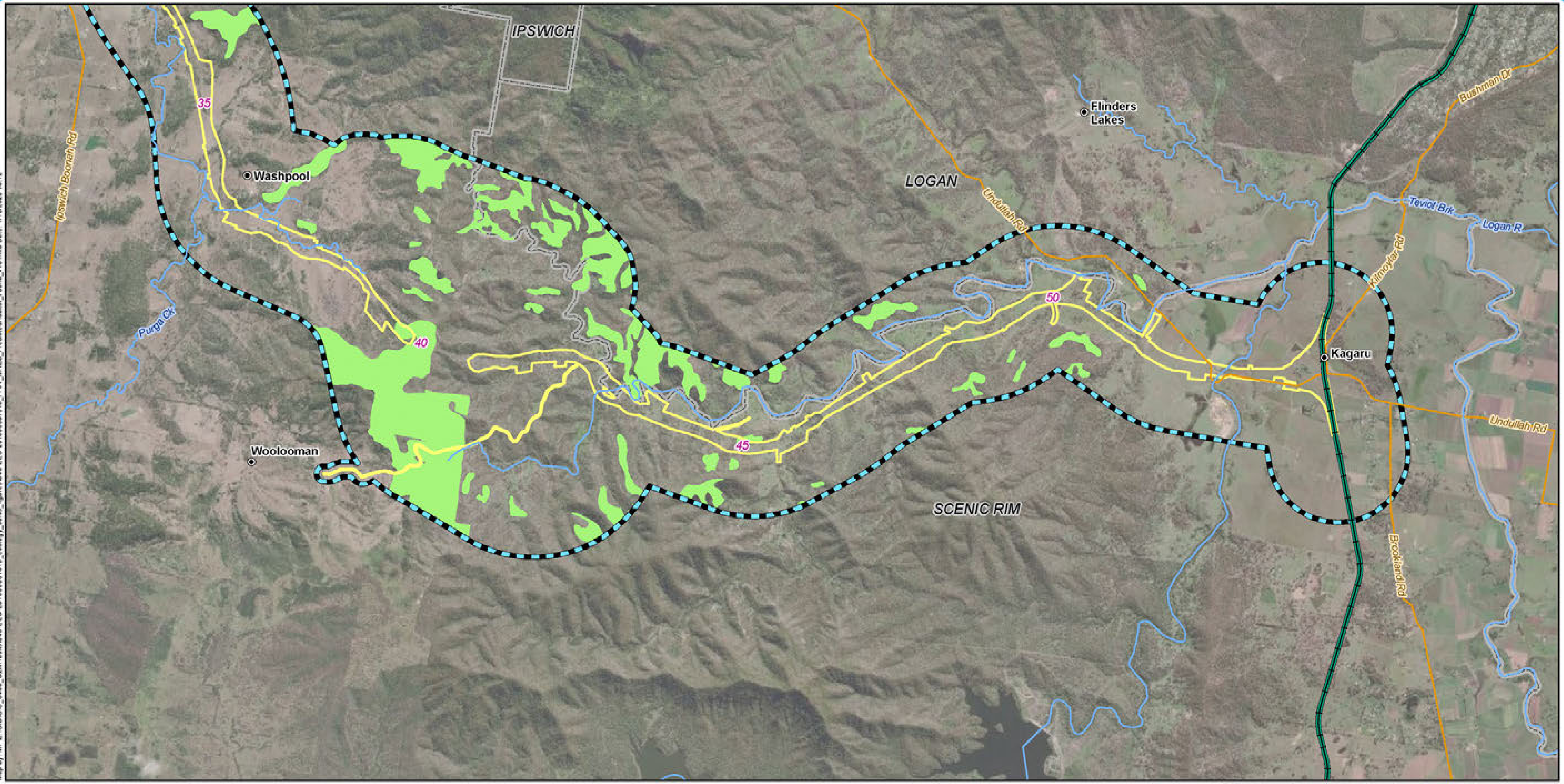
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Regent honeyeater (*Anthochaera phrygia*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

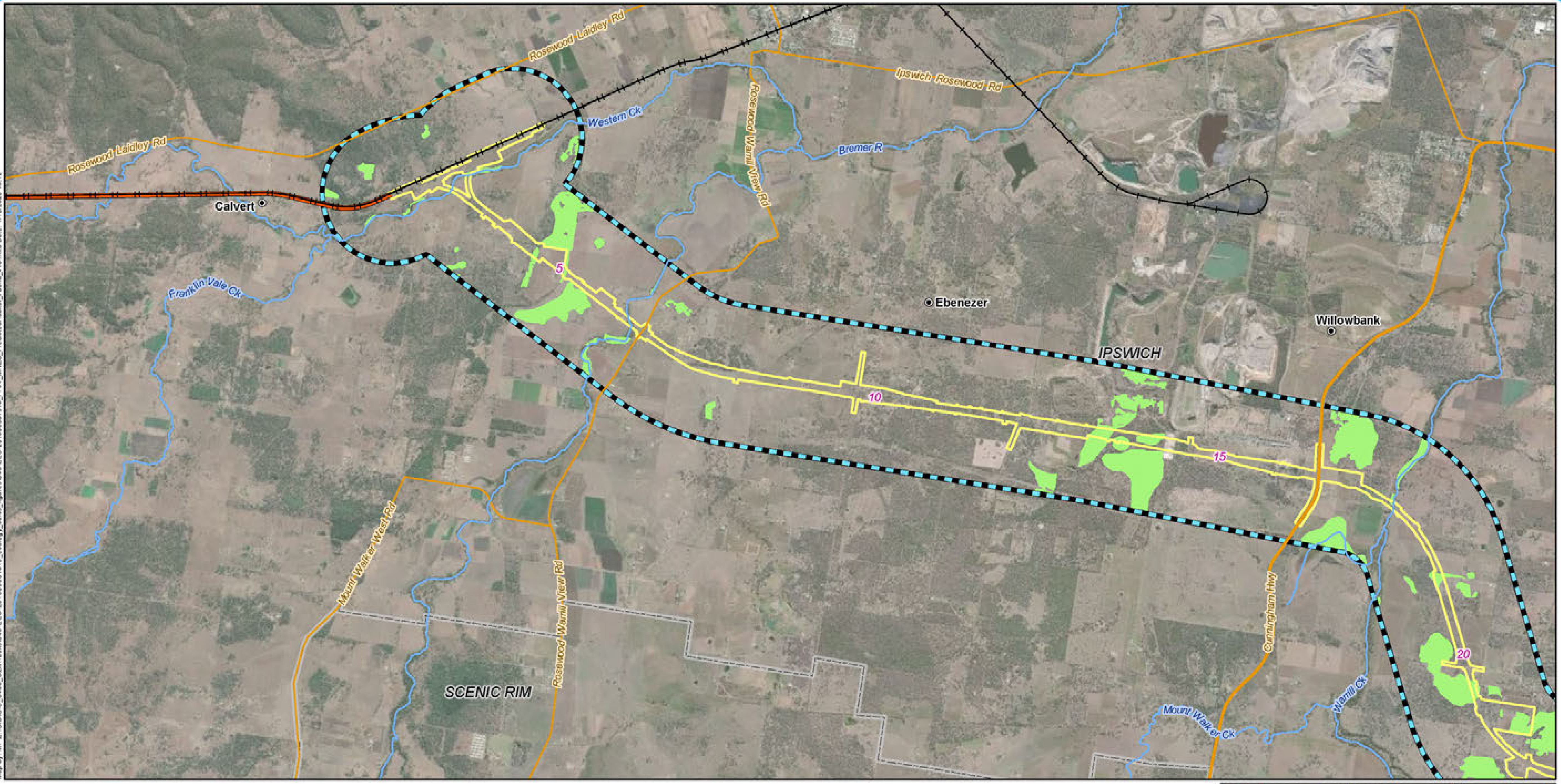
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Regent honeyeater (*Anthochaera phrygia*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

Future Freight
Integrating Community, Environment and Engineering

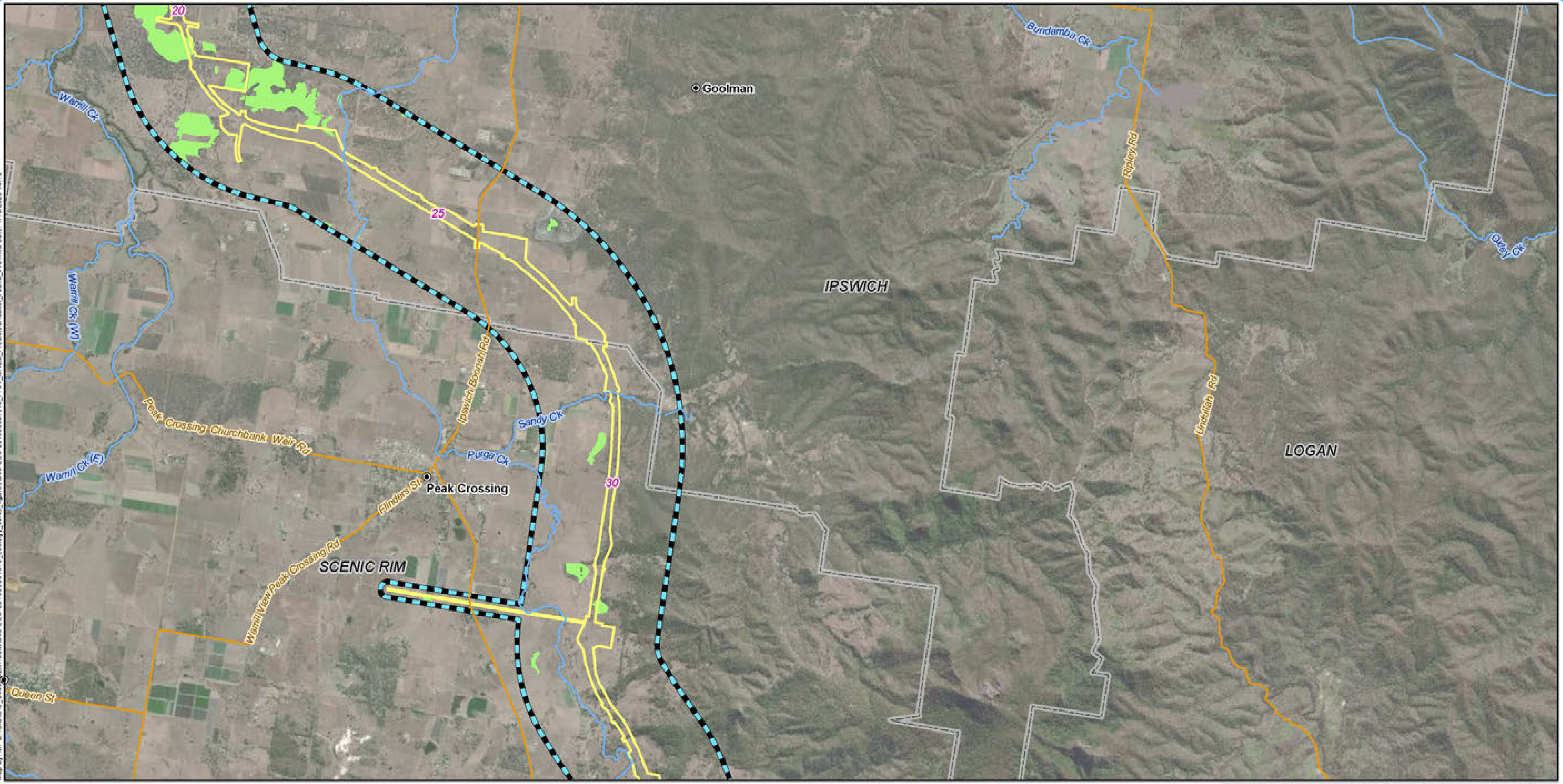
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australasian bittern (*Botaurus poiciloptilus*)

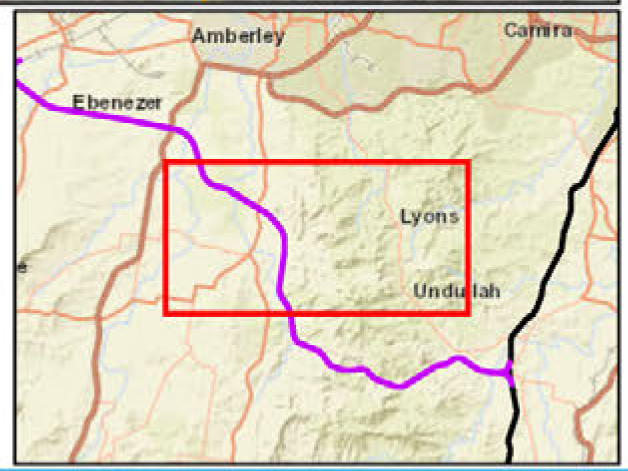
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Map by: MF Z:\GIS\GIS_3400_C2K\Tasks\340-EEC-201905081615_ecology_calcs_figures\340-EEC-201905081615_FFJV_MNES_PredictedHabitat_Fauna_v10.mxd Date: 1/10/2020 15:12



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat



A3 scale: 1:60,000

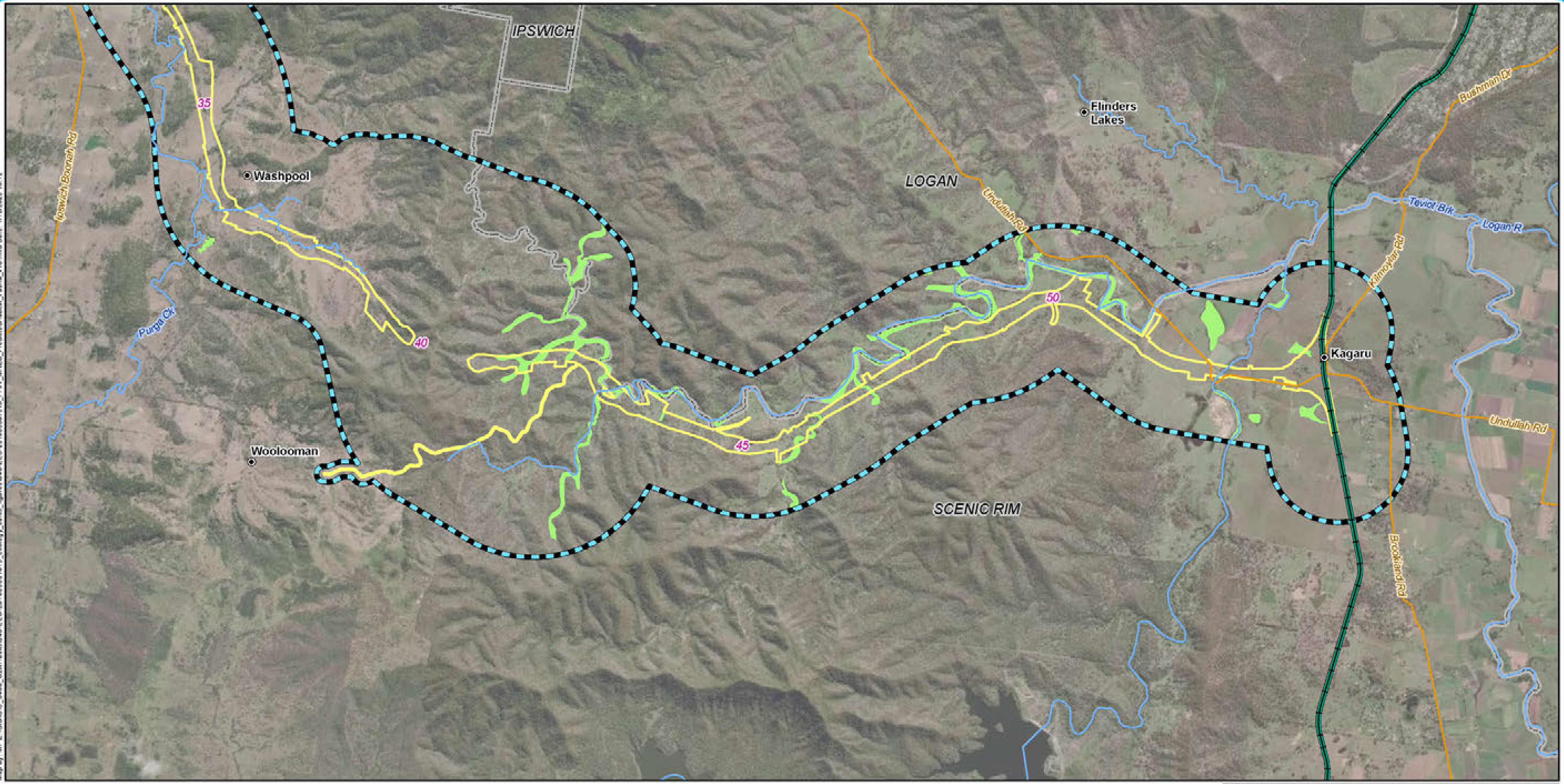
0 0.5 1 1.5 2 2.5km

Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australasian bittern (*Botaurus poiciloptilus*)



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

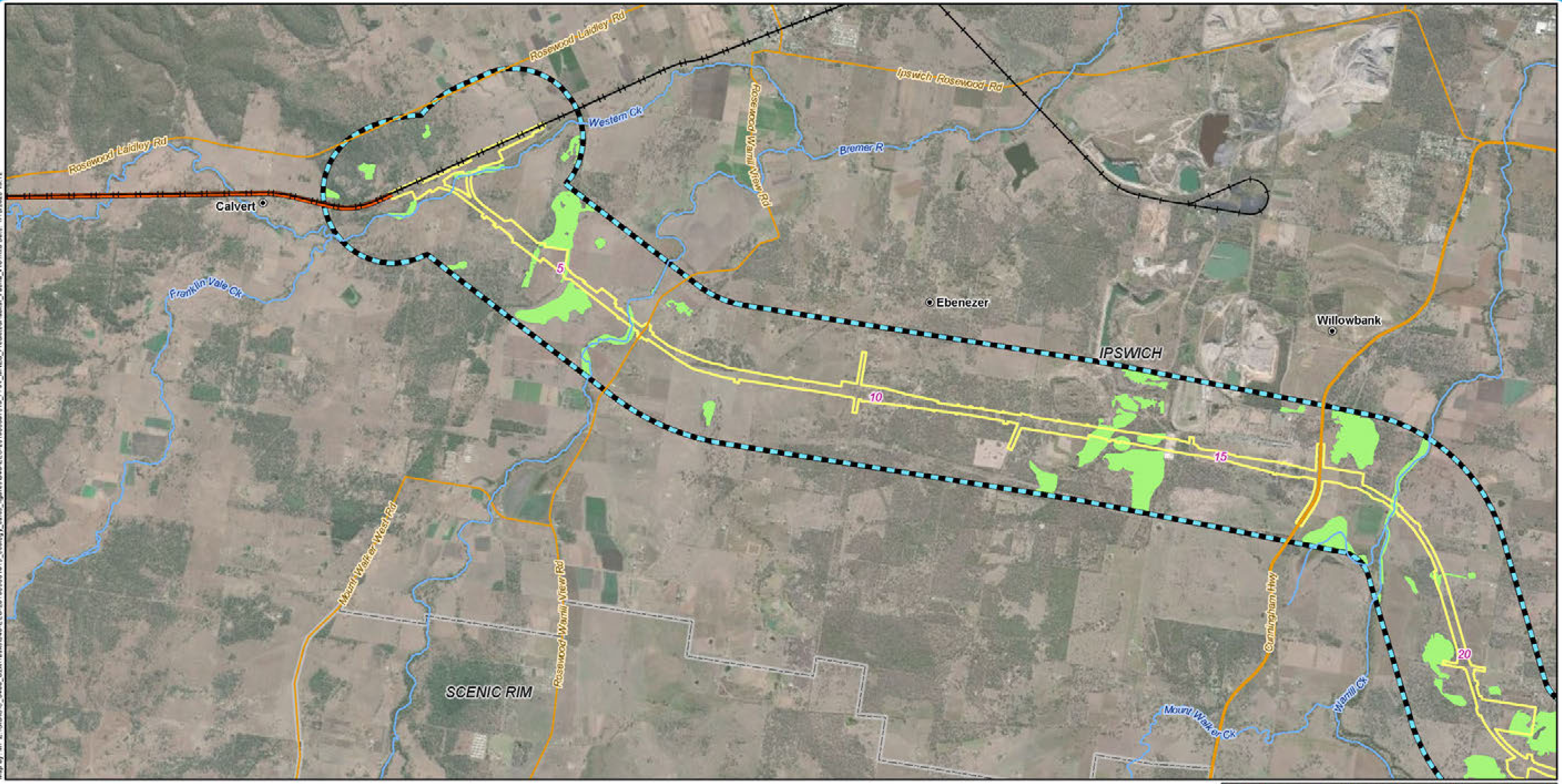
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australasian bittern (*Botaurus poiciloptilus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

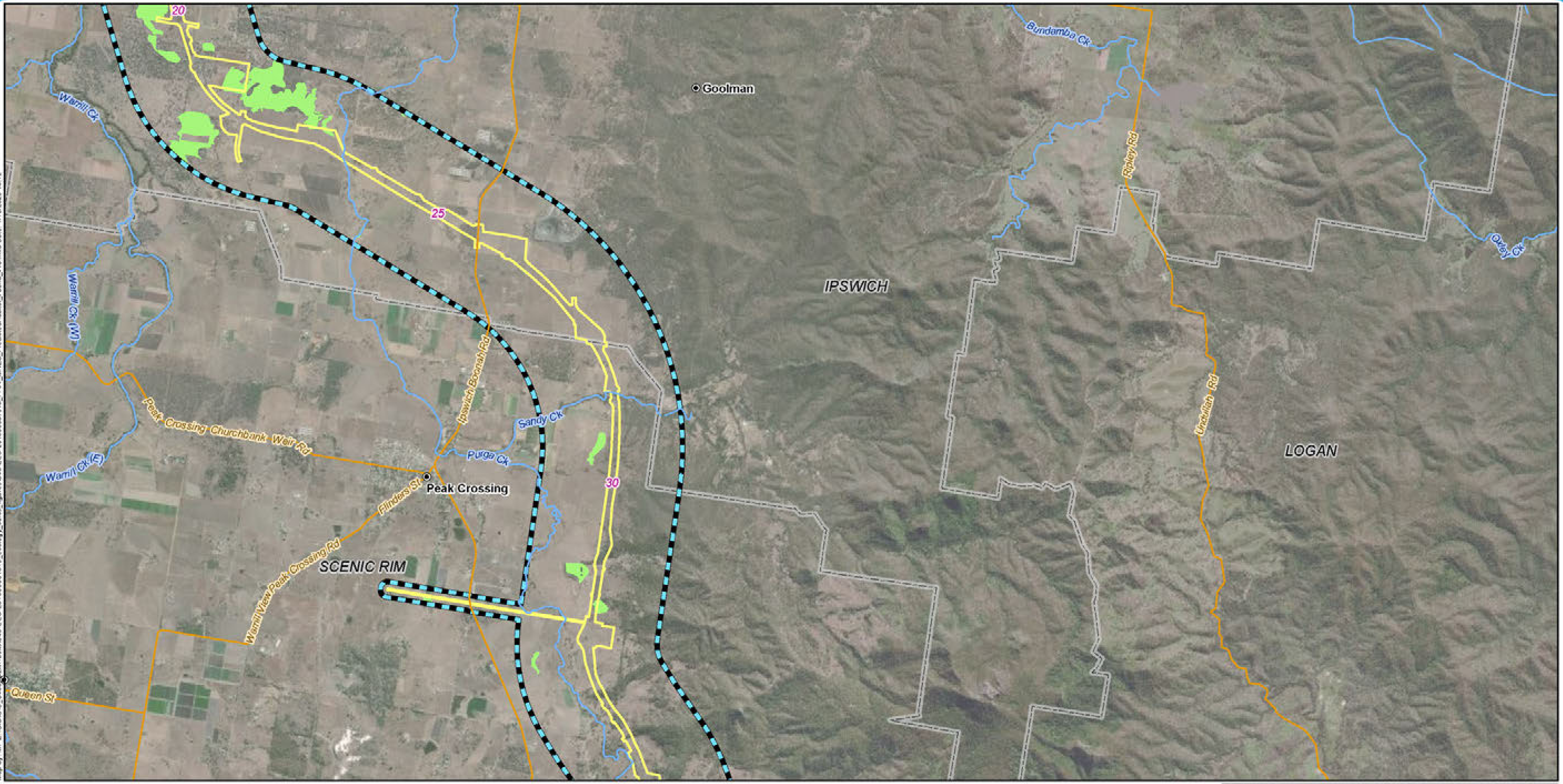
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

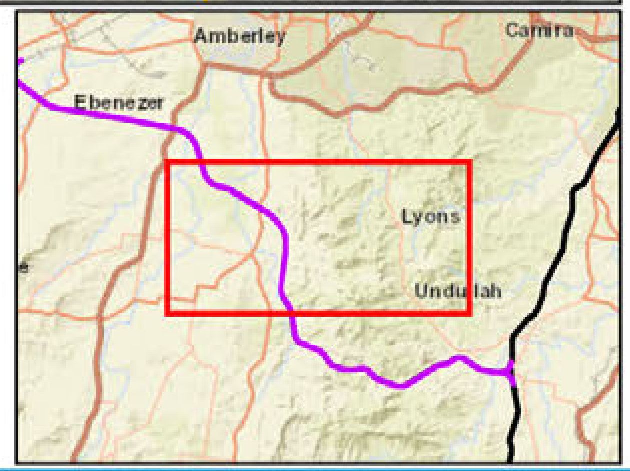
Predicted Habitat: Curlew sandpiper (*Calidris ferruginea*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

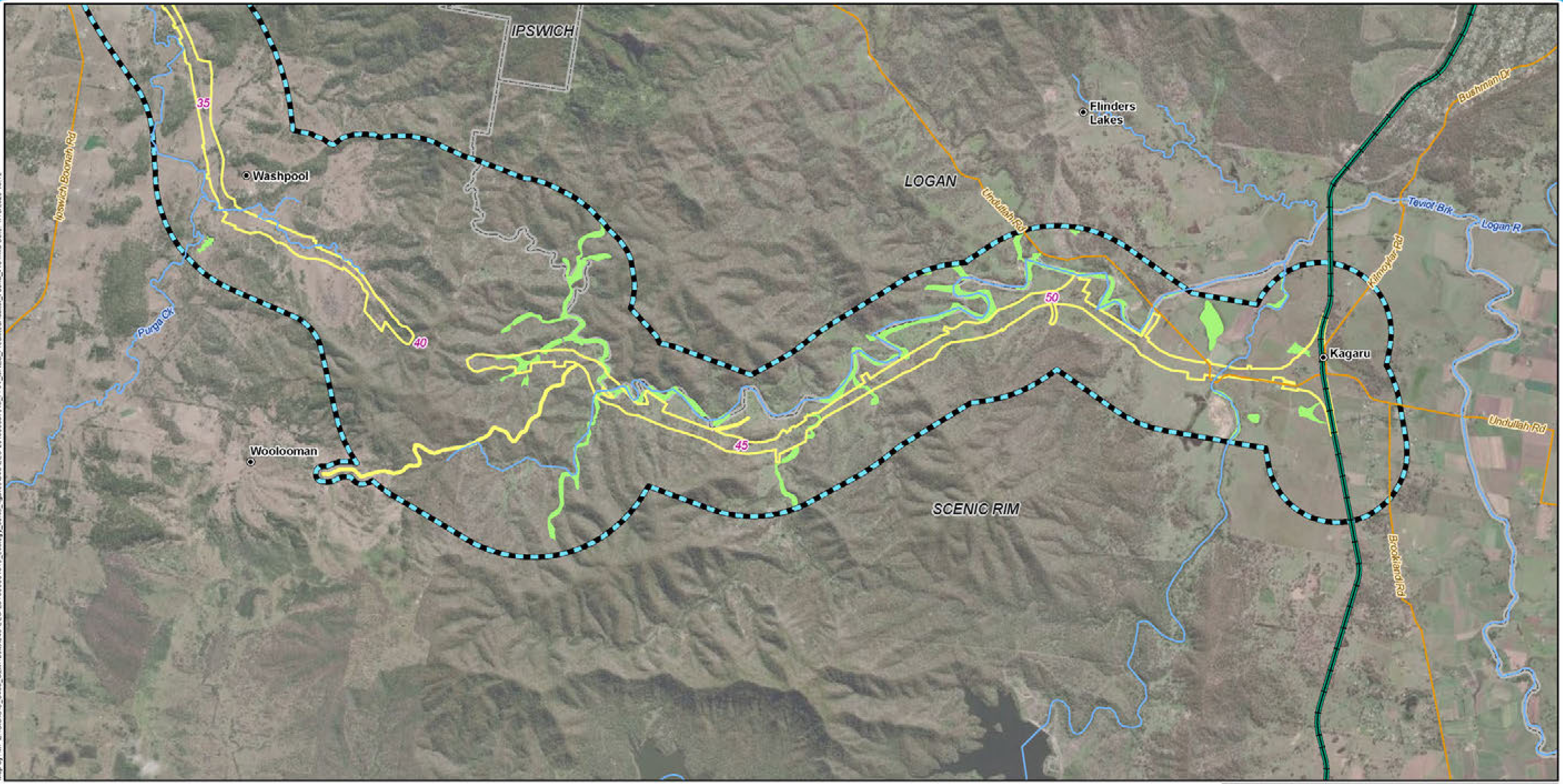
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Curlew sandpiper (*Calidris ferruginea*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

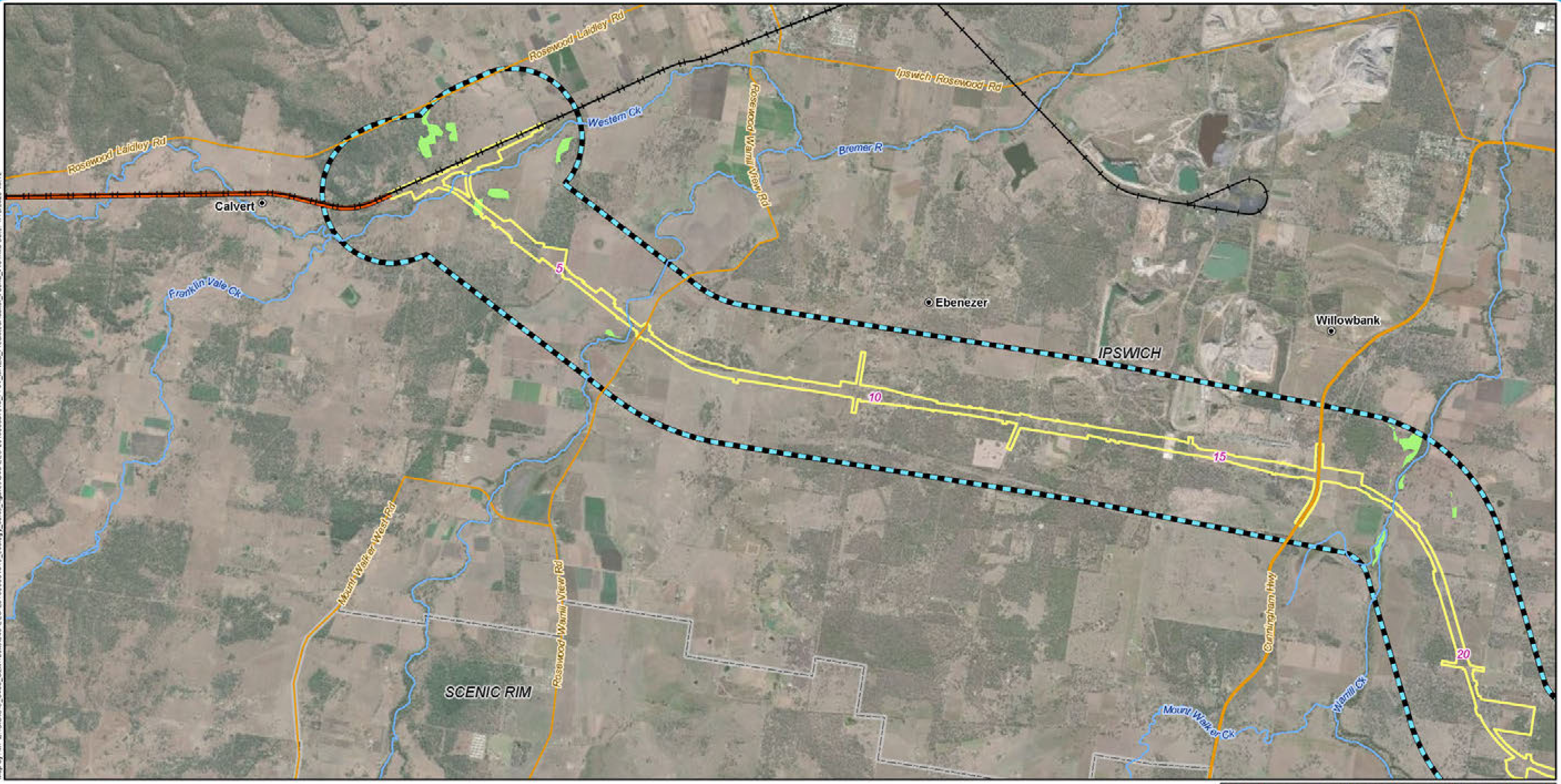
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Curlew sandpiper (*Calidris ferruginea*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5	Chainage (km)		EIS disturbance footprint (surface disturbance only)
◉	Localities		MNES study area
	Existing rail		Local Government Areas
	H2C project alignment		Potential habitat
	Watercourses		
	Major roads		
	Minor roads		

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

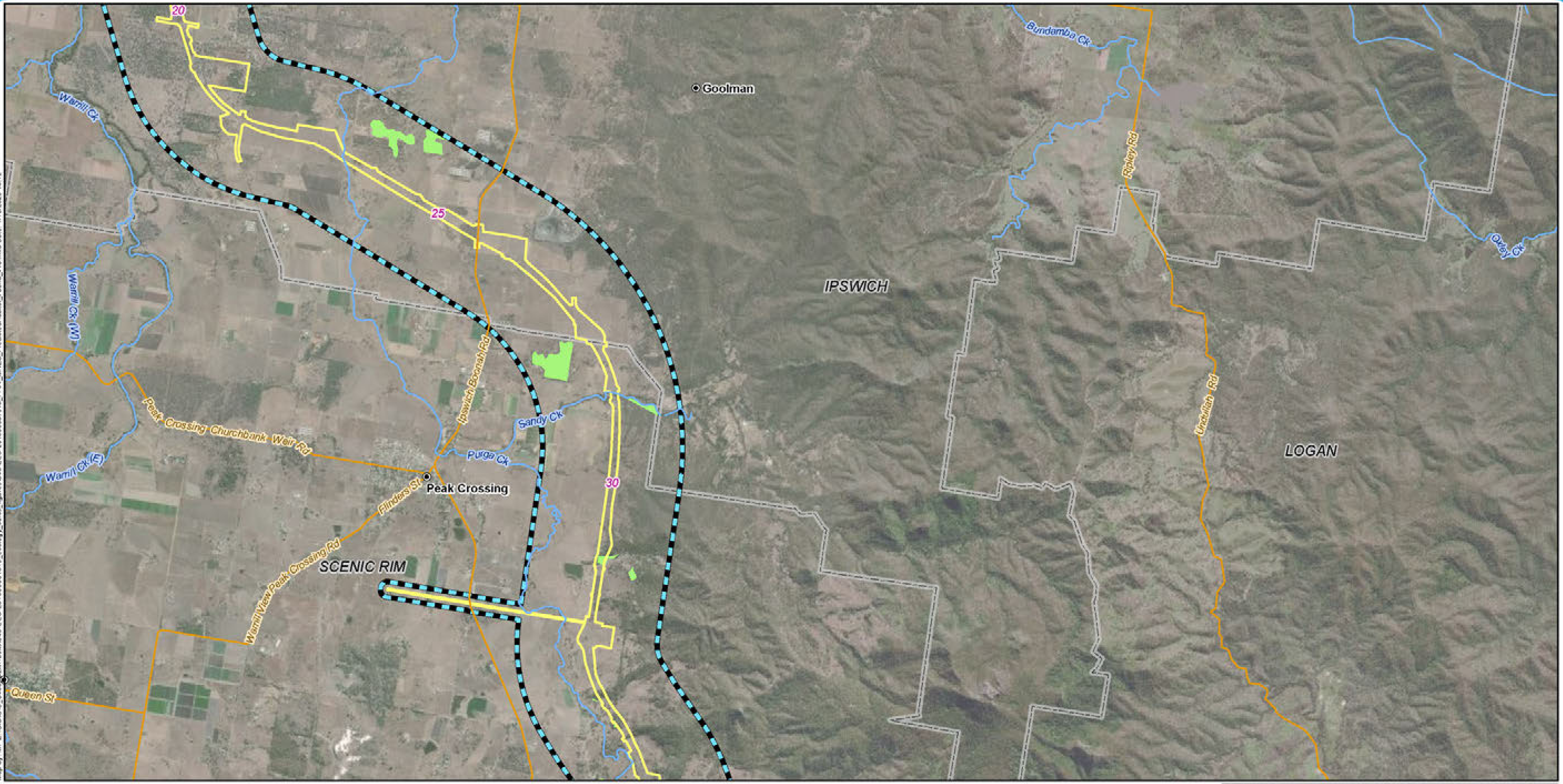
Future Freight
Integrating Community, Environment and Engineering

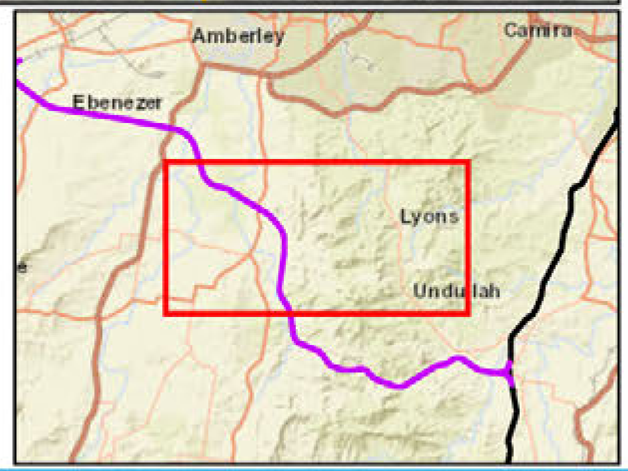
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Large-eared pied bat (*Chalinolobus dwyeri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

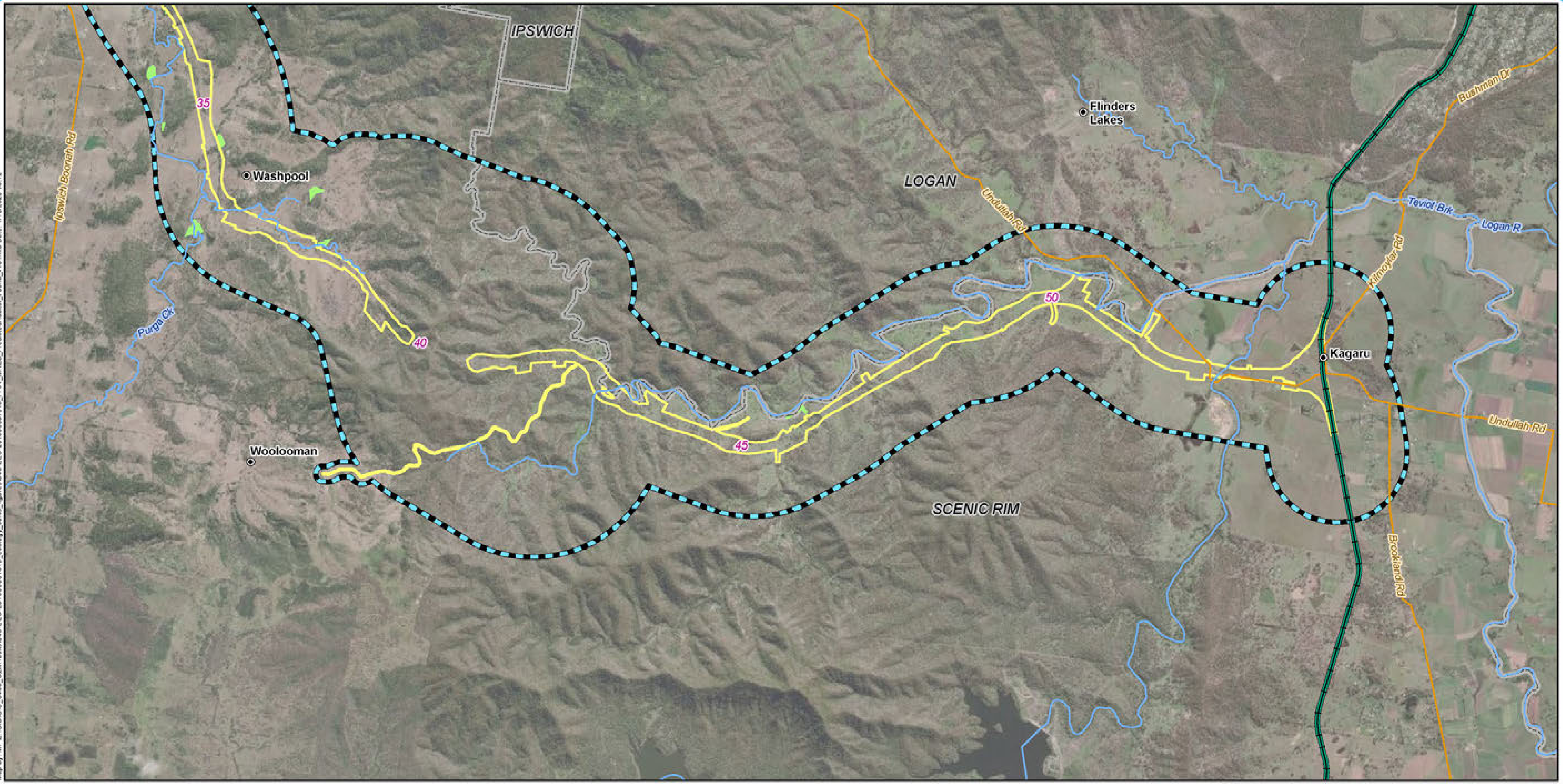
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Large-eared pied bat (*Chalinolobus dwyeri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

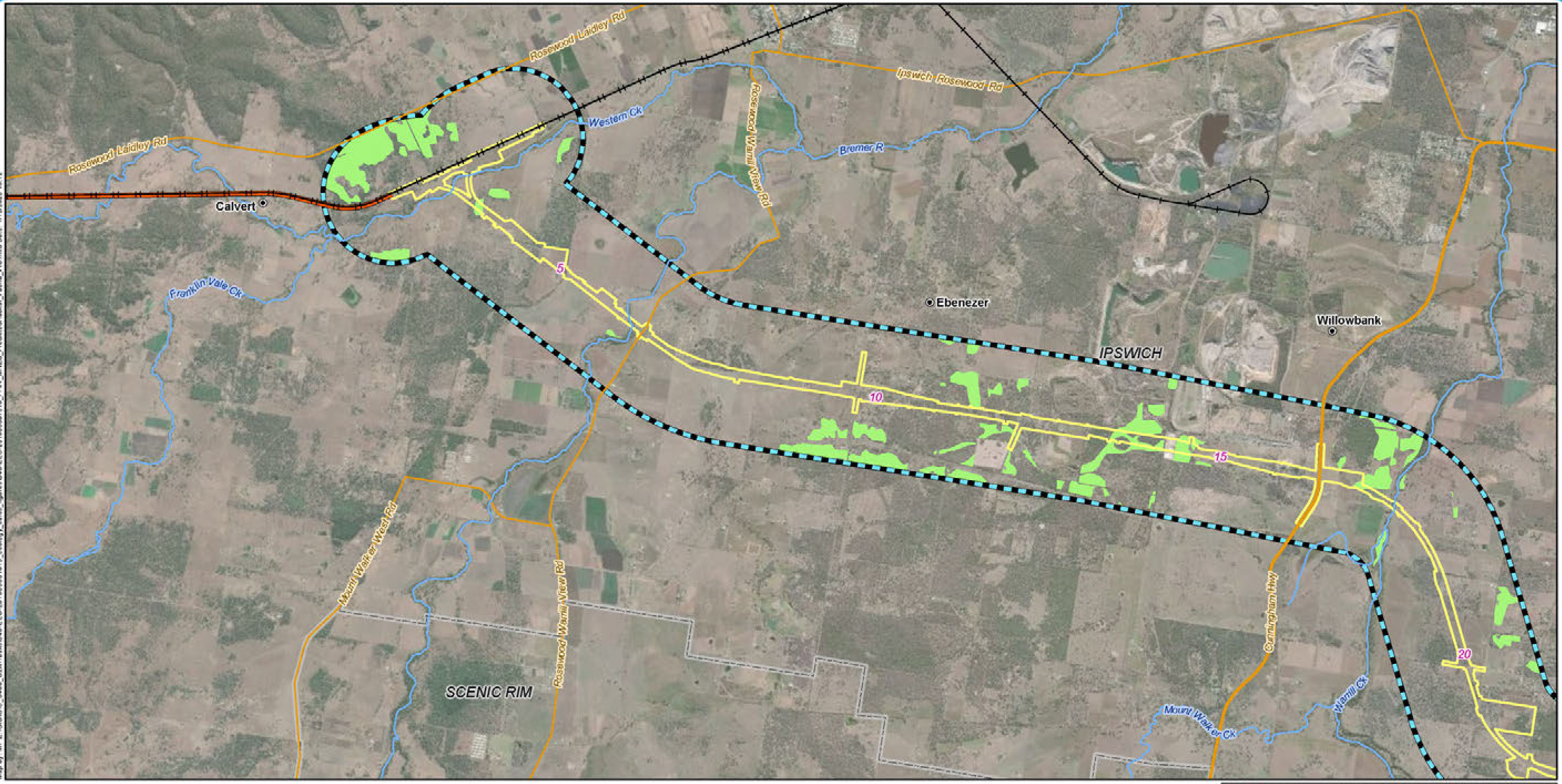
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Large-eared pied bat (*Chalinolobus dwyeri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Map by: MF Z:\GIS\GIS_3400_C2K\Tasks\340-EEC-201905081615_ecology_calcs_figures\340-EEC-201905081615_FFJV_MNES_PredictedHabitat_Fauna_v10.mxd Date: 1/10/2020 15:12

Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

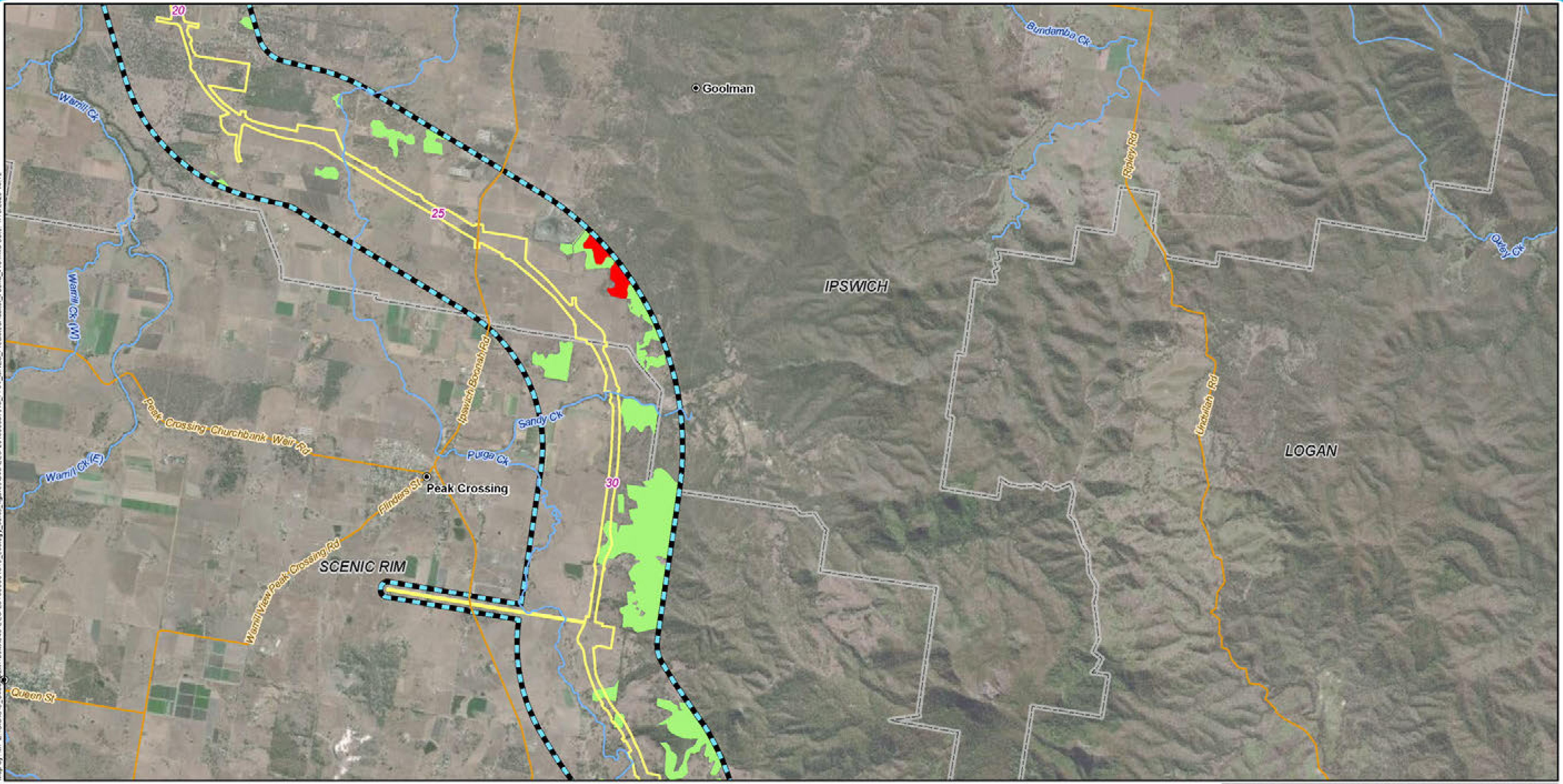
Future Freight
Integrating Community, Environment and Engineering

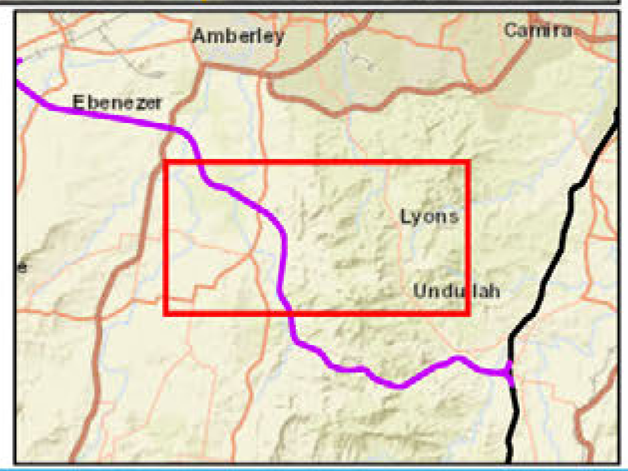
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Spotted-tailed quoll (*Dasyurus maculatus maculatus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

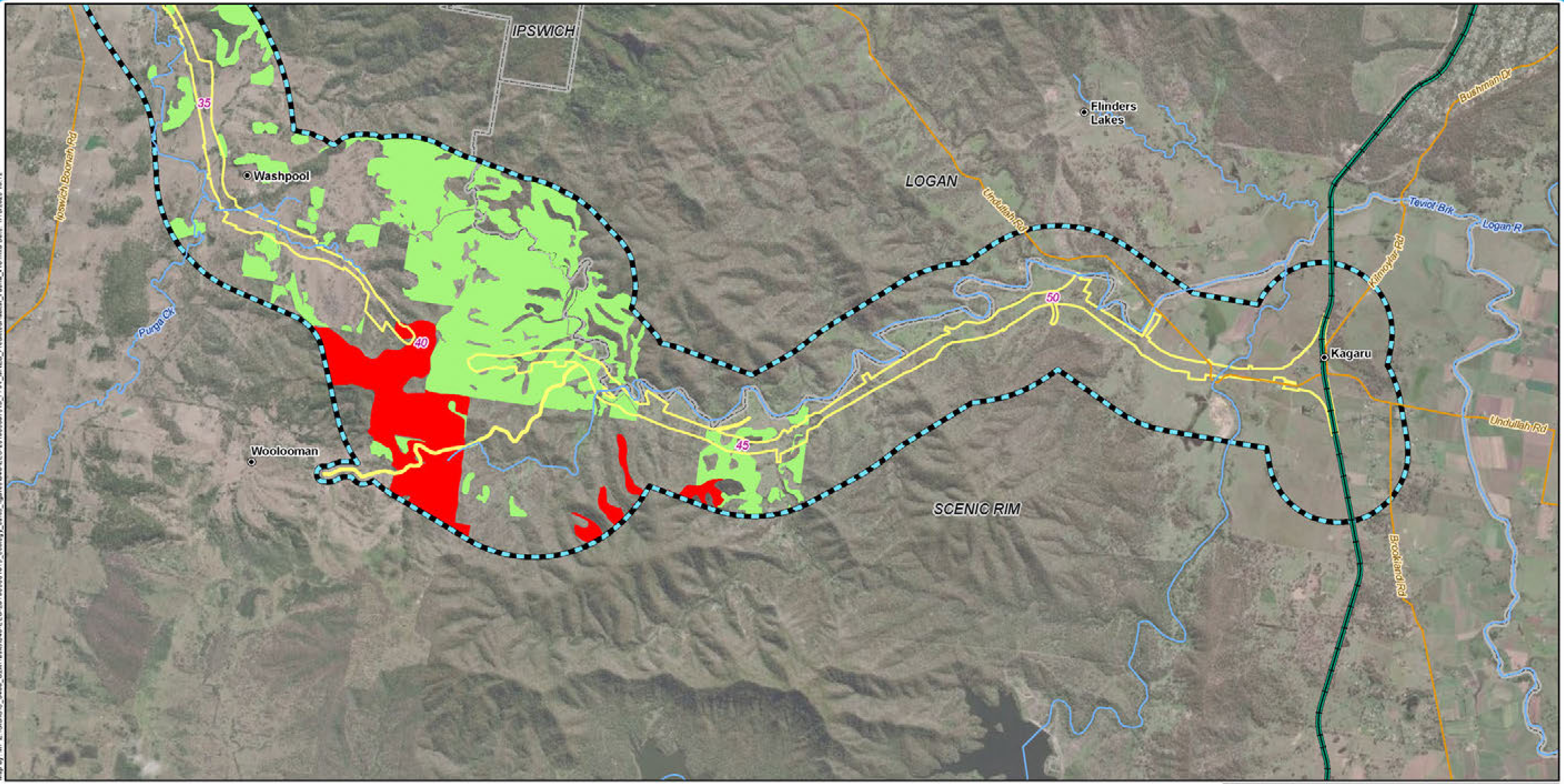
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Spotted-tailed quoll (*Dasyurus maculatus maculatus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5 Chainage (km)	EIS disturbance footprint (surface disturbance only)
Localities	MNES study area
Existing rail	Local Government Areas
K2ARB project alignment	Habitat critical to the survival of the species
Watercourses	Potential habitat
Major roads	
Minor roads	

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

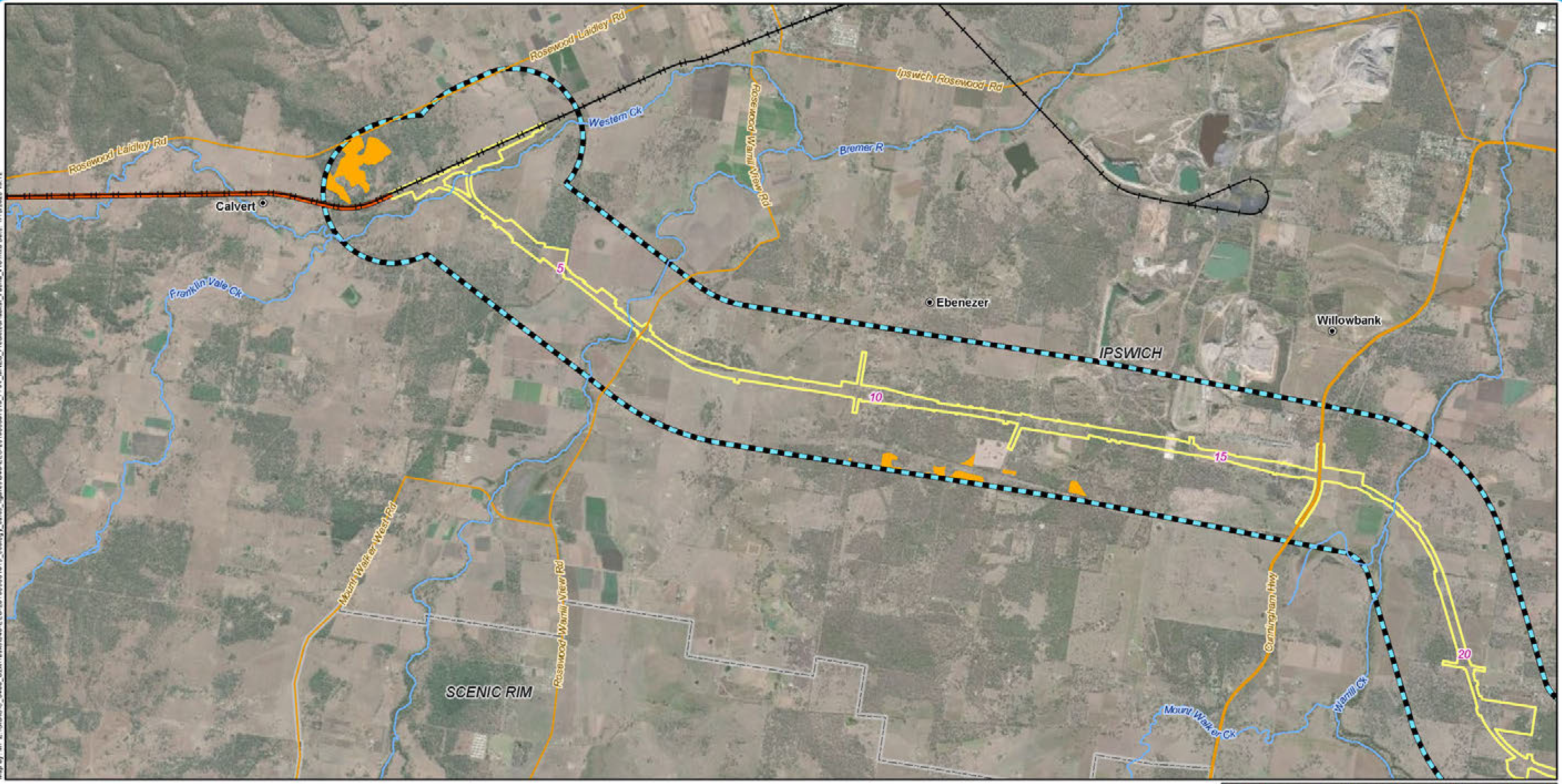
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Spotted-tailed quoll (*Dasyurus maculatus maculatus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Important habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

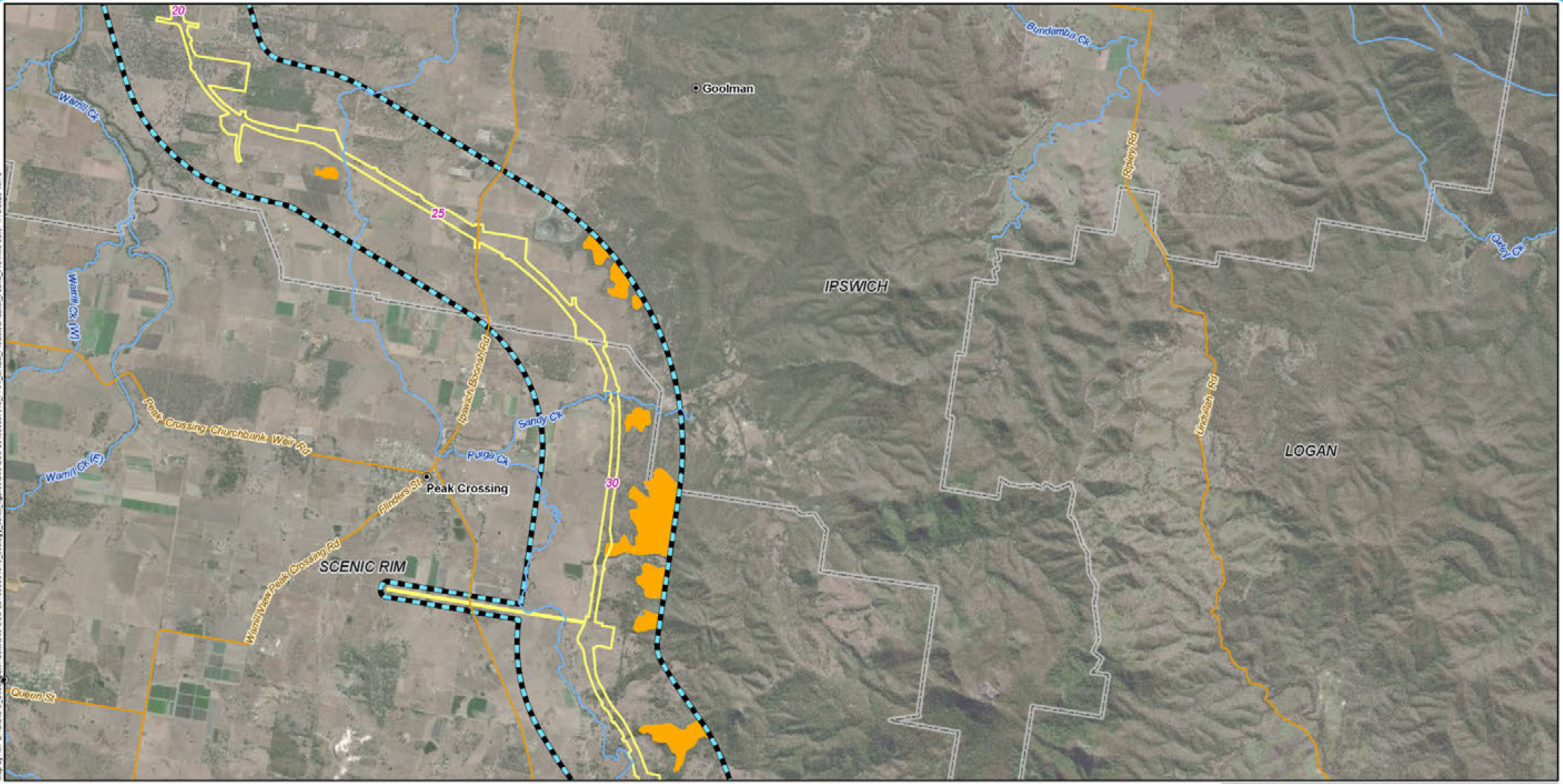
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

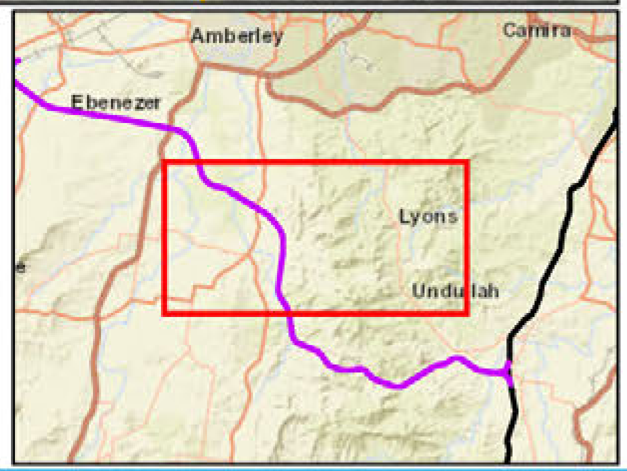
Predicted Habitat: Collared delma (*Delma torquata*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Important habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

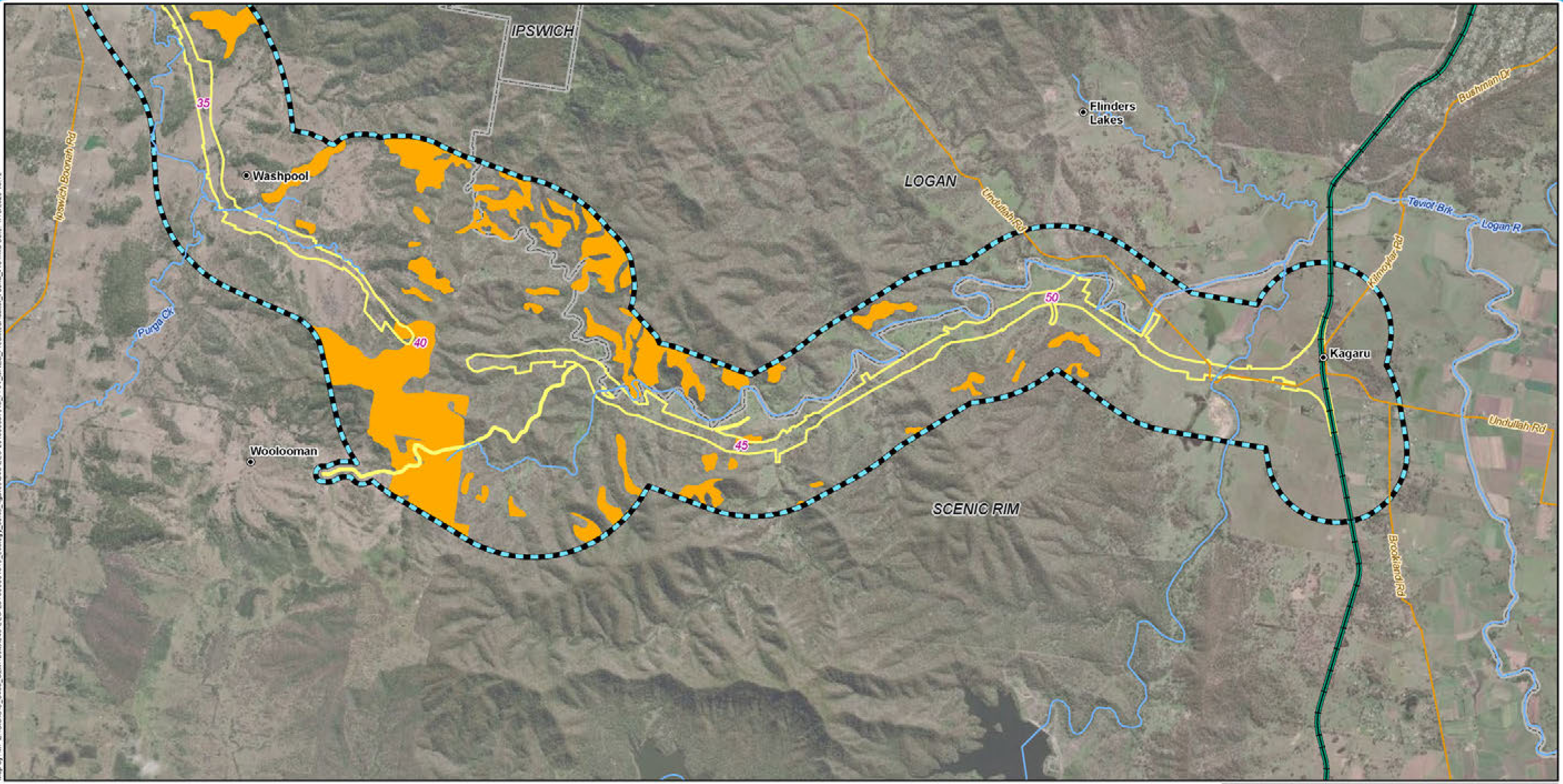
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Collared delma (*Delma torquata*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Important habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

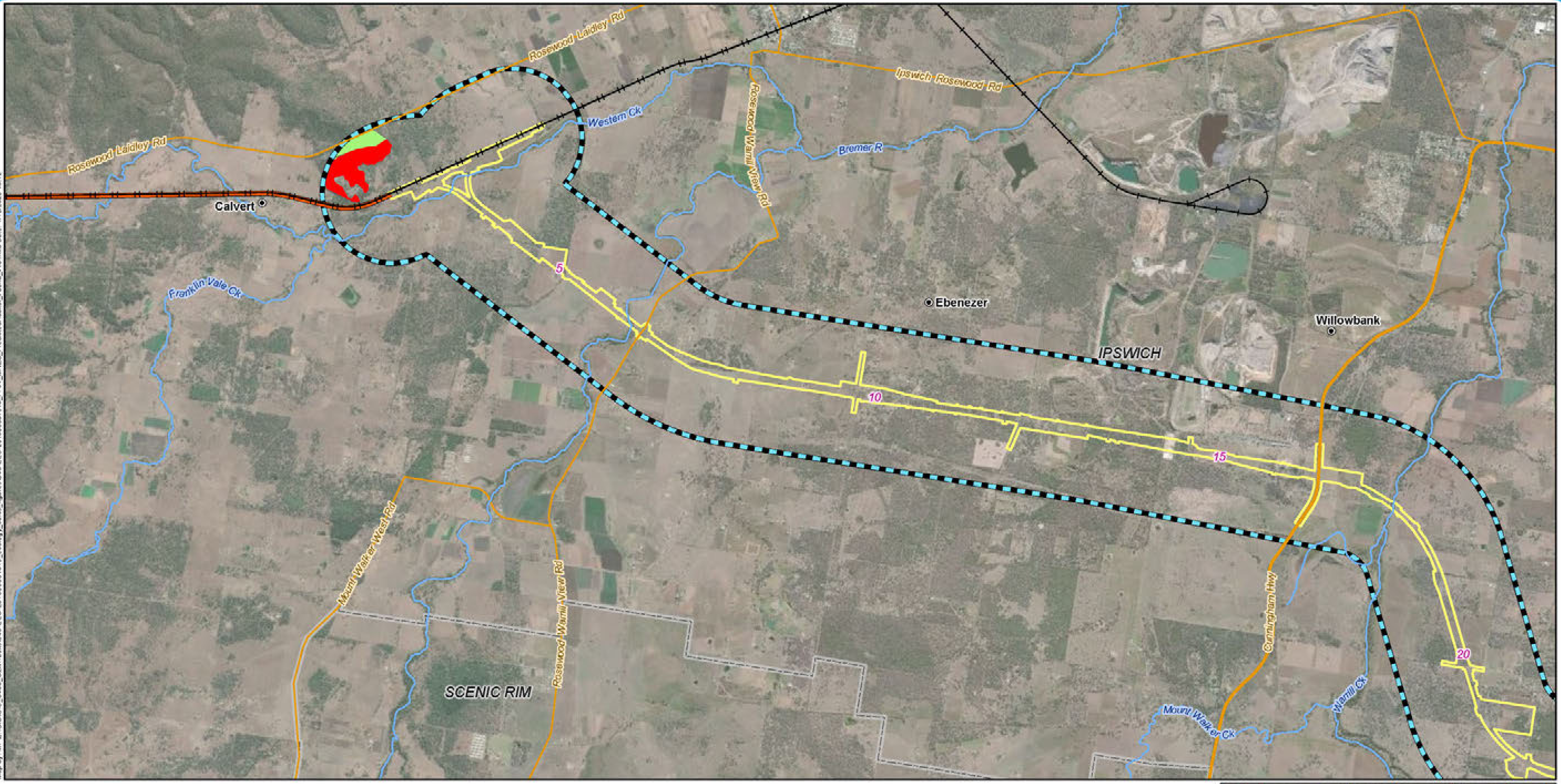
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Collared delma (*Delma torquata*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

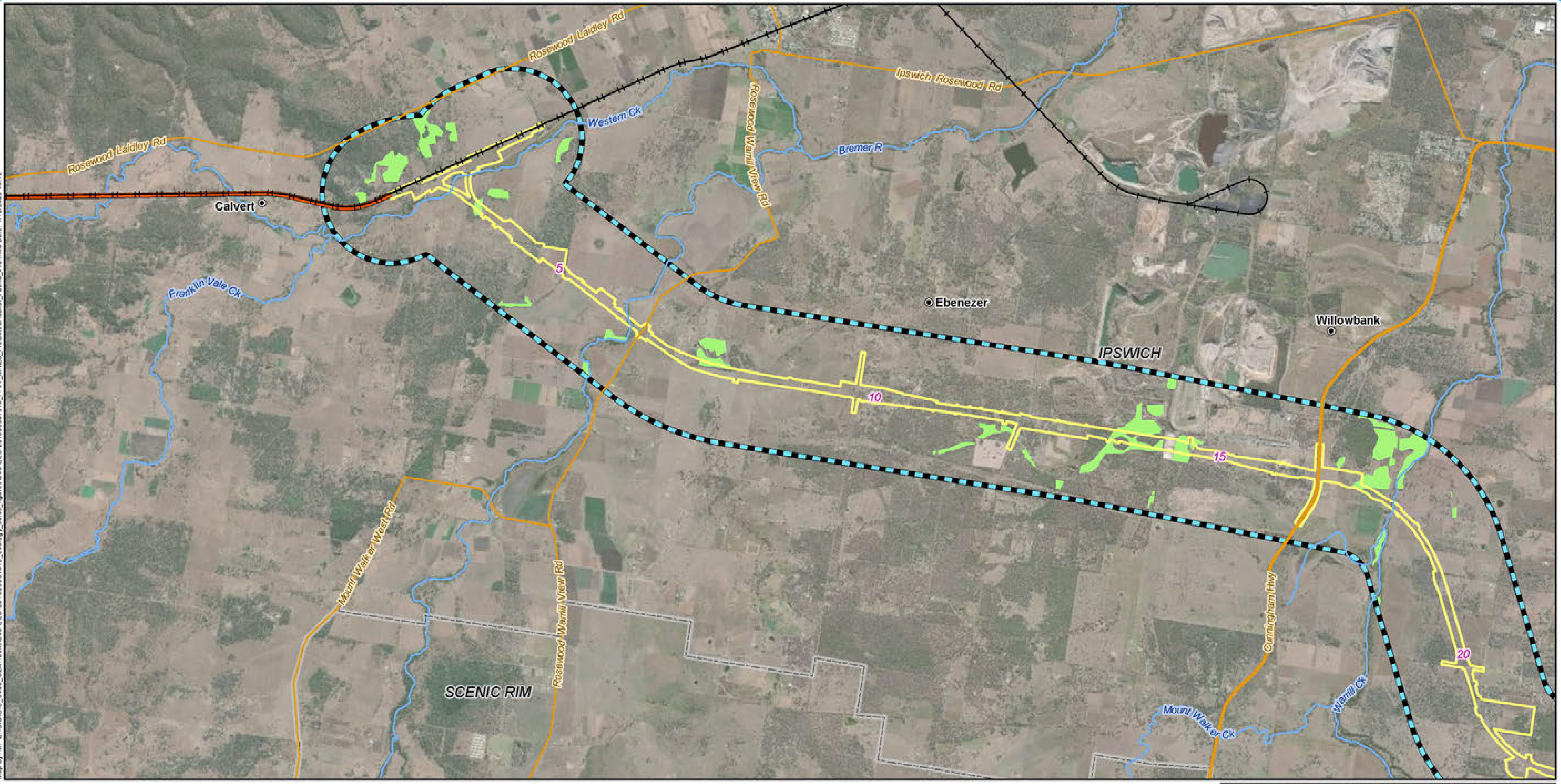
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Red goshawk (*Erythrotriorchis radiatus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

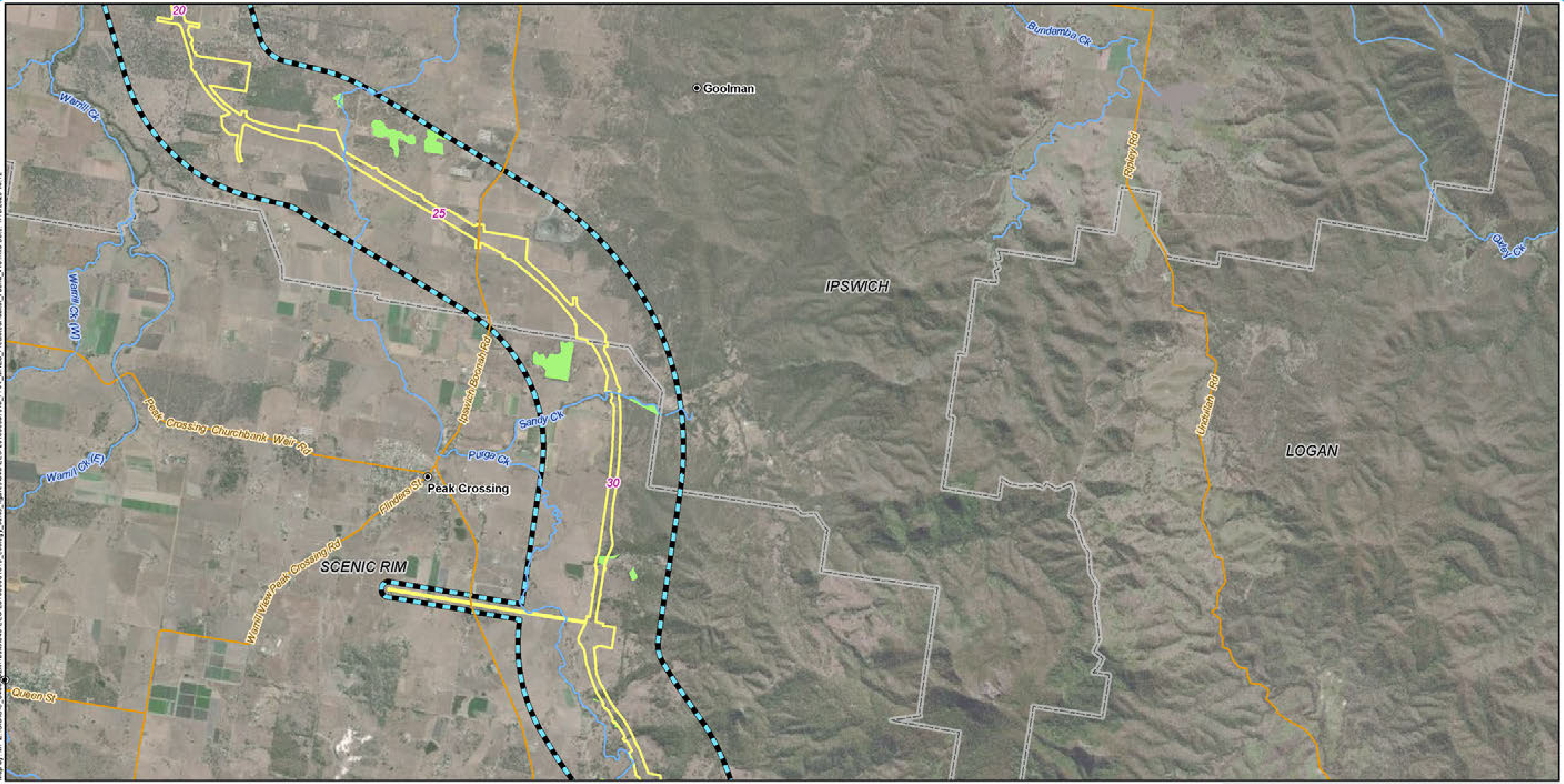
Future Freight
Integrating Community, Environment and Engineering

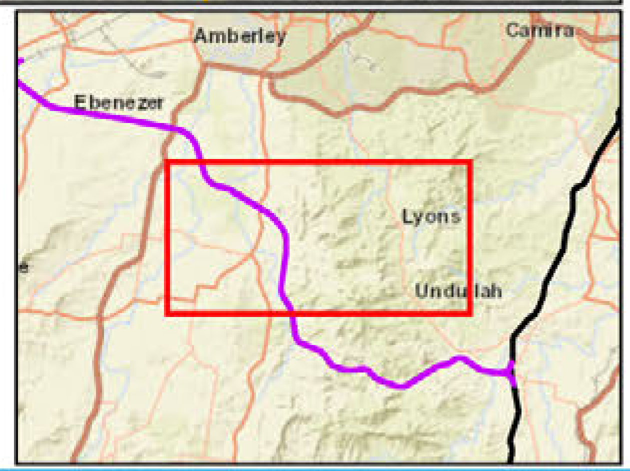
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Painted honeyeater (*Grantiella picta*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

5 Chainage (km)	EIS disturbance footprint (surface disturbance only)
Localities	MNES study area
Watercourses	Local Government Areas
Major roads	Potential habitat
Minor roads	

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

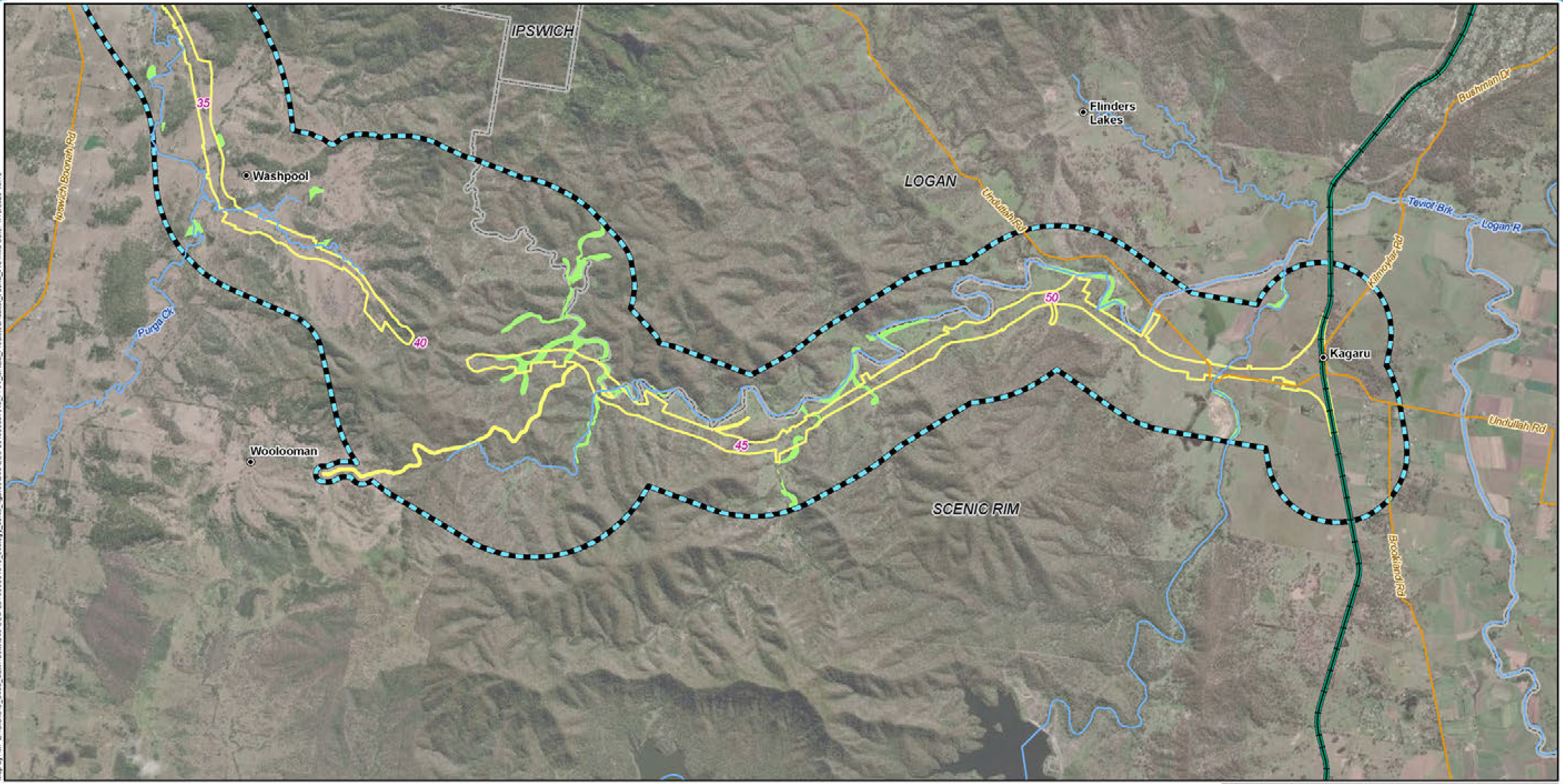
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Painted honeyeater (*Grantiella picta*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

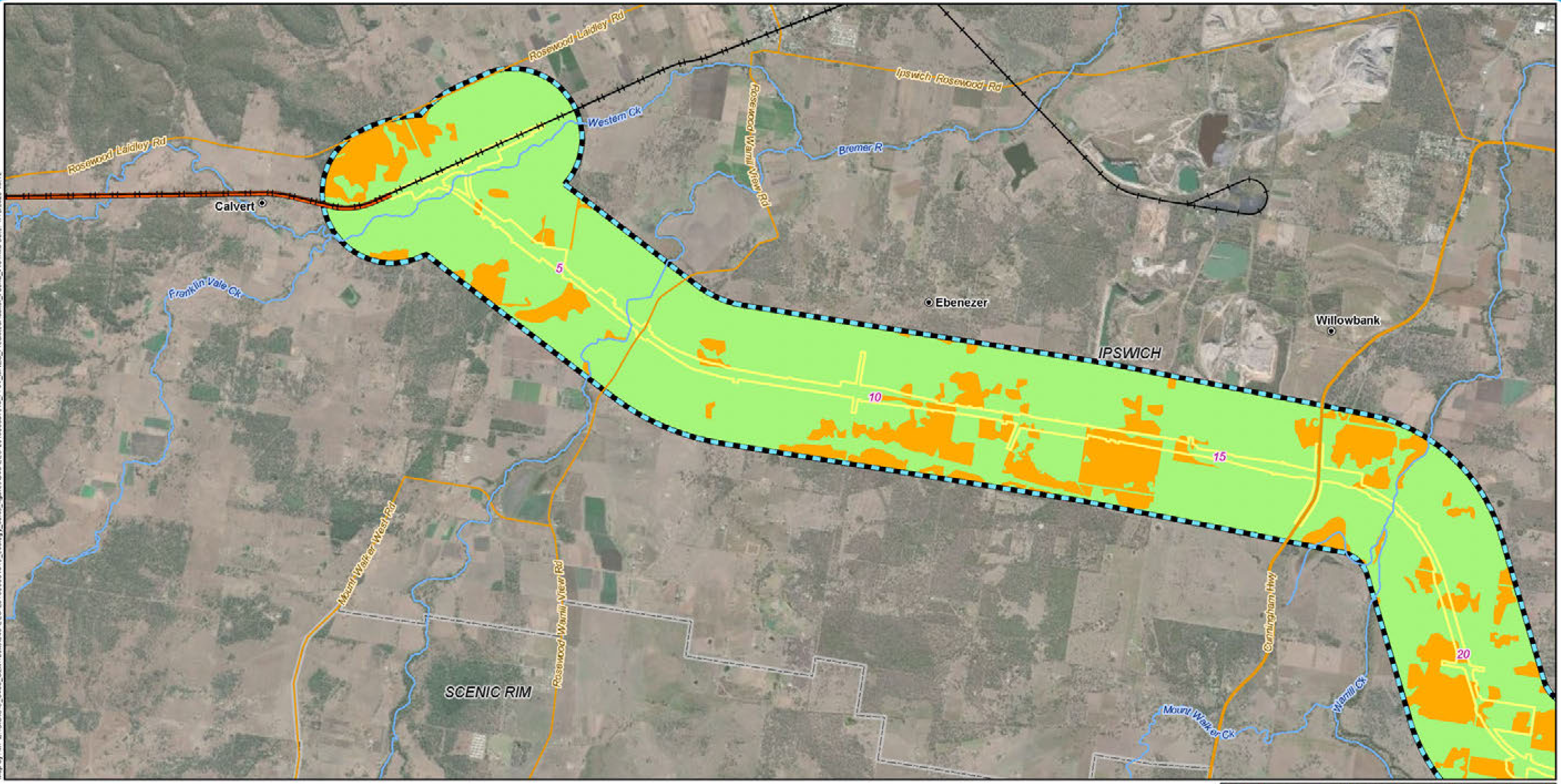
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Painted honeyeater (*Grantiella picta*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Important habitat
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

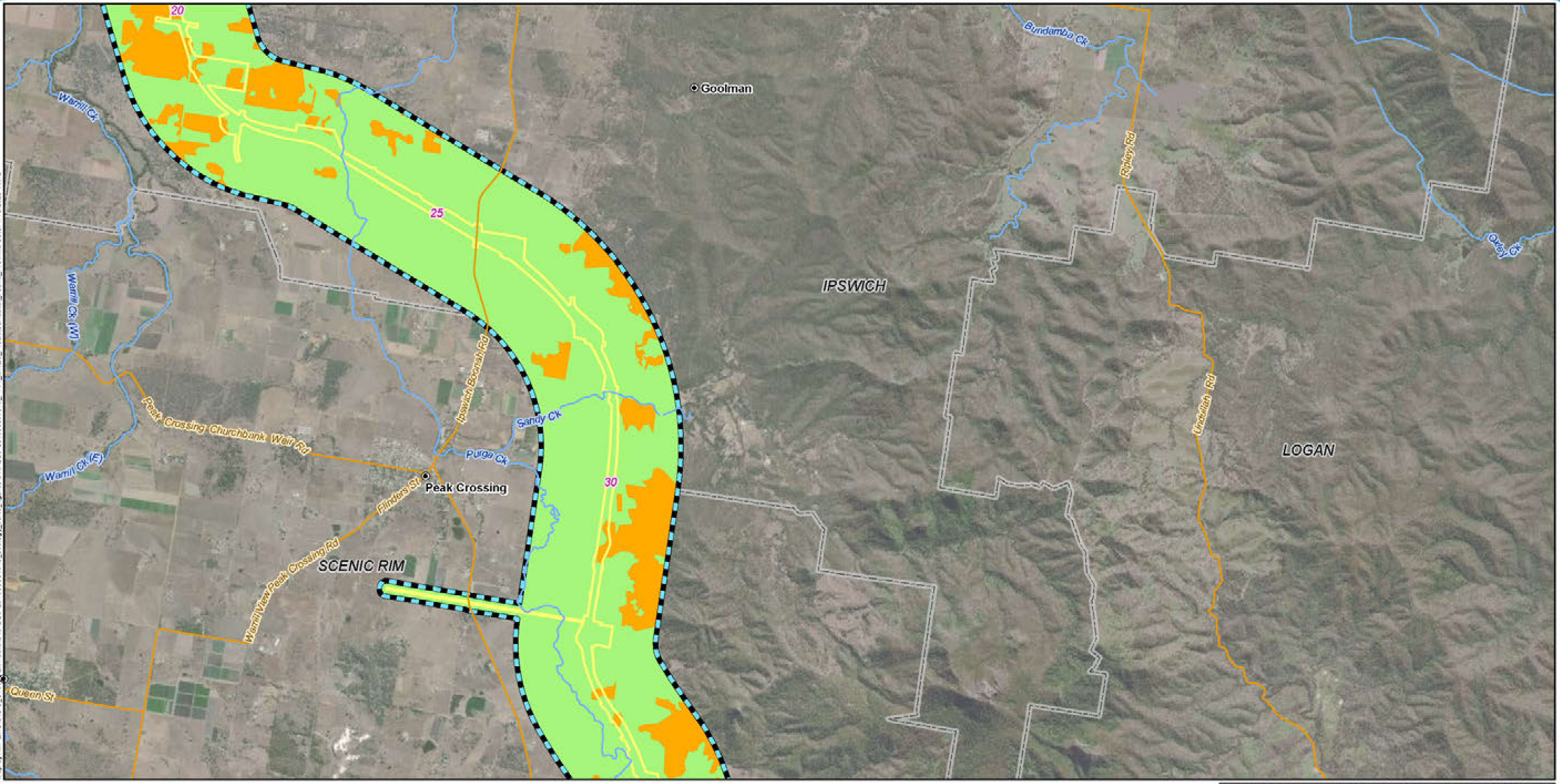
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

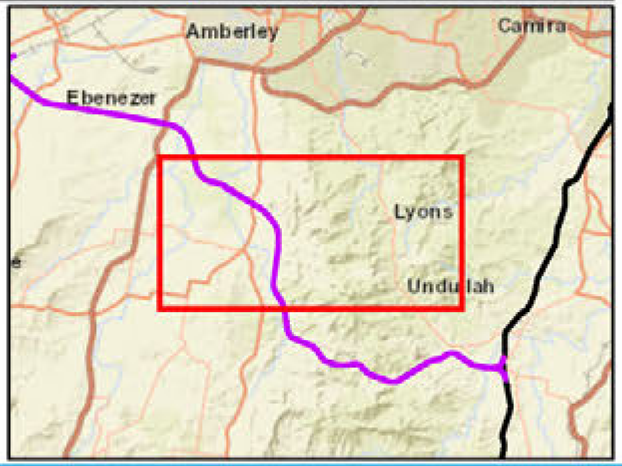
Predicted Habitat: White-throated needletail (*Hirundapus caudacutus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5 Chainage (km)	EIS disturbance footprint (surface disturbance only)
Localities	MNES study area
Watercourses	Local Government Areas
Major roads	Important habitat
Minor roads	Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

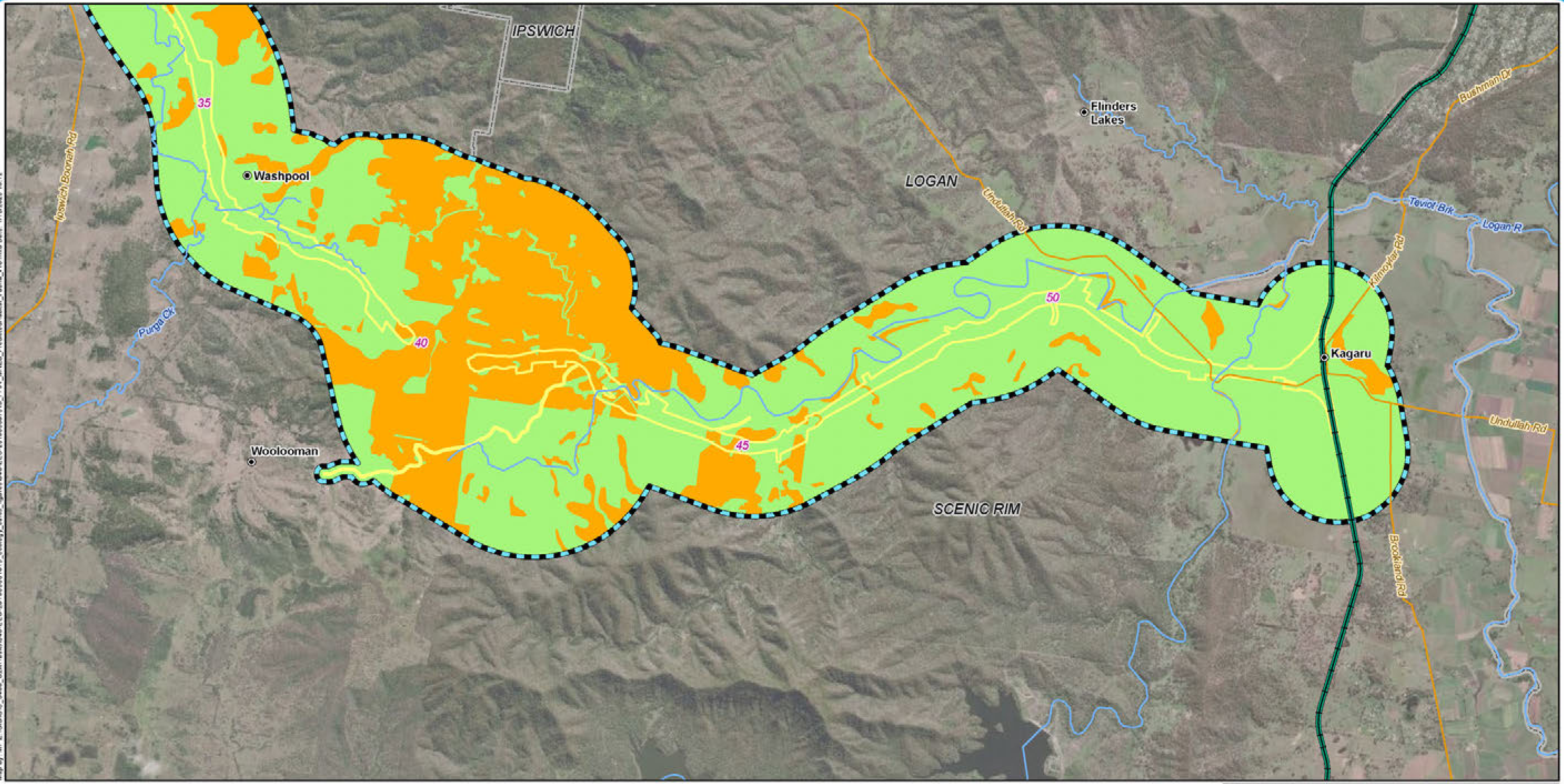
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: White-throated needletail (*Hirundapus caudacutus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Important habitat
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

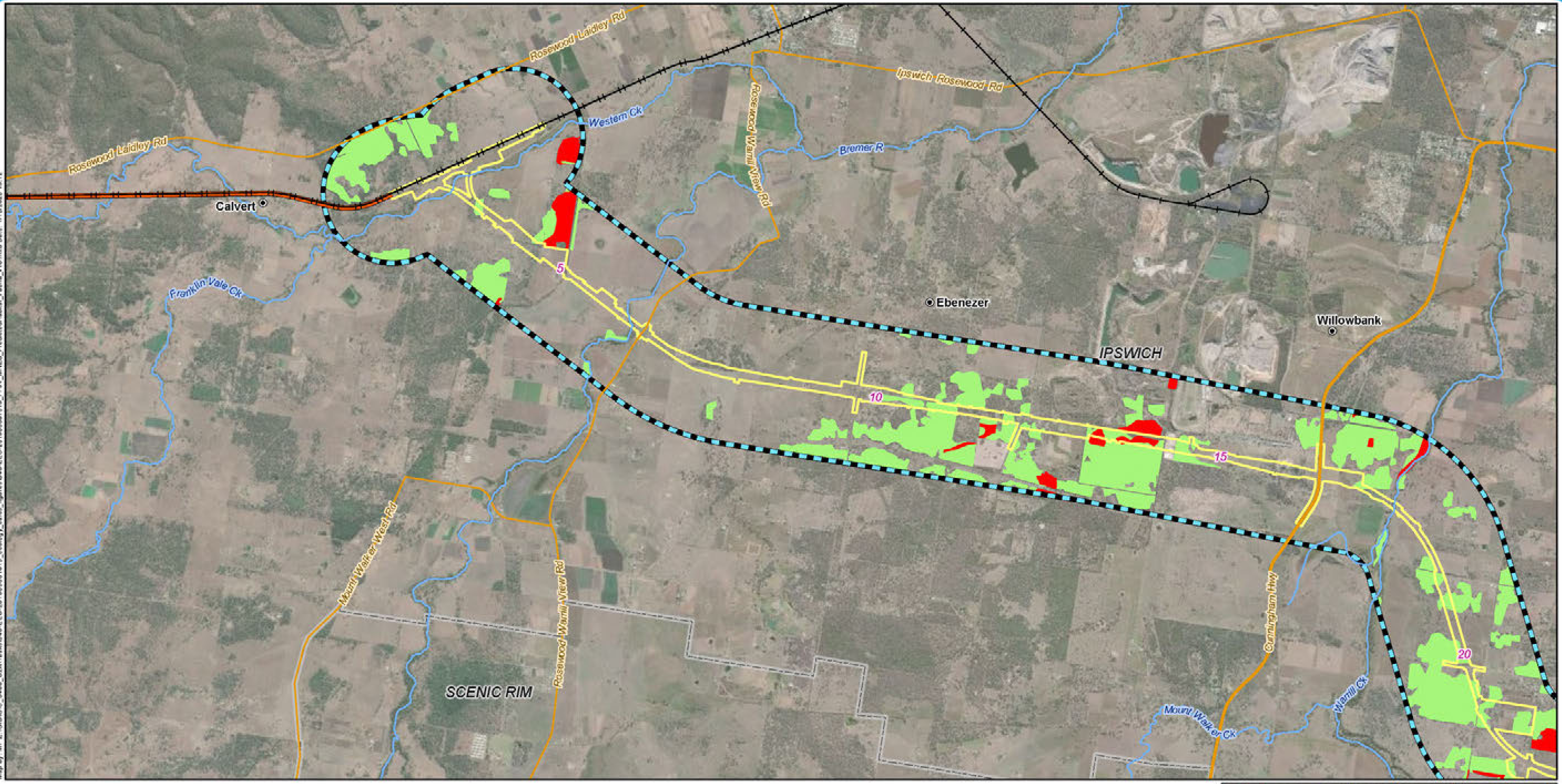
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

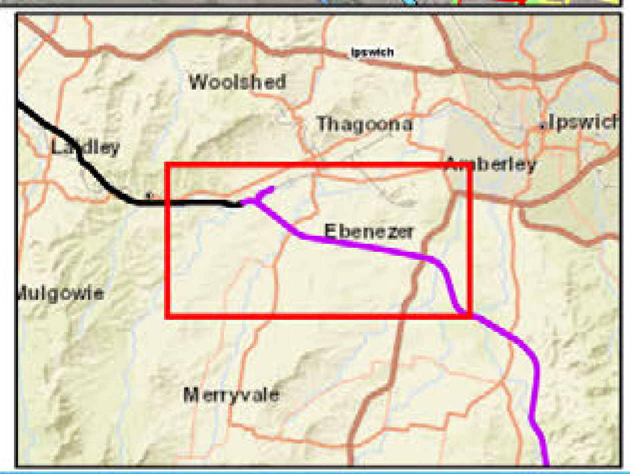
Predicted Habitat: White-throated needletail (*Hirundapus caudacutus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

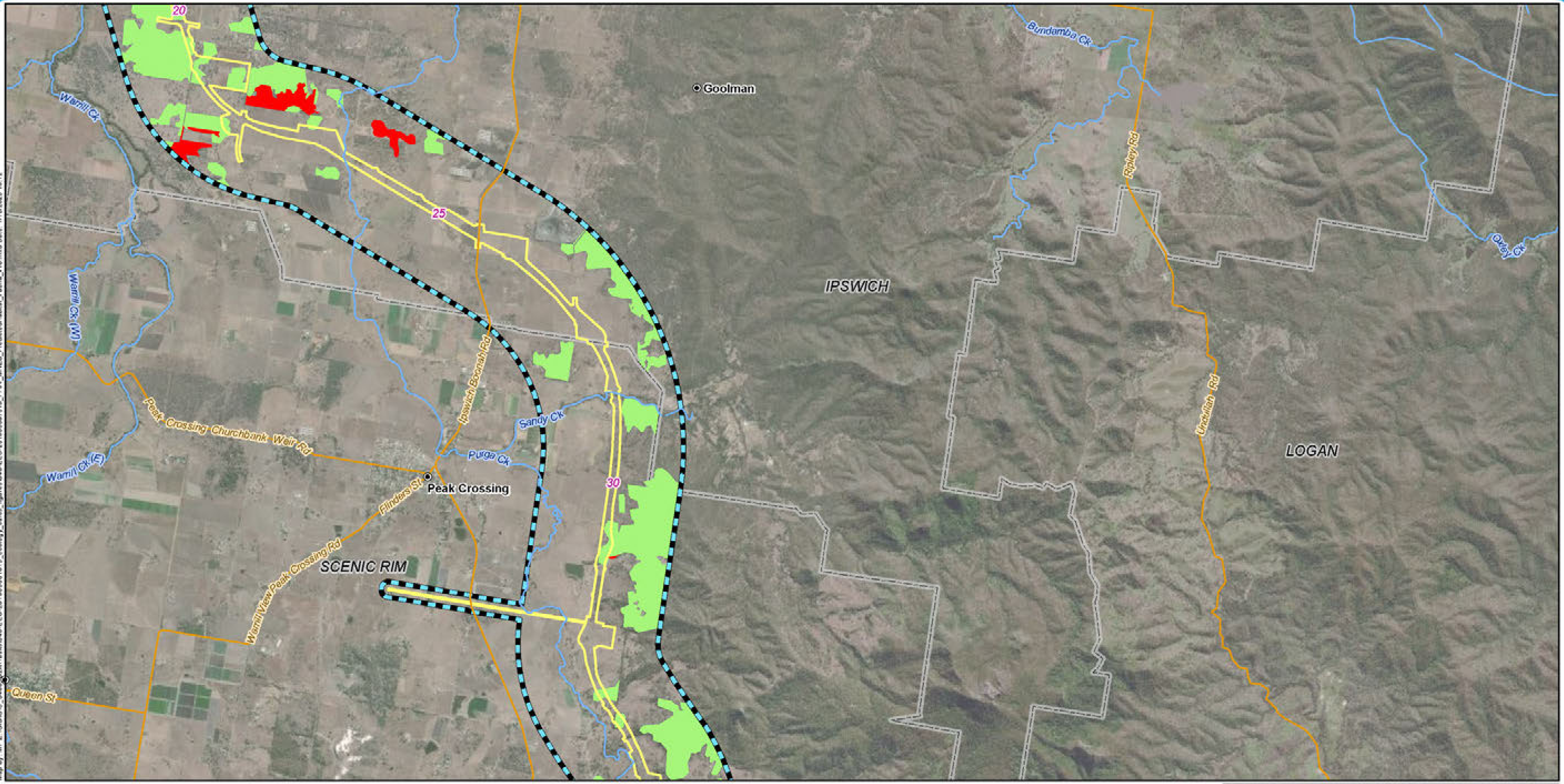
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

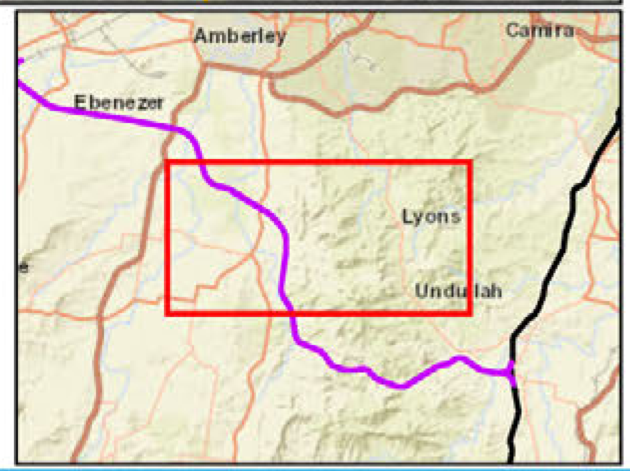
Predicted Habitat: Swift parrot (*Lathamus discolor*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5	Chainage (km)		EIS disturbance footprint (surface disturbance only)
●	Localities		MNES study area
	Watercourses		Local Government Areas
	Major roads		Habitat critical to the survival of the species
	Minor roads		Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

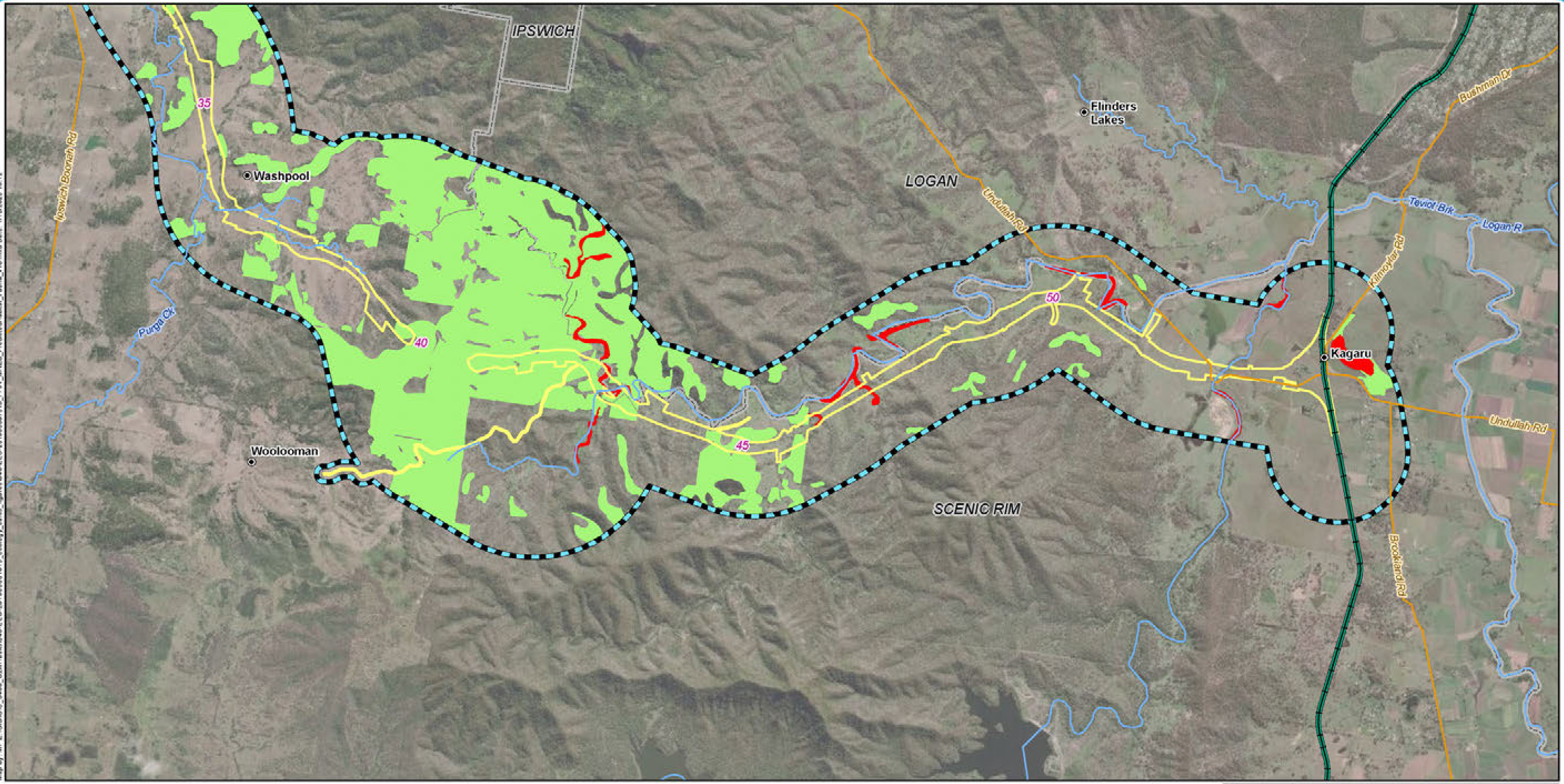
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Swift parrot (*Lathamus discolor*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

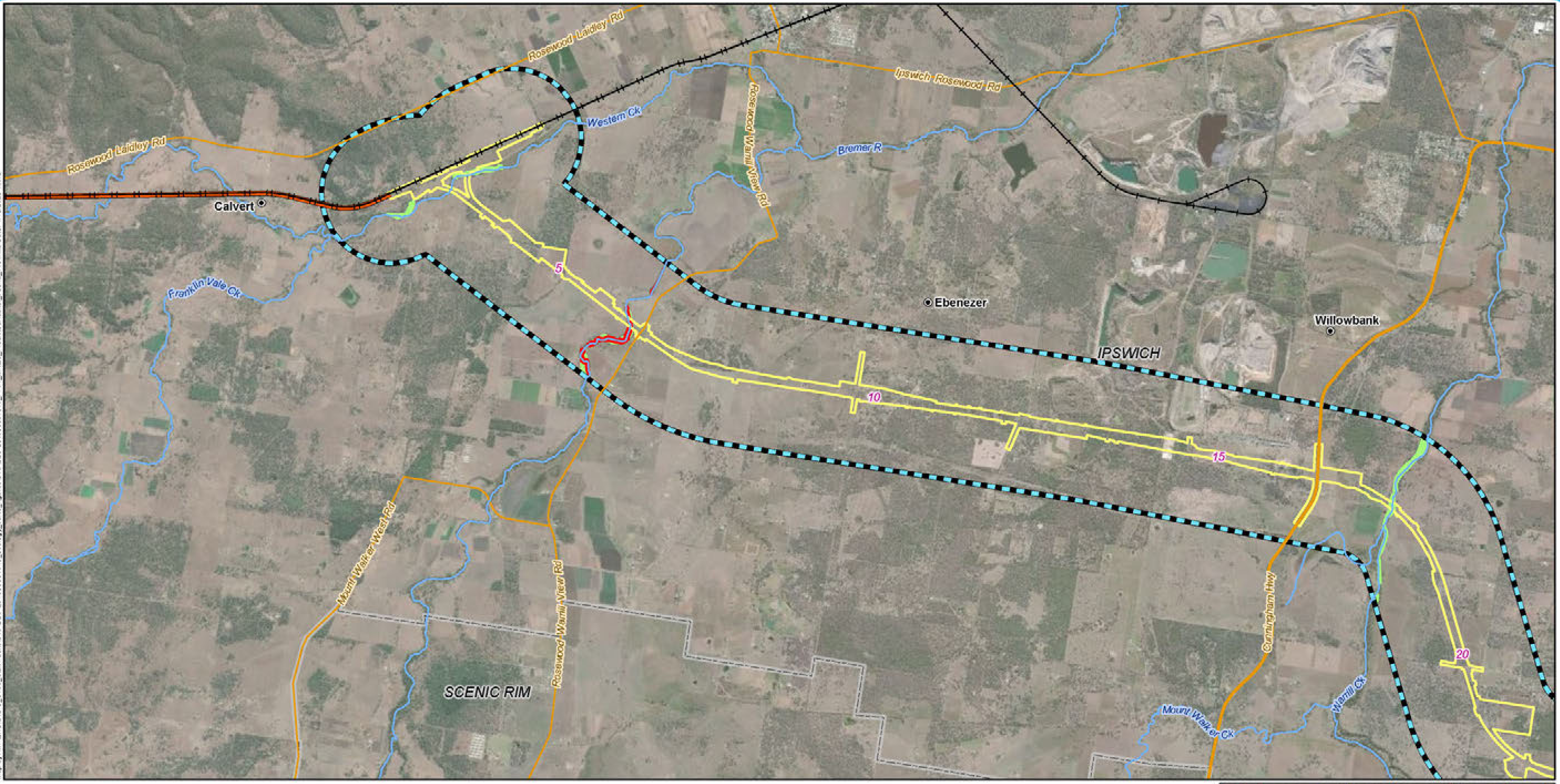
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Swift parrot (*Lathamus discolor*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

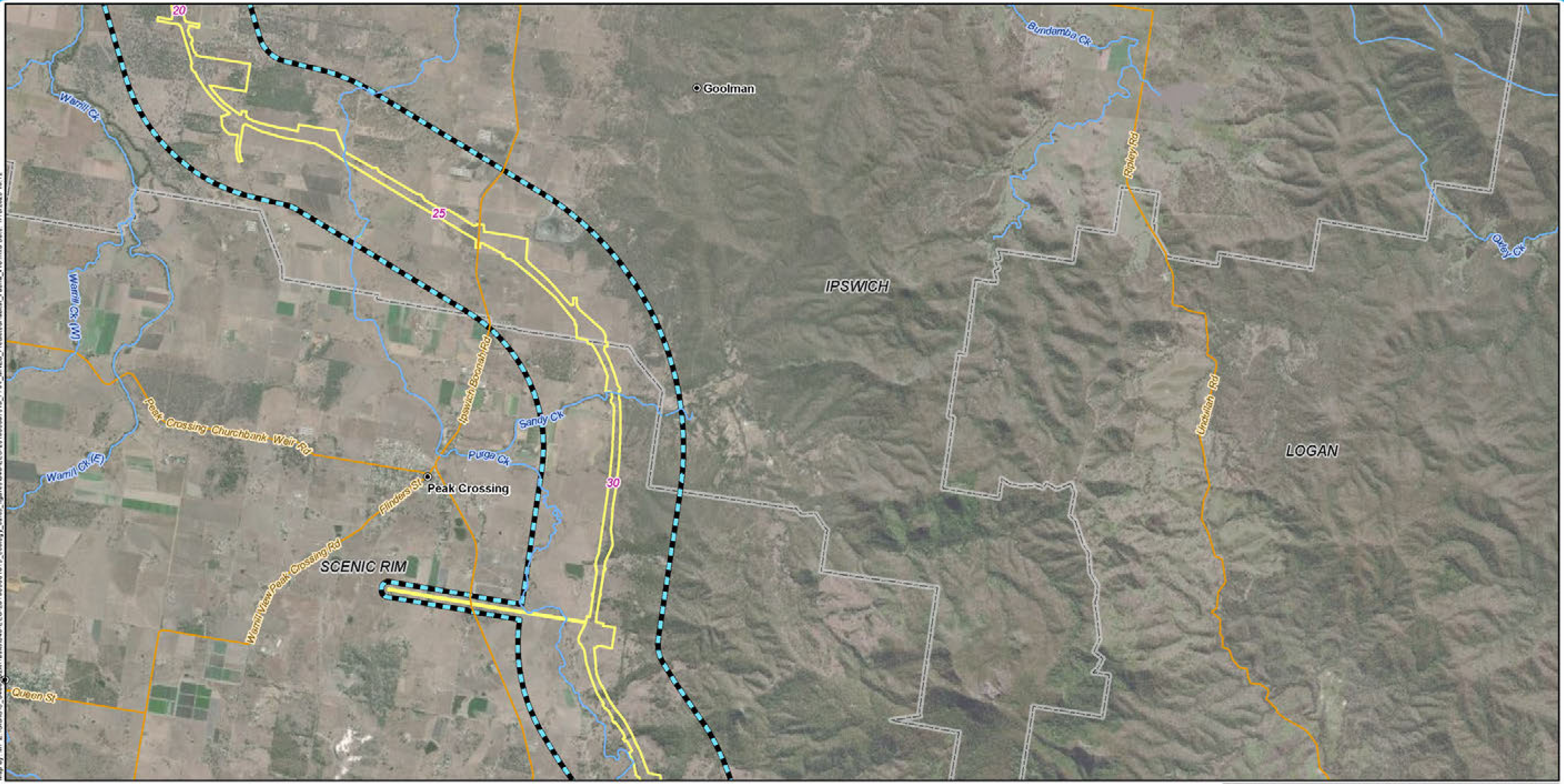
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

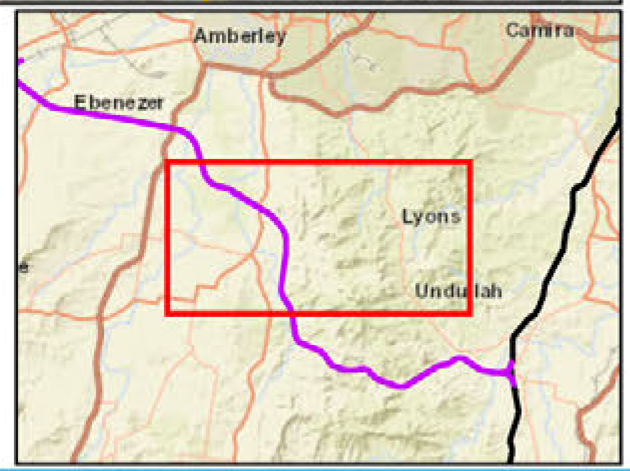
Predicted Habitat: Australian lungfish (*Neoceratodus forsteri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

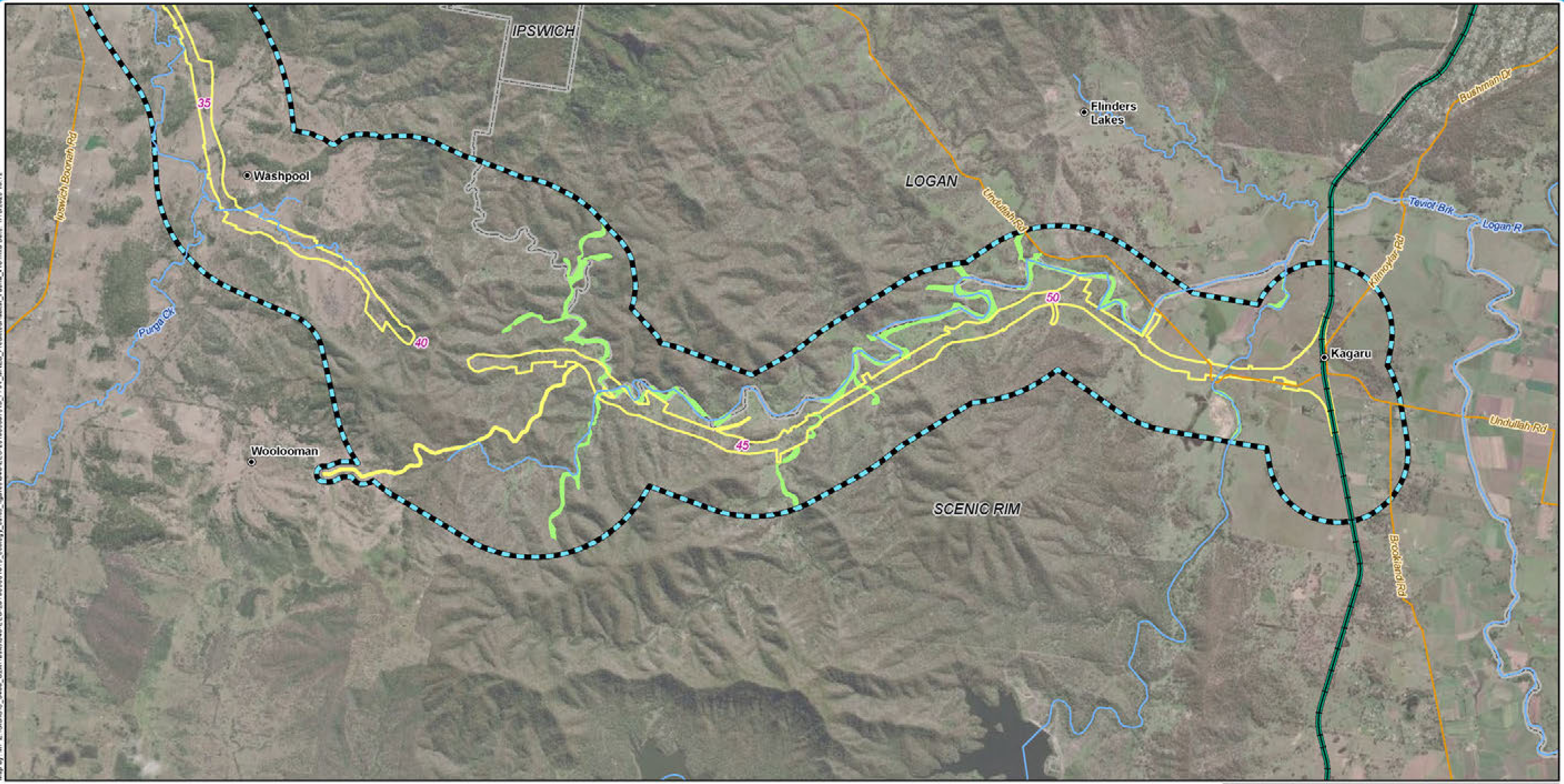
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australian lungfish (*Neoceratodus forsteri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

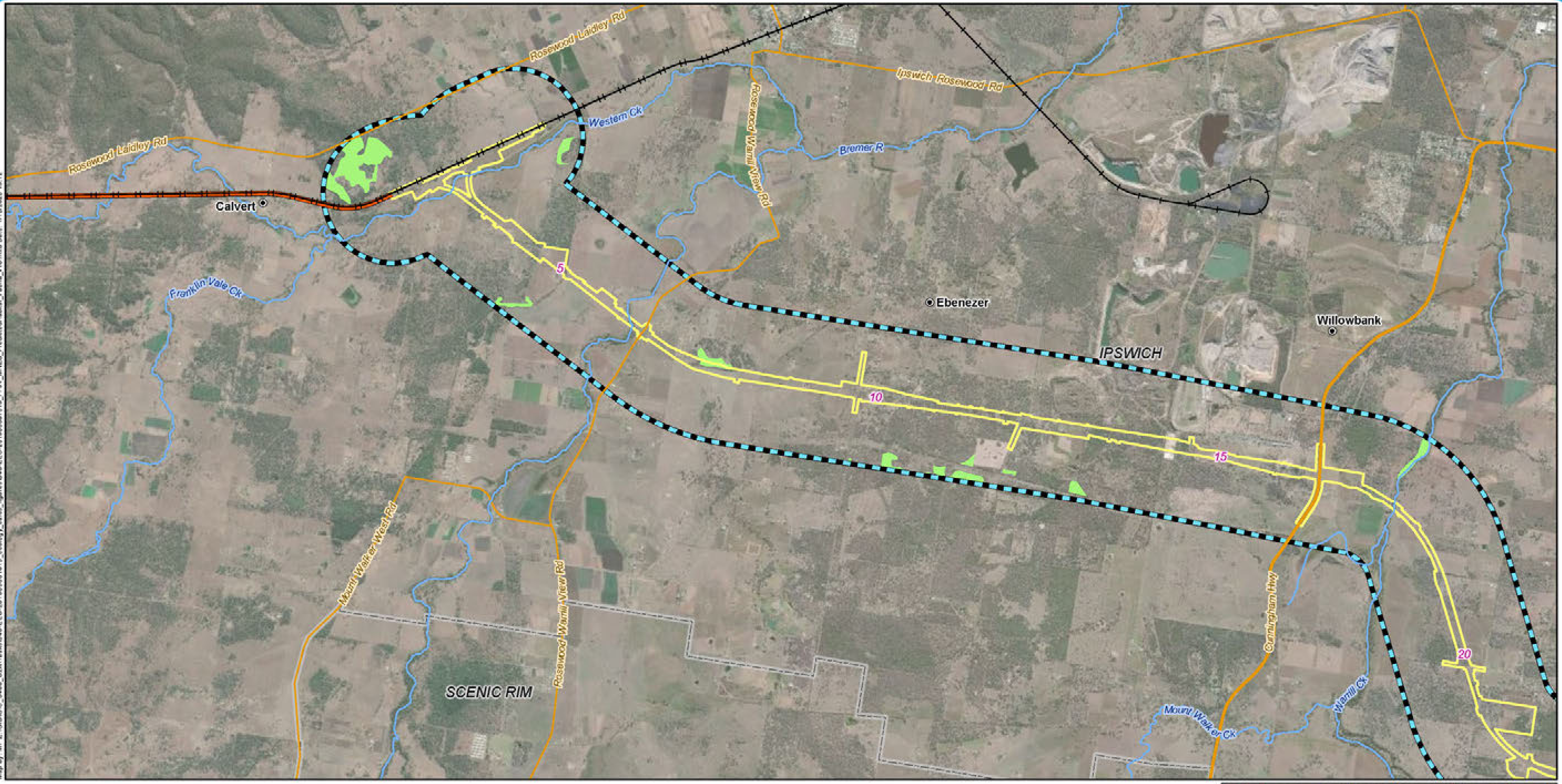
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australian lungfish (*Neoceratodus forsteri*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5 Chainage (km)	EIS disturbance footprint (surface disturbance only)
Localities	MNES study area
Existing rail	Local Government Areas
H2C project alignment	Potential habitat
Watercourses	
Major roads	
Minor roads	

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

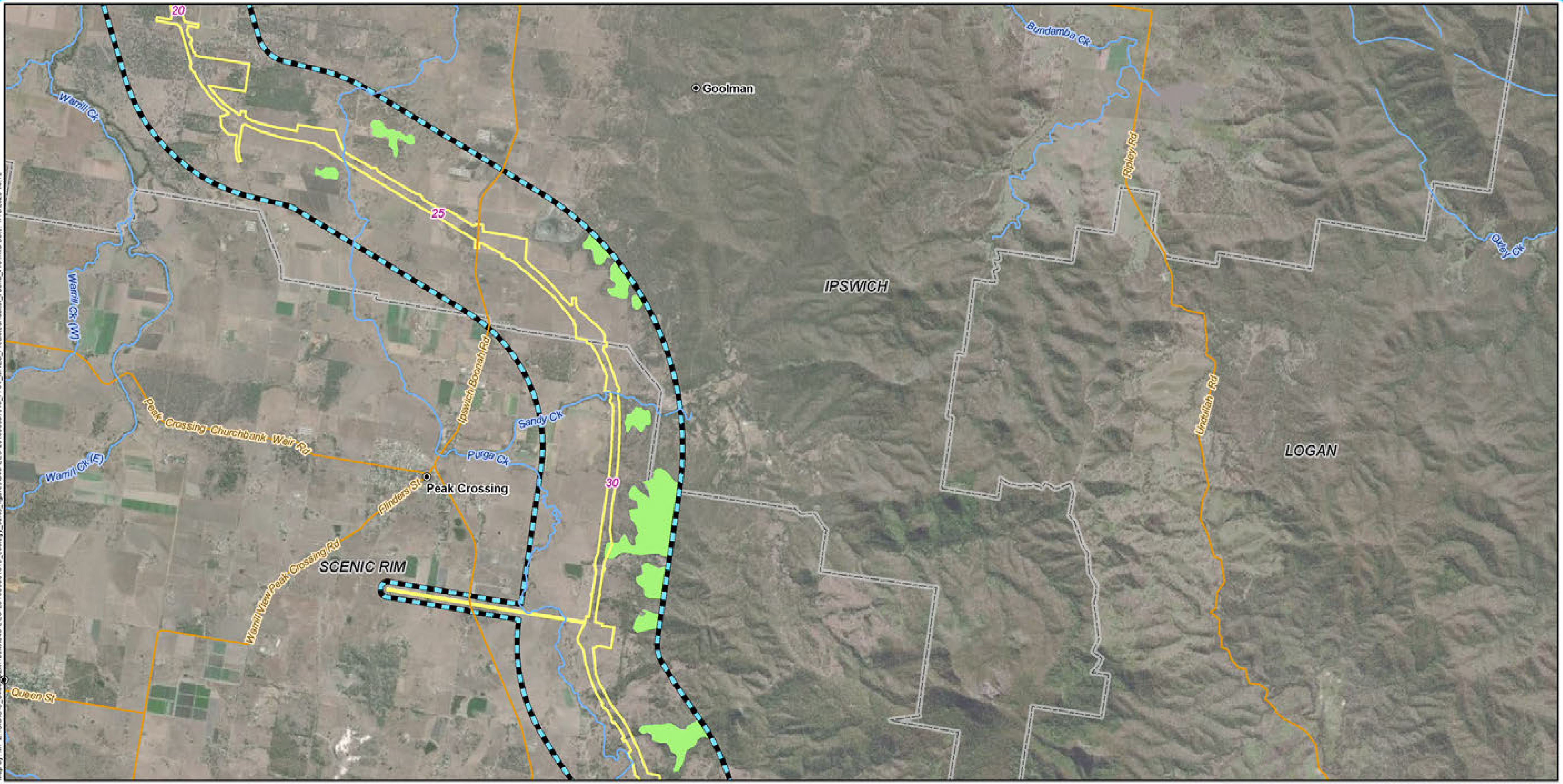
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

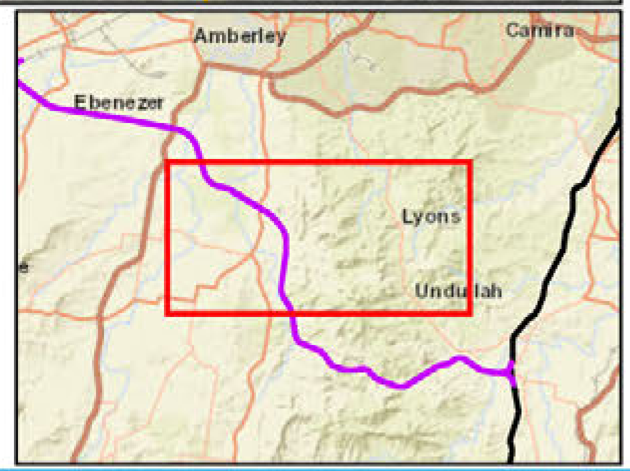
Predicted Habitat: Southern greater glider (*Petauroides volans volans*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

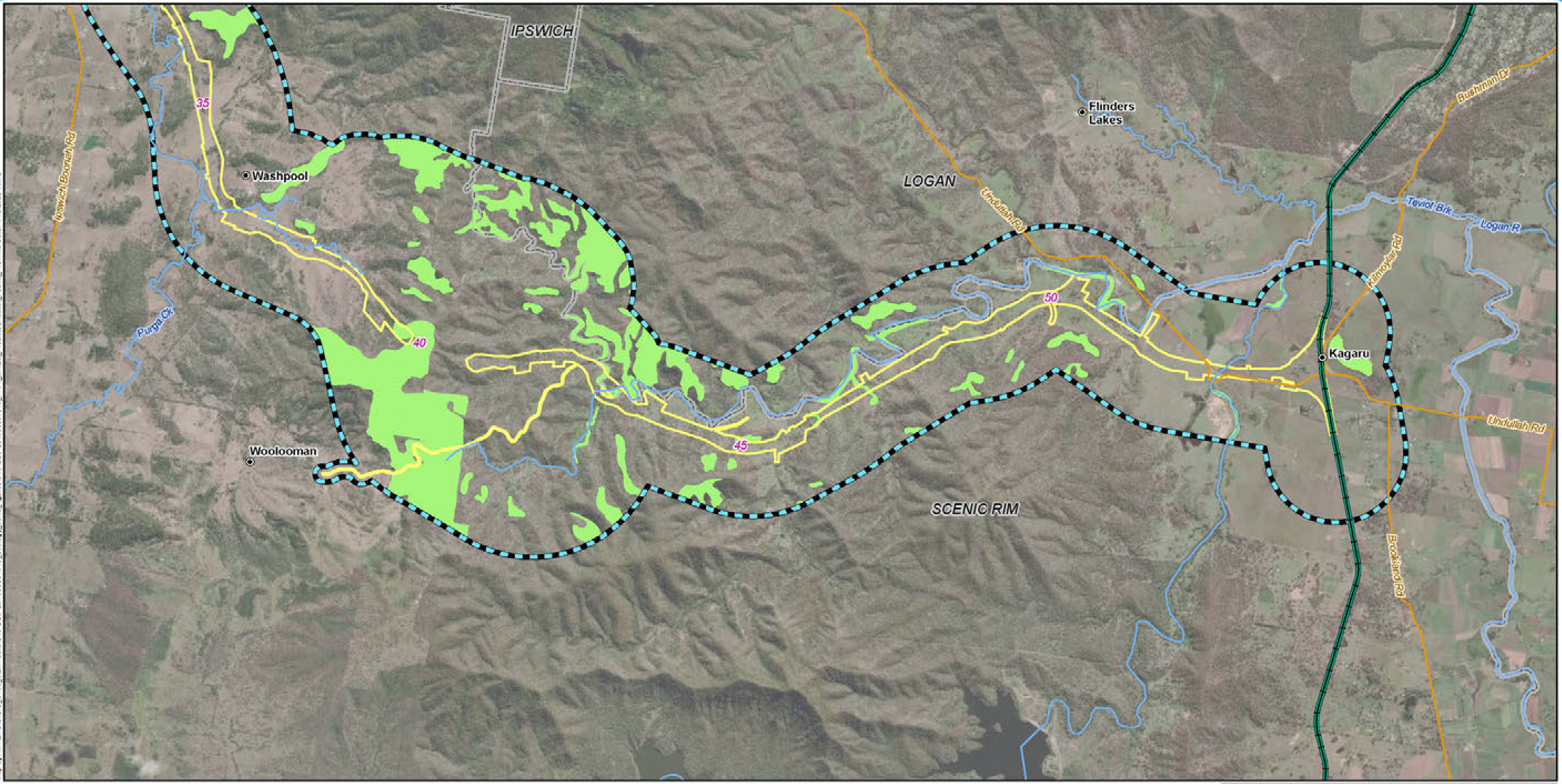
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Southern greater glider (*Petauroides volans volans*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

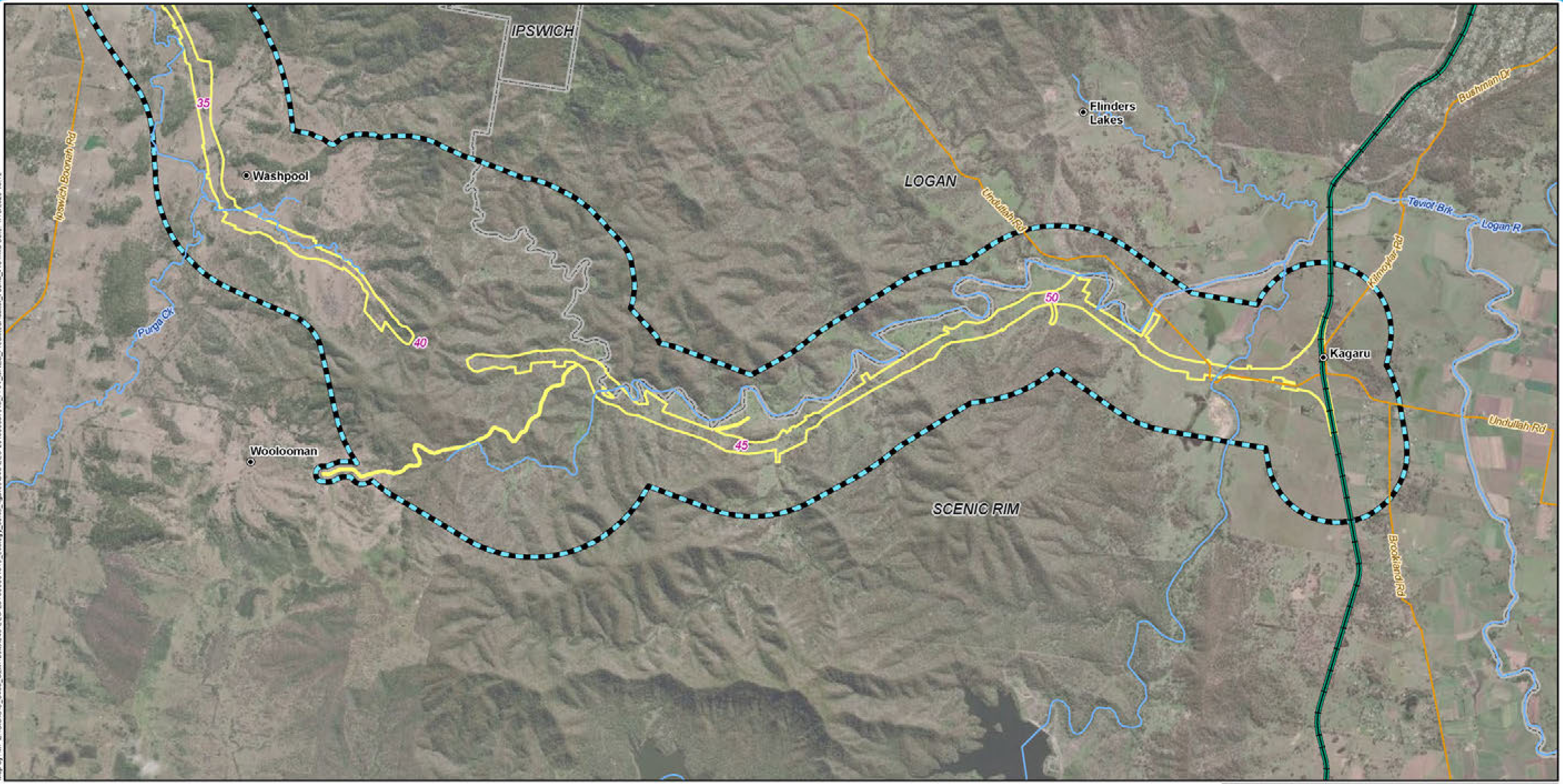
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Southern greater glider (*Petauroides volans volans*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

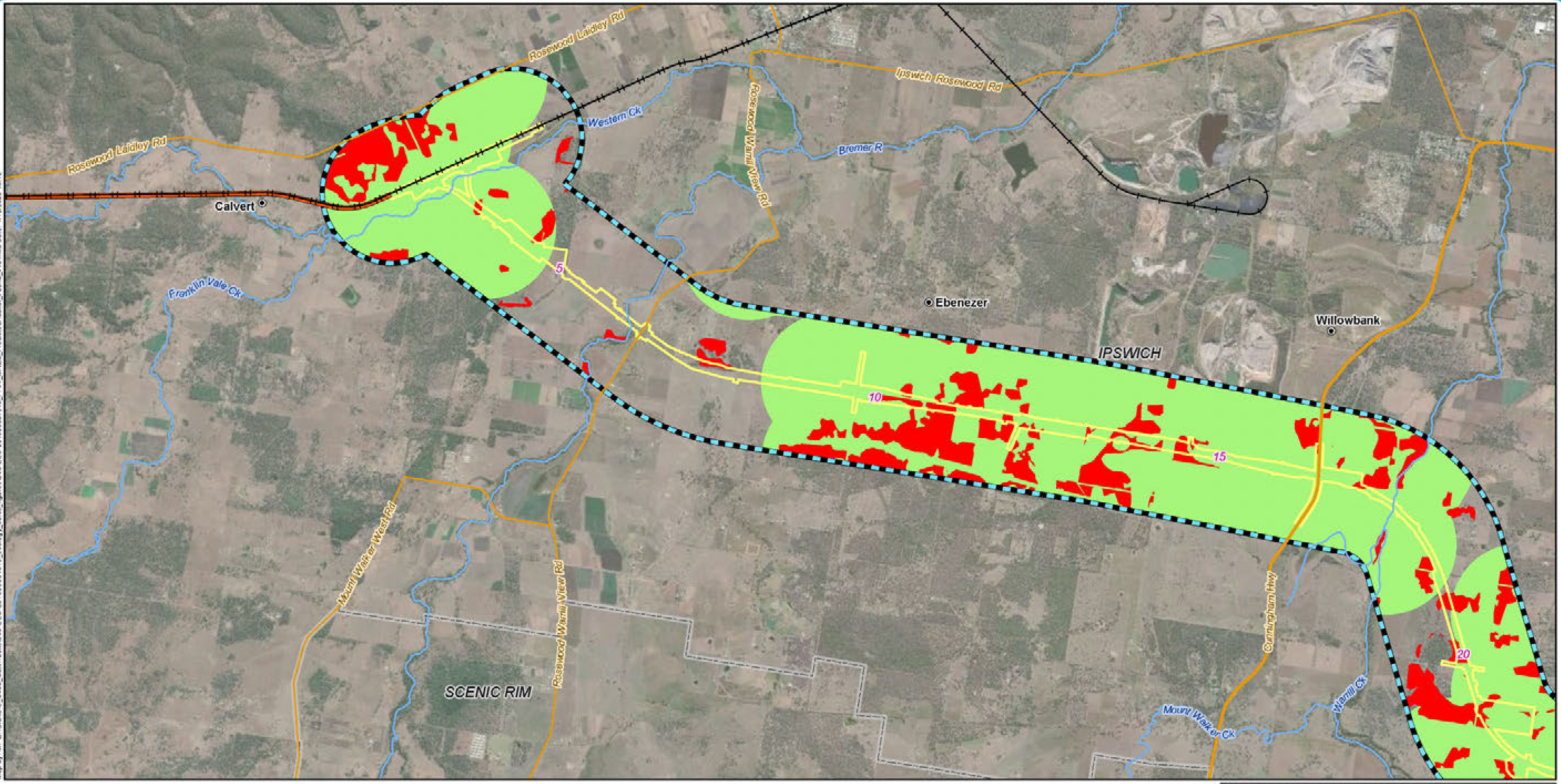
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Brush-tailed rock-wallaby (*Petrogale penicillata*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

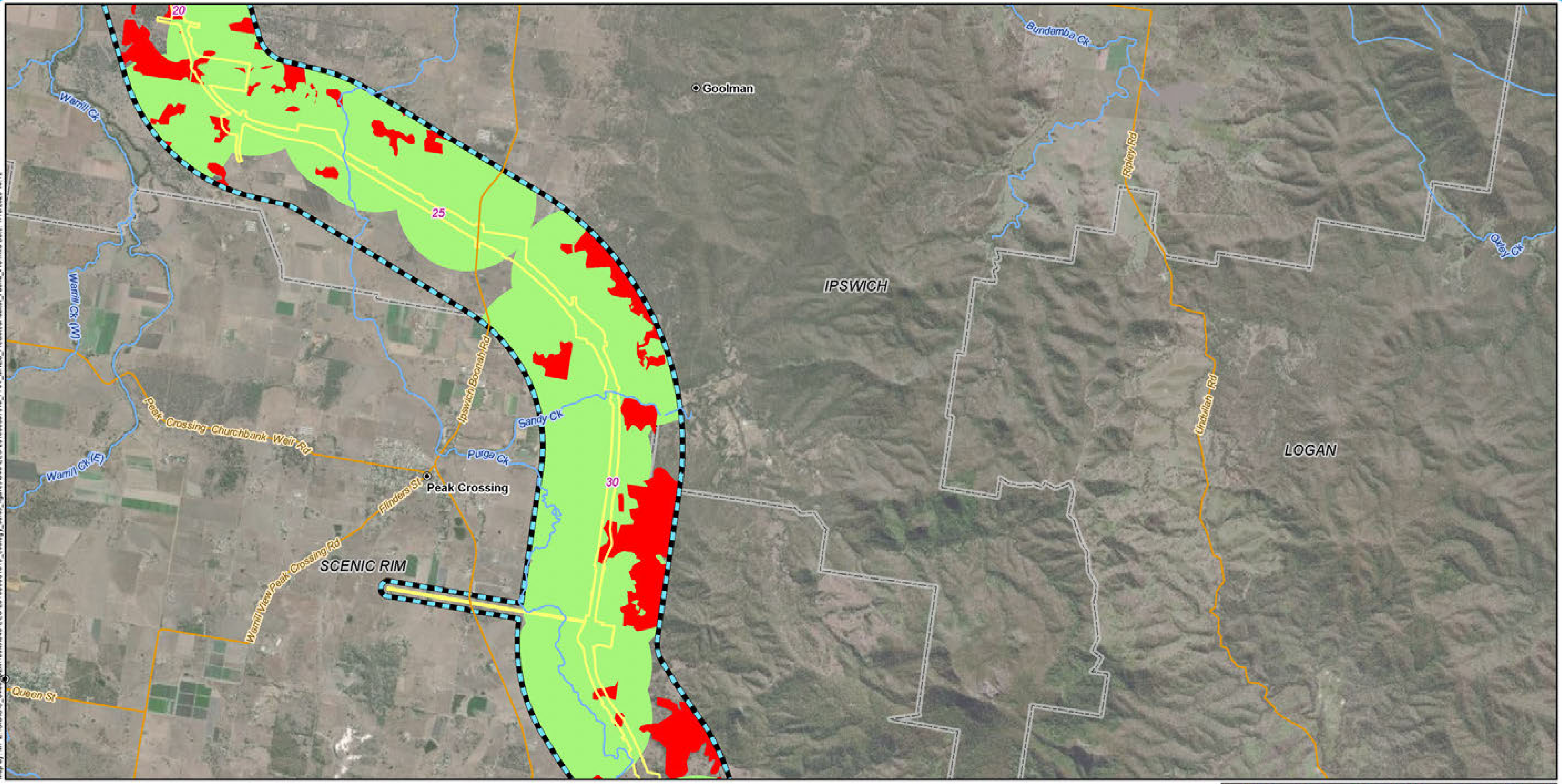
Future Freight
Integrating Community, Environment and Engineering

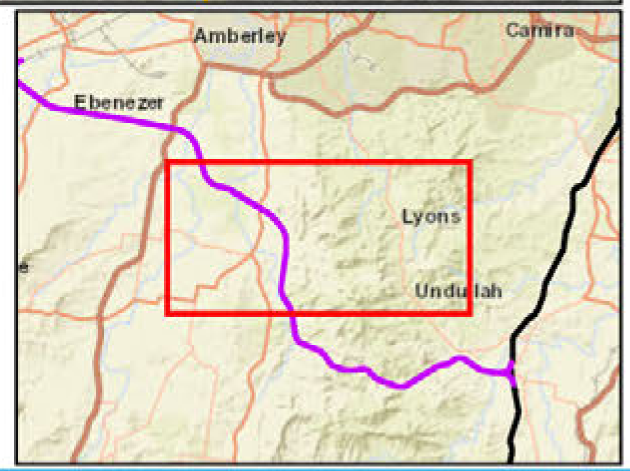
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Koala (*Phascolarctos cinereus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

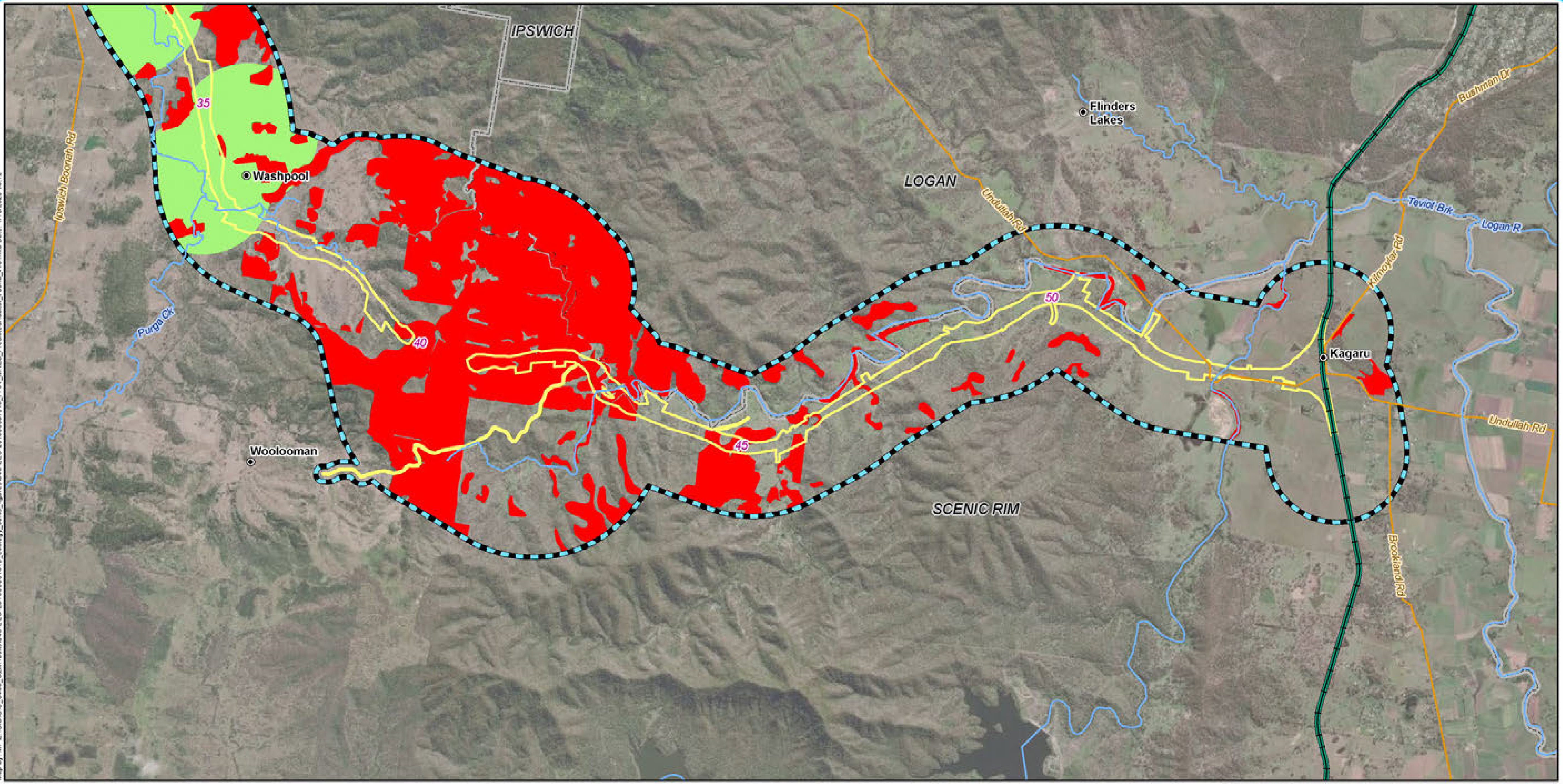
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Koala (*Phascolarctos cinereus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5 Chainage (km)	EIS disturbance footprint (surface disturbance only)
Localities	MNES study area
Existing rail	Local Government Areas
K2ARB project alignment	Habitat critical to the survival of the species
Watercourses	Potential habitat
Major roads	
Minor roads	

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

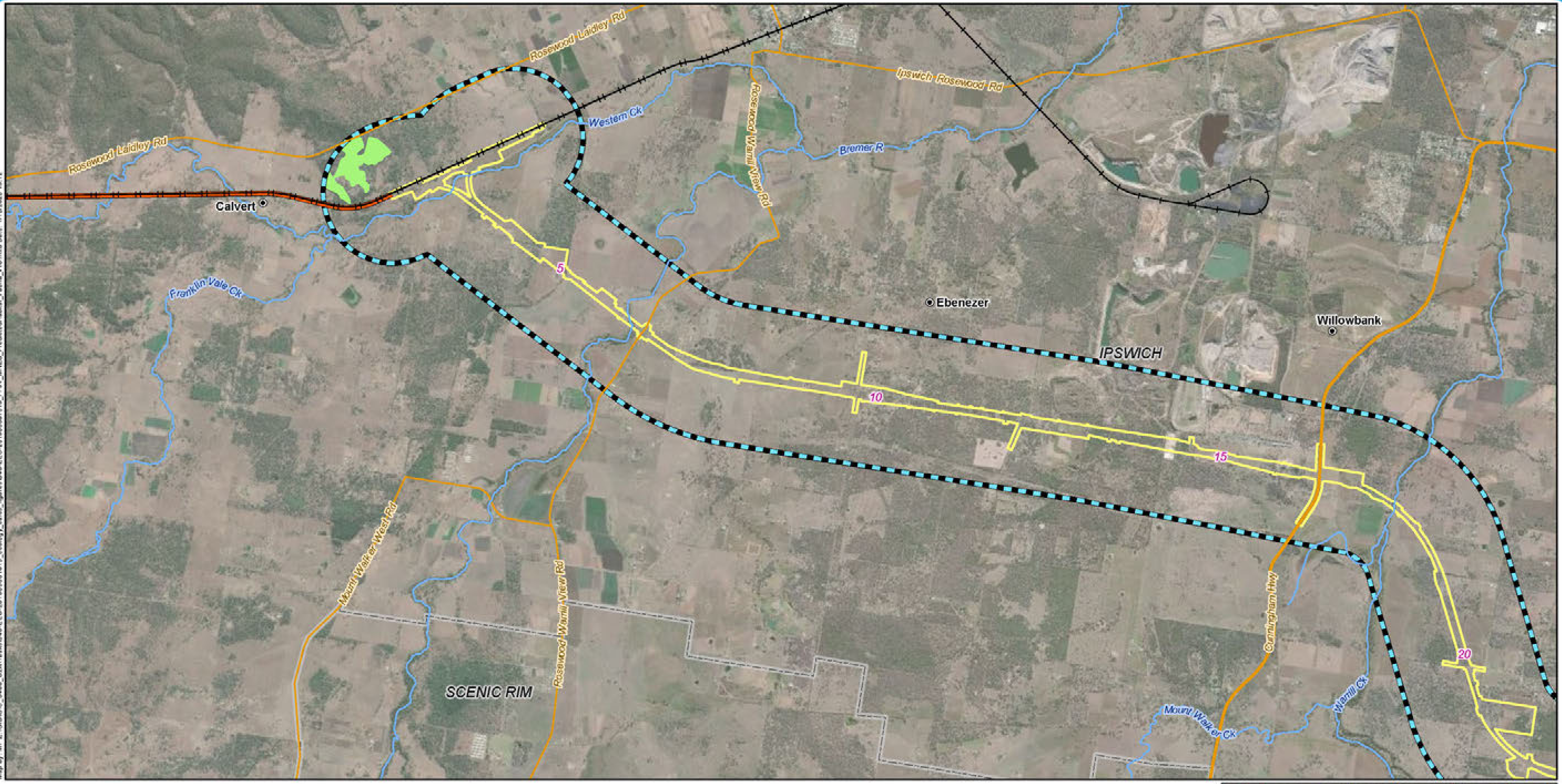
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Koala (*Phascolarctos cinereus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

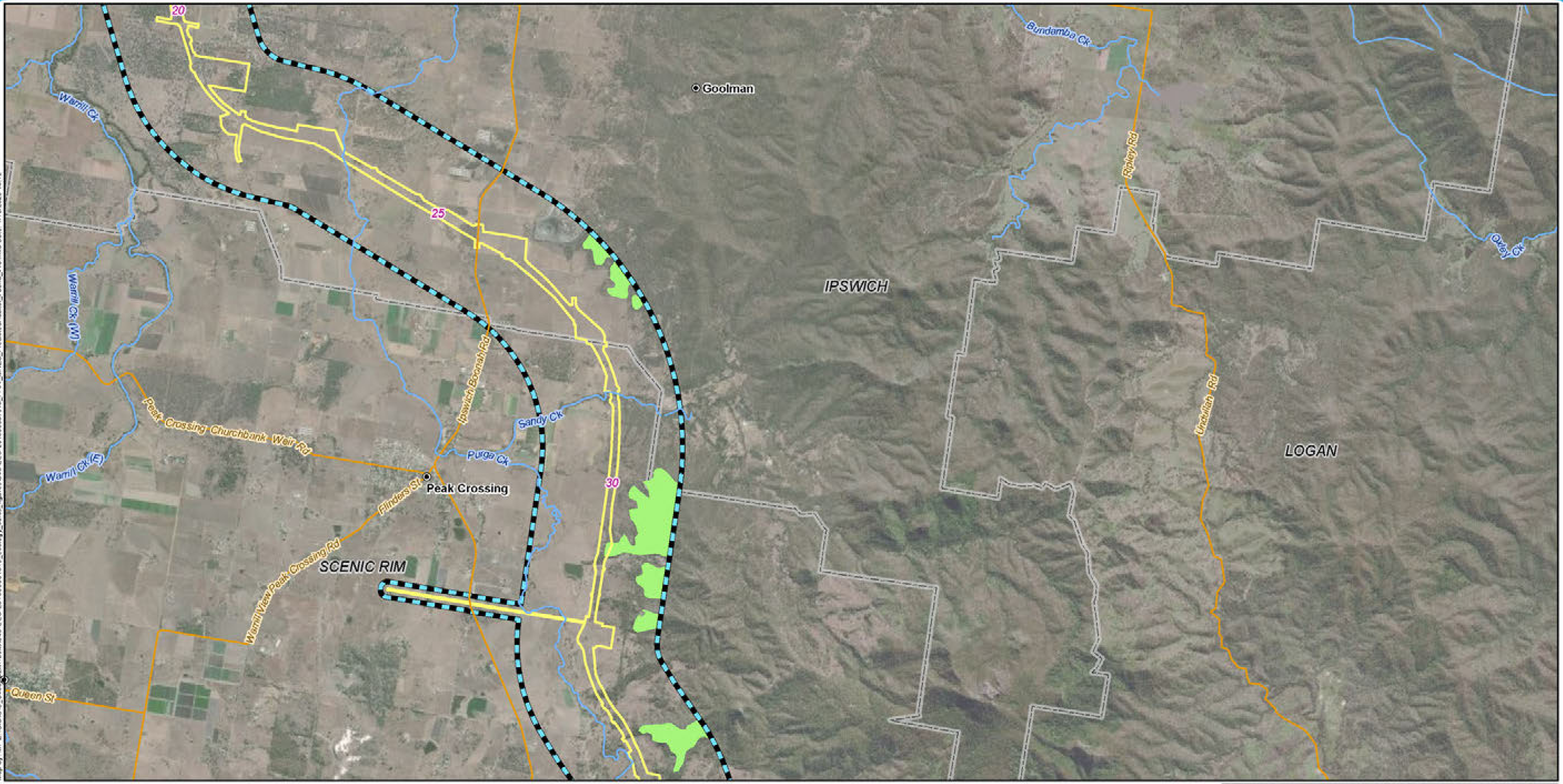
Future Freight
Integrating Community, Environment and Engineering

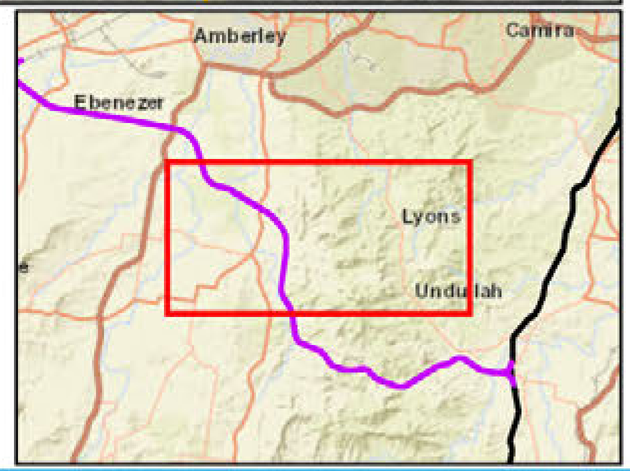
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Long-nosed potoroo (*Potorous tridactylus tridactylus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

Future Freight Integrating Community, Environment and Engineering

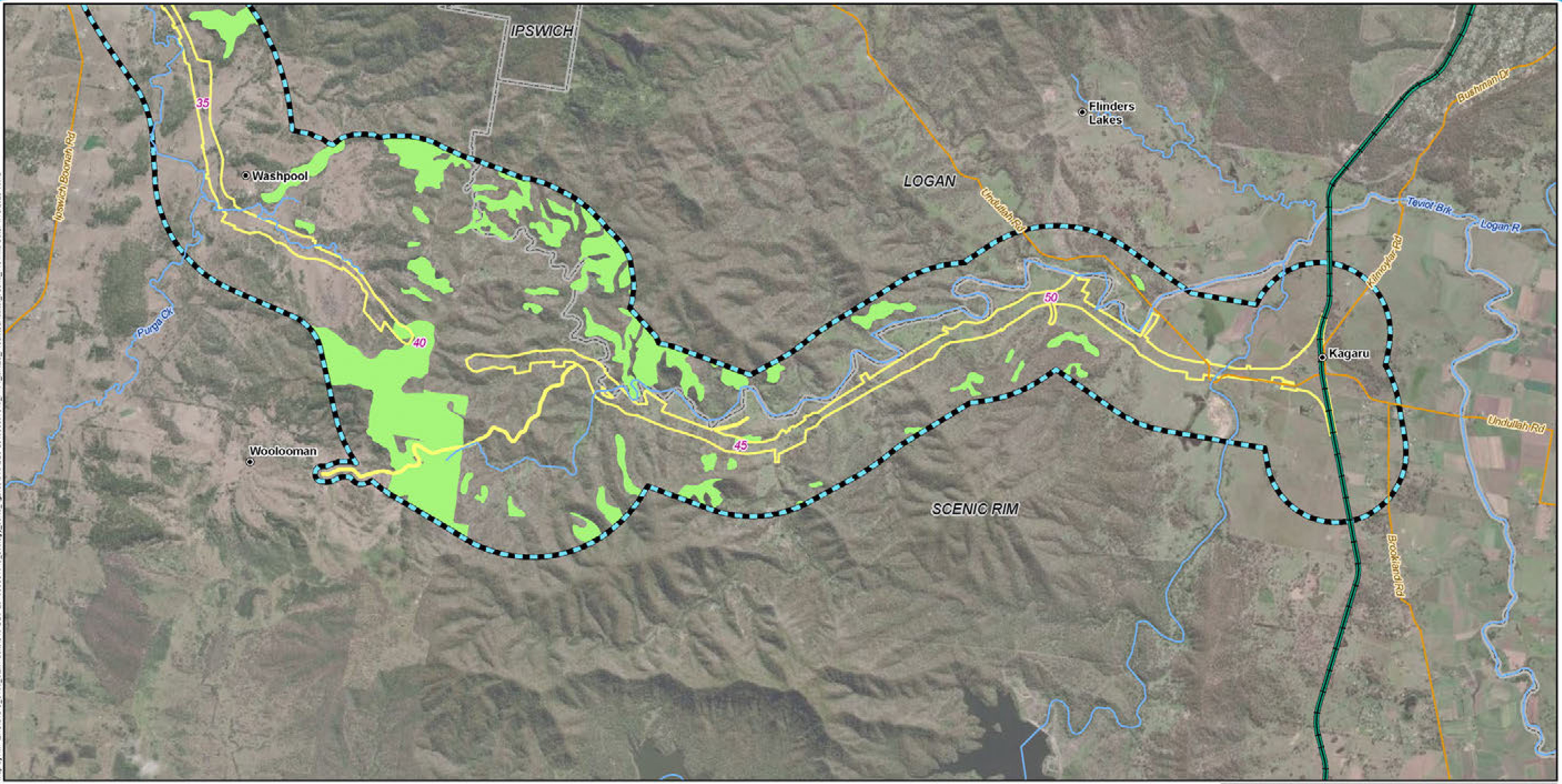
Issue date: 01/10/2020 Version: 0

Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Long-nosed potoroo (*Potorous tridactylus tridactylus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

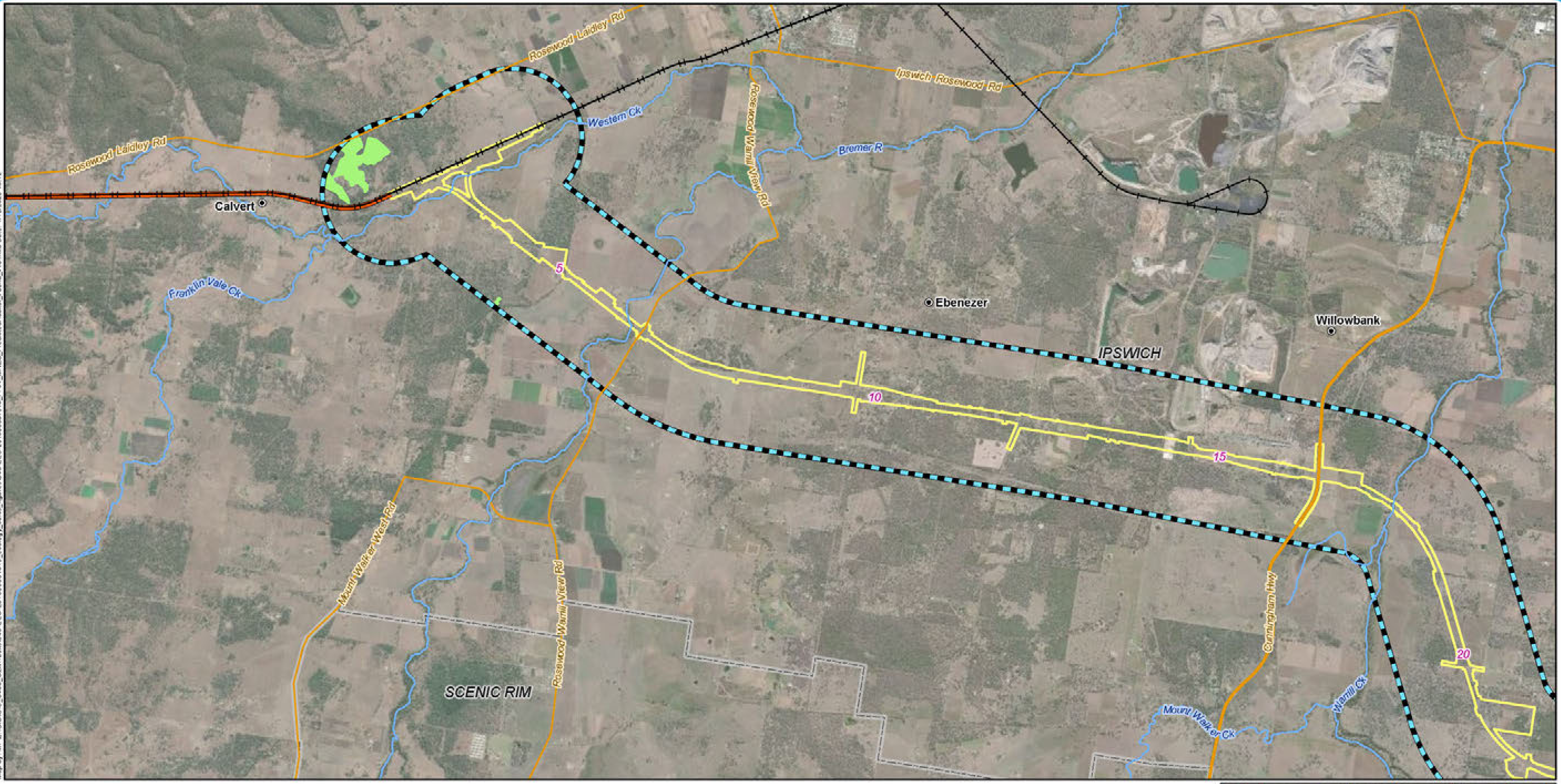
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Long-nosed potoroo (*Potorous tridactylus tridactylus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

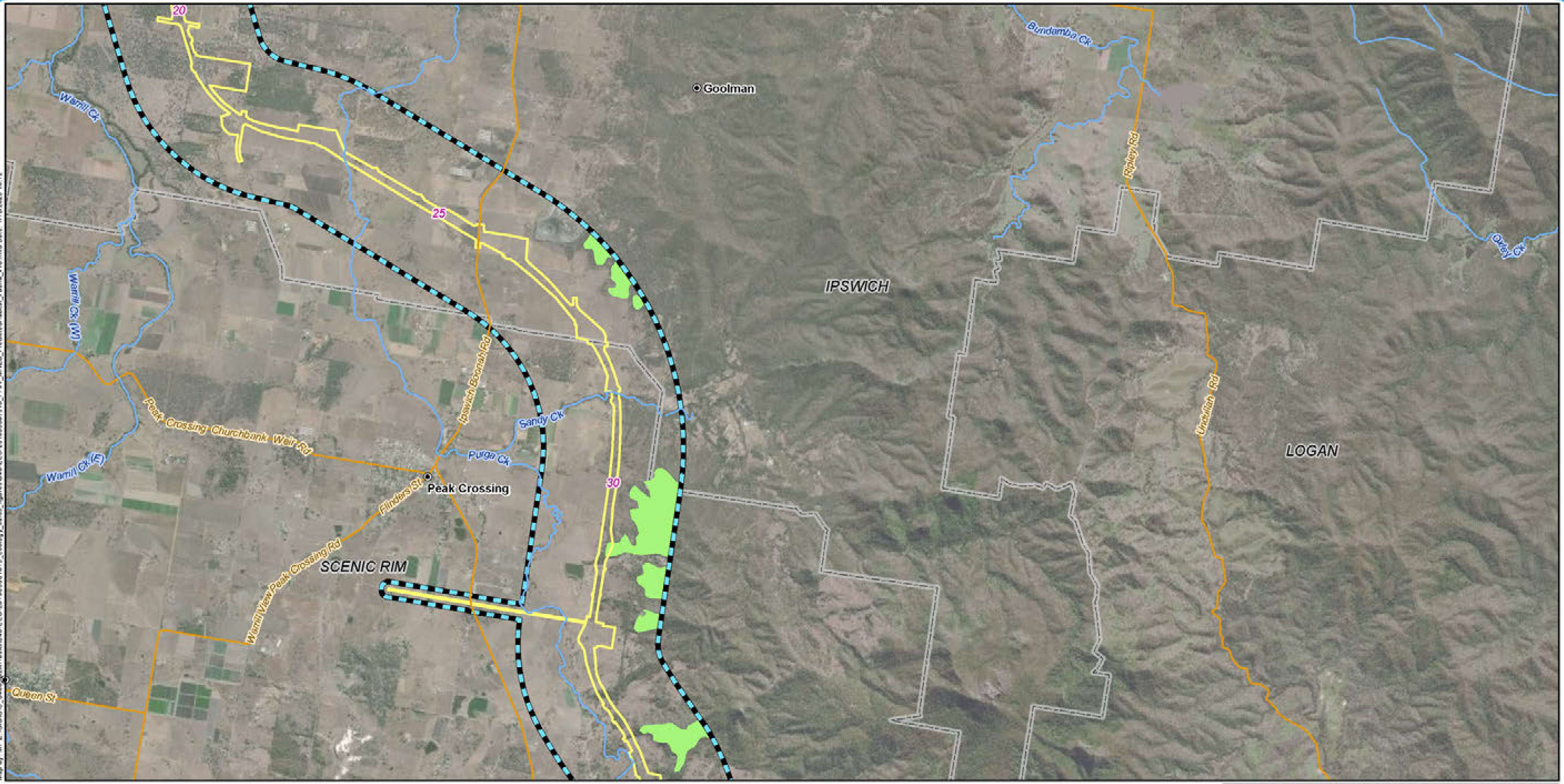
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

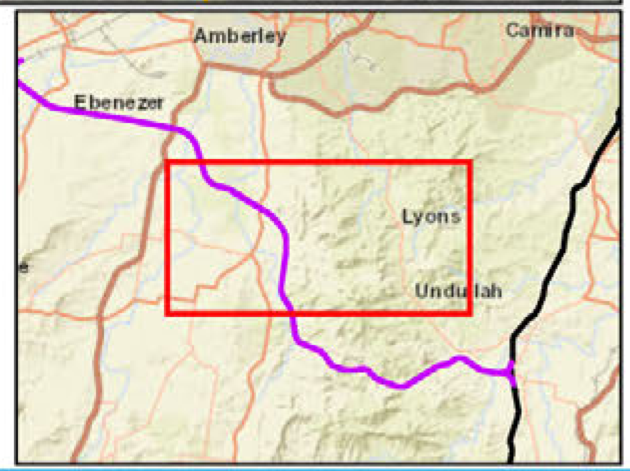
Predicted Habitat: New Holland mouse (*Pseudomys novaehollandiae*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

Future Freight
Integrating Community, Environment and Engineering

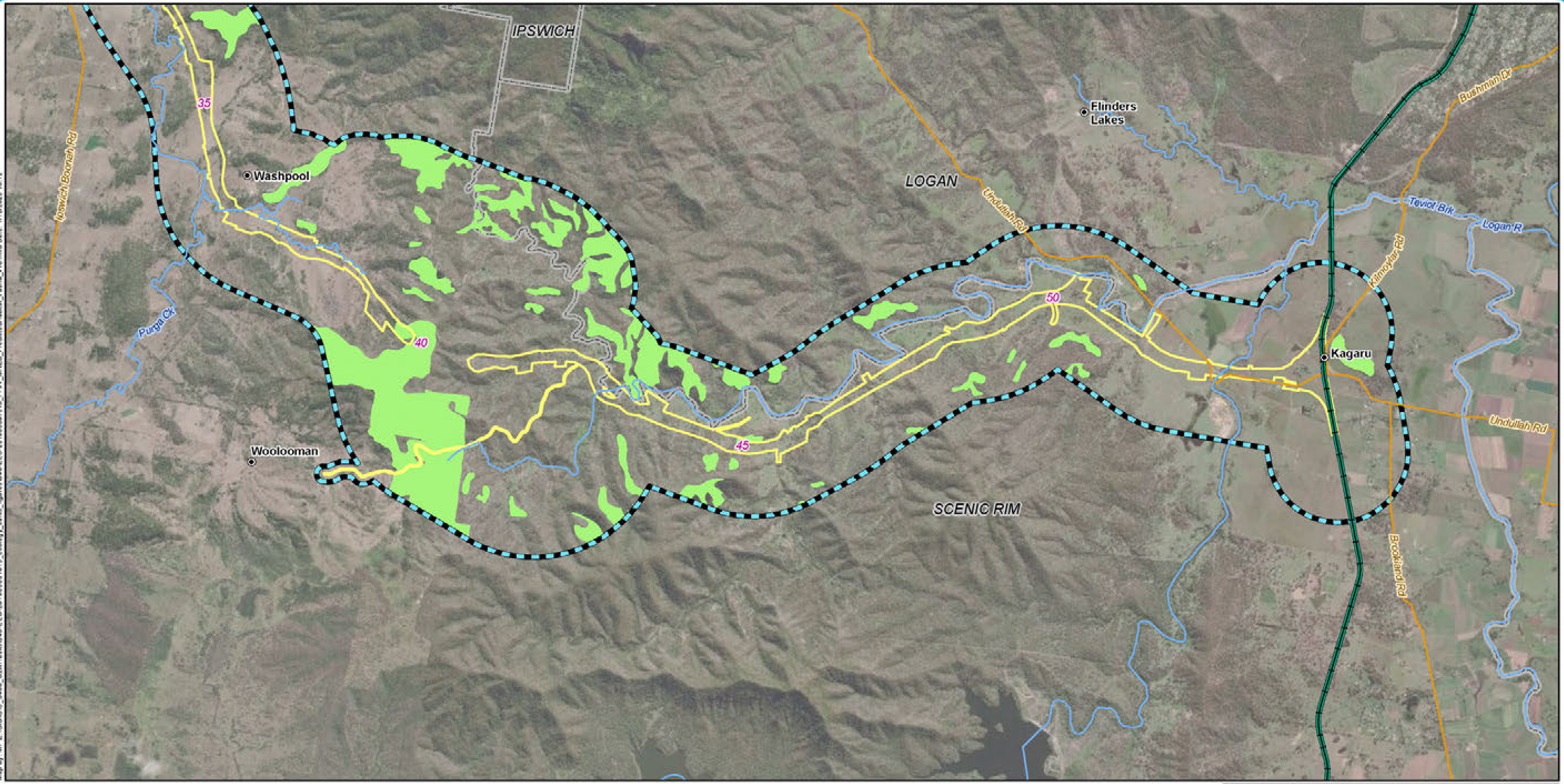
Issue date: 01/10/2020 Version: 0

Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: New Holland mouse (*Pseudomys novaehollandiae*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

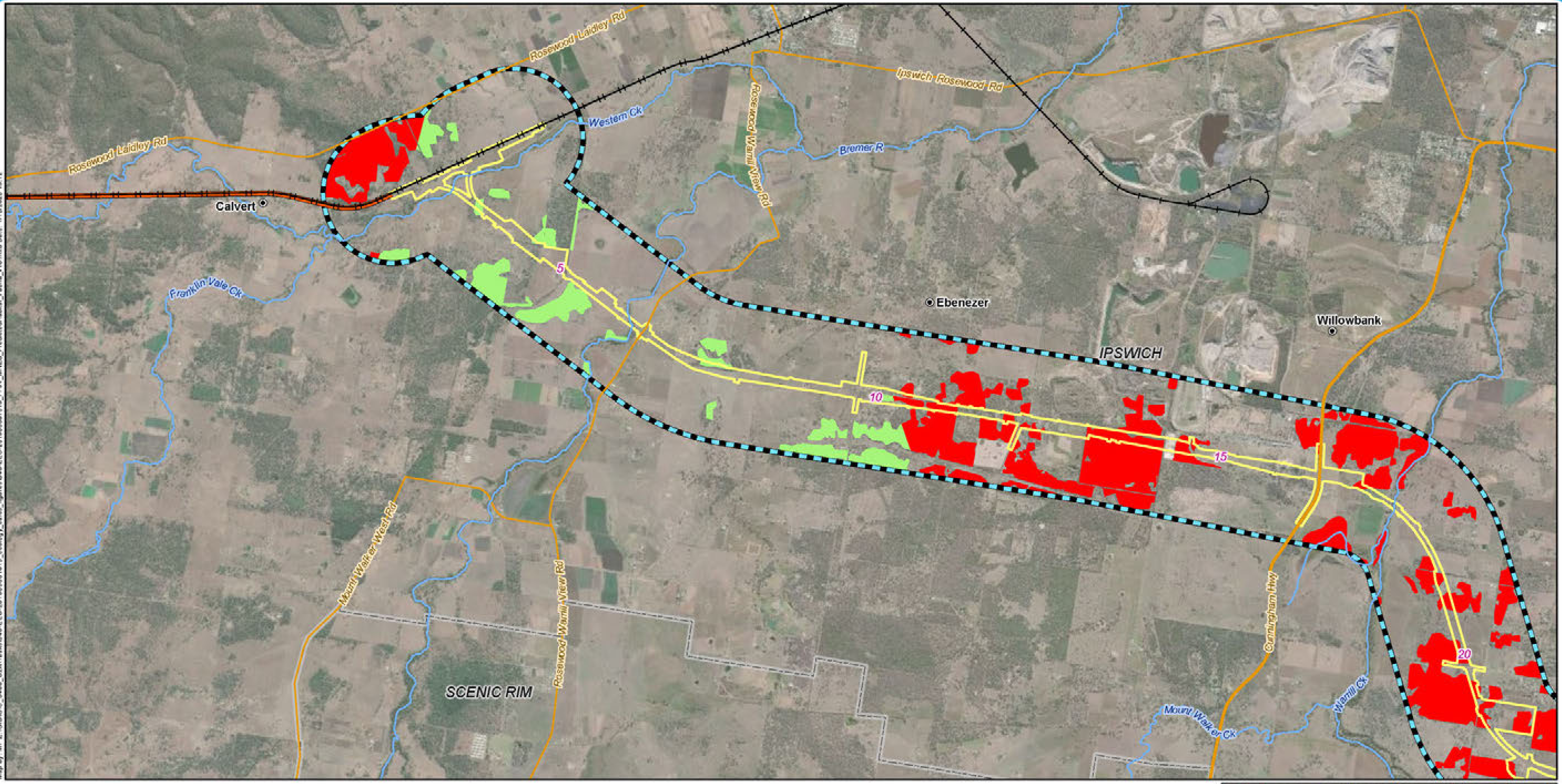
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: New Holland mouse (*Pseudomys novaehollandiae*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

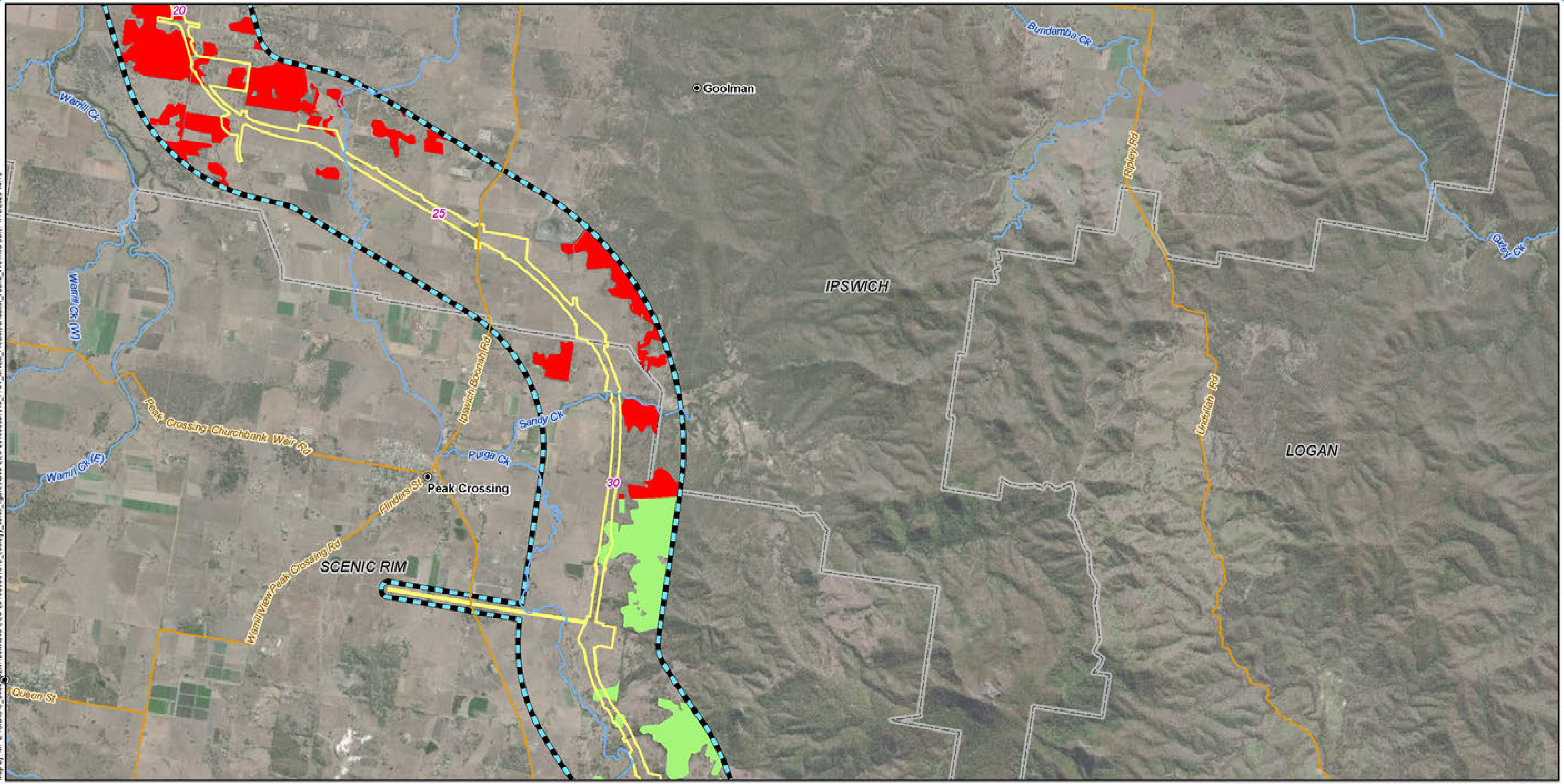
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Grey-headed flying-fox (*Pteropus poliocephalus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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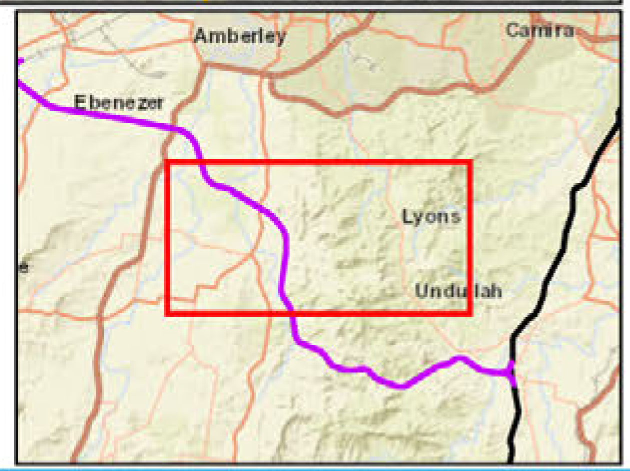
Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat



A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

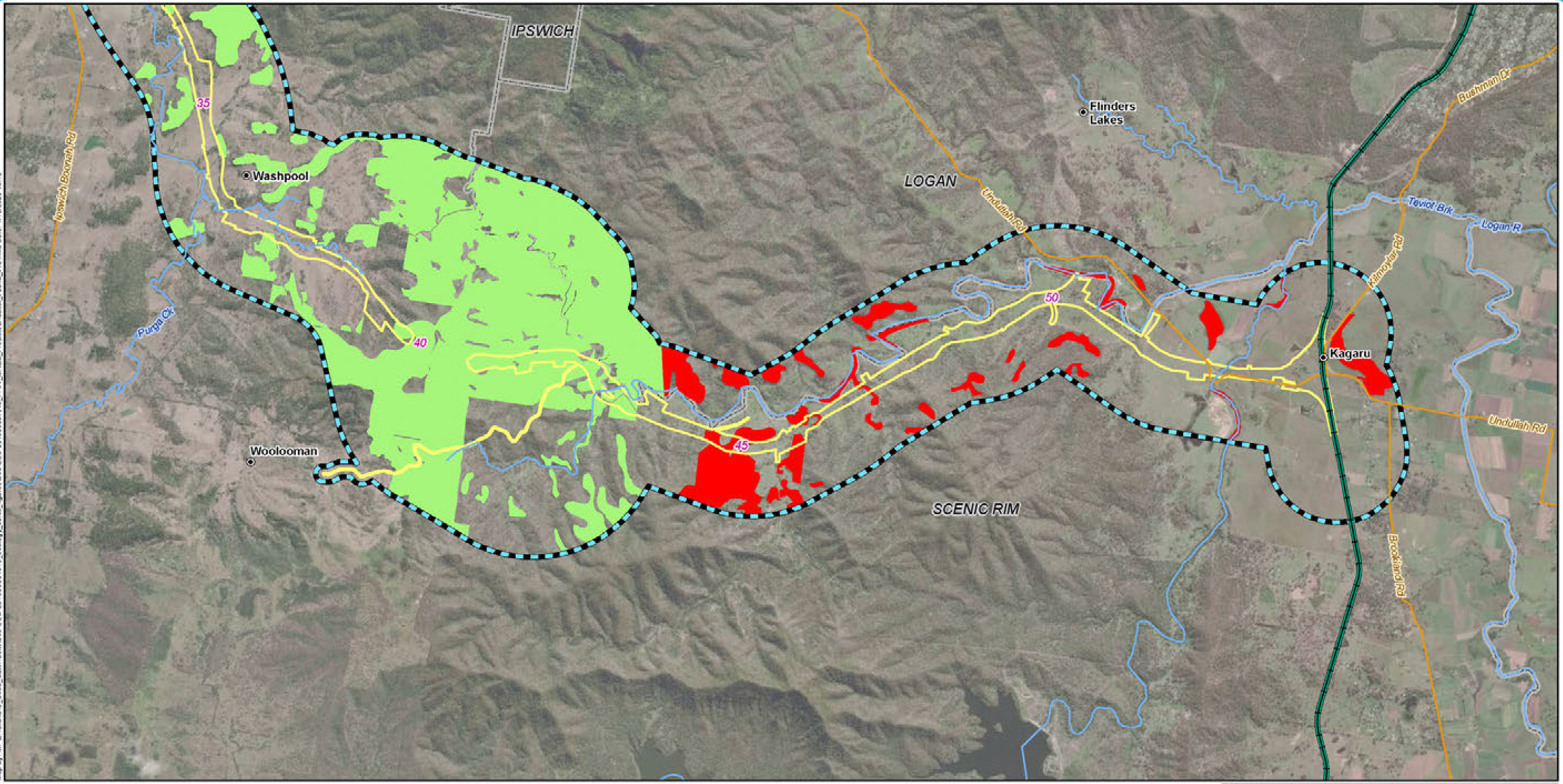
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Grey-headed flying-fox (*Pteropus poliocephalus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

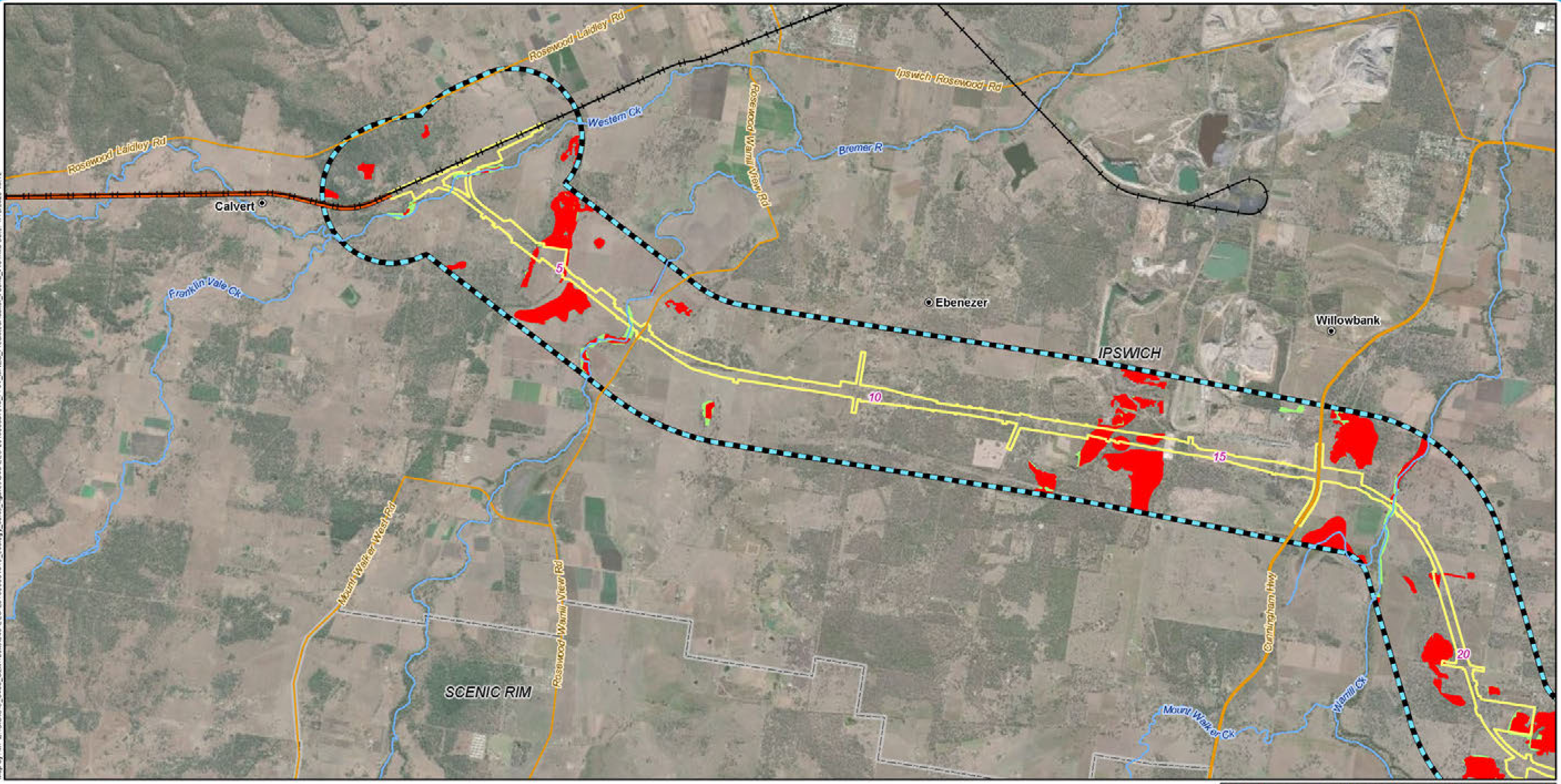
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Grey-headed flying-fox (*Pteropus poliocephalus*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- H2C project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

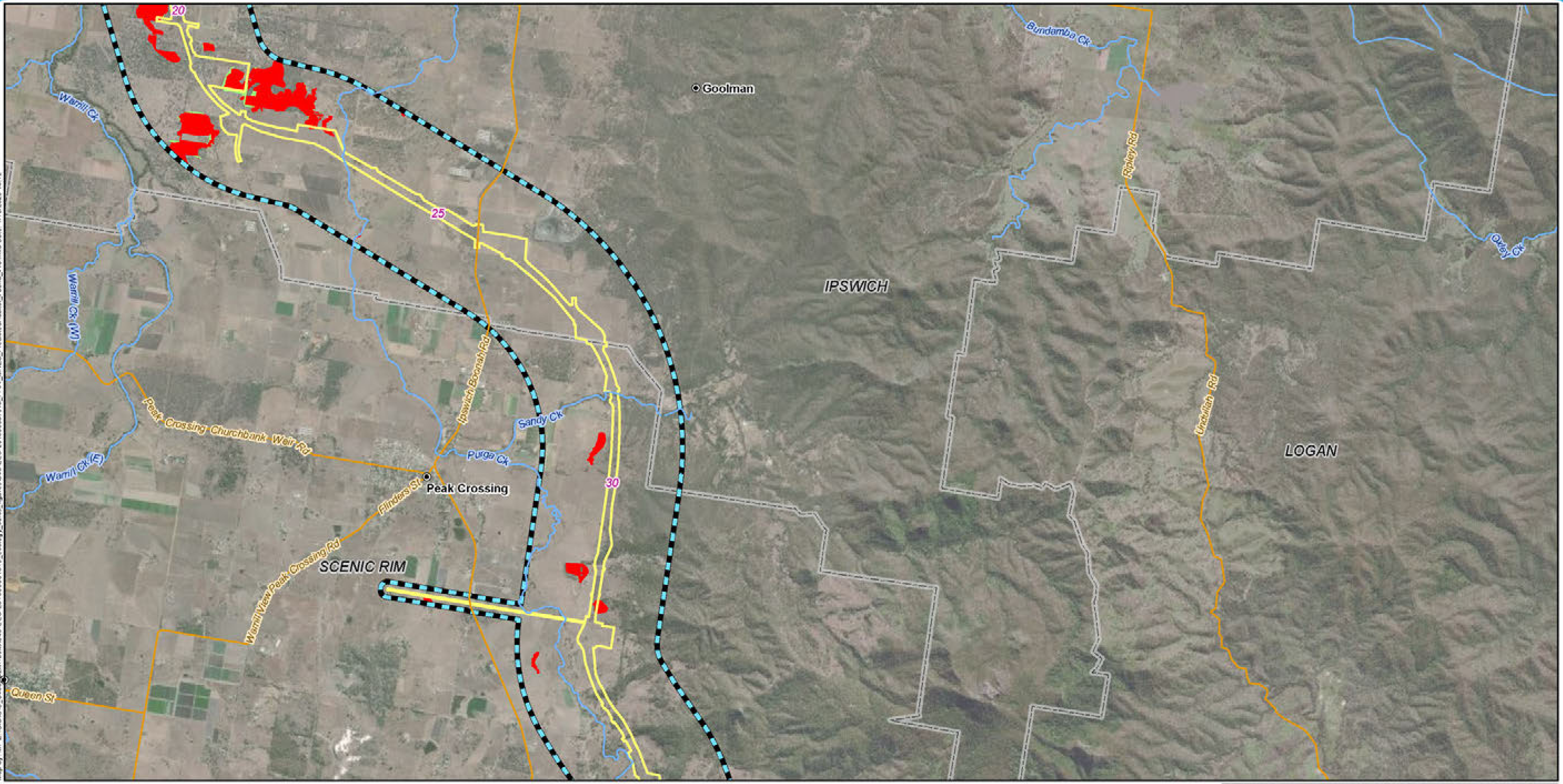
Future Freight
Integrating Community, Environment and Engineering

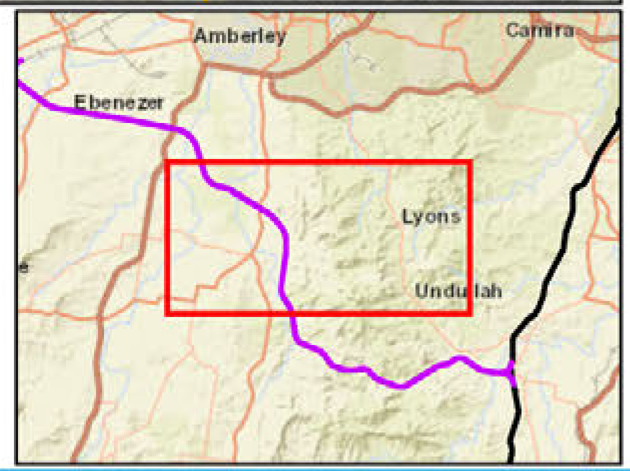
Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australian painted snipe (*Rostratula australis*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





Legend

- 5 Chainage (km)
- Localities
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species
- Potential habitat

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

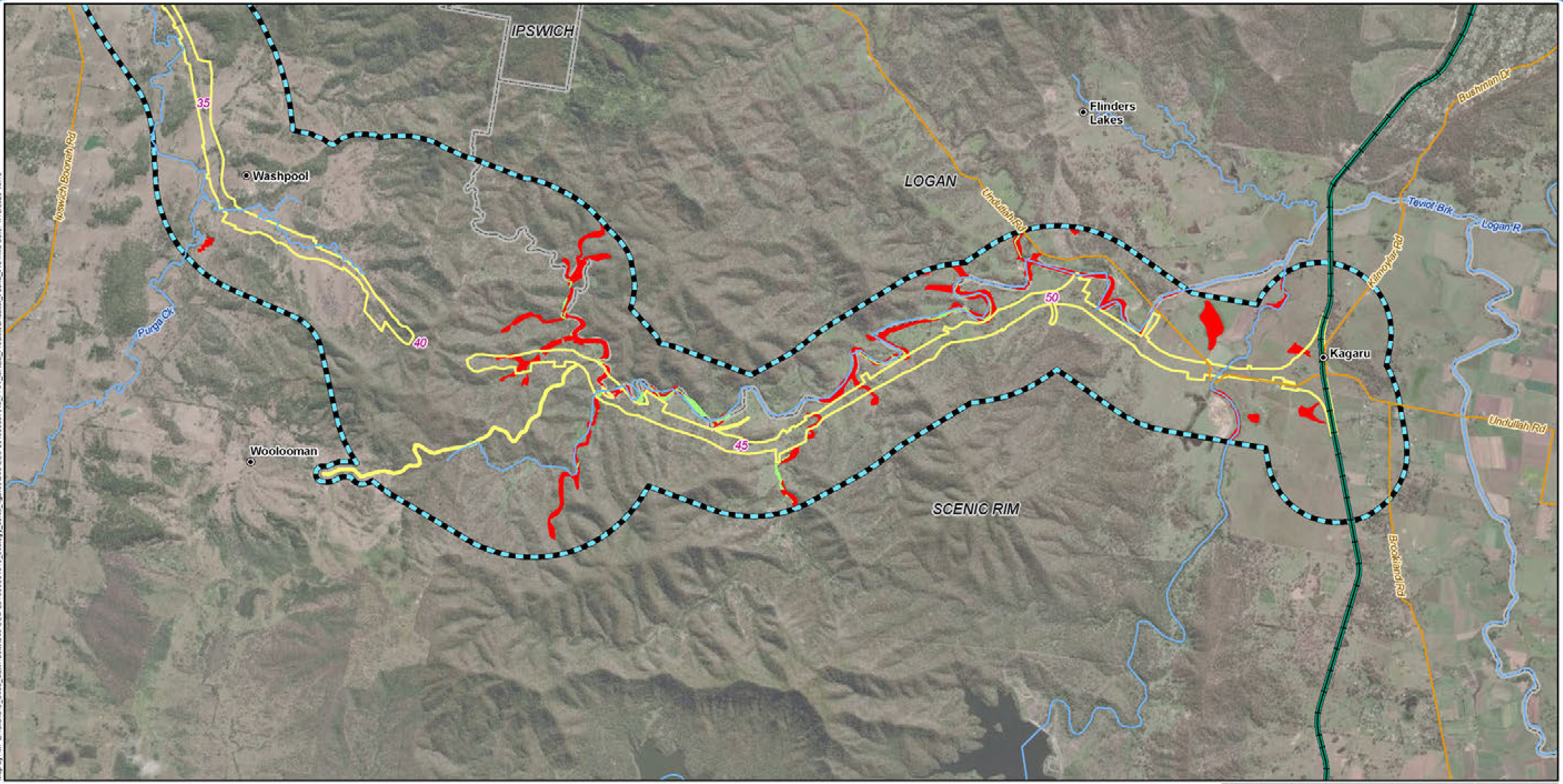
Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australian painted snipe (*Rostratula australis*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

5	Chainage (km)		EIS disturbance footprint (surface disturbance only)
	Localities		MNES study area
	Existing rail		Local Government Areas
	K2ARB project alignment		Habitat critical to the survival of the species
	Watercourses		Potential habitat
	Major roads		
	Minor roads		

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

Future Freight
Integrating Community, Environment and Engineering

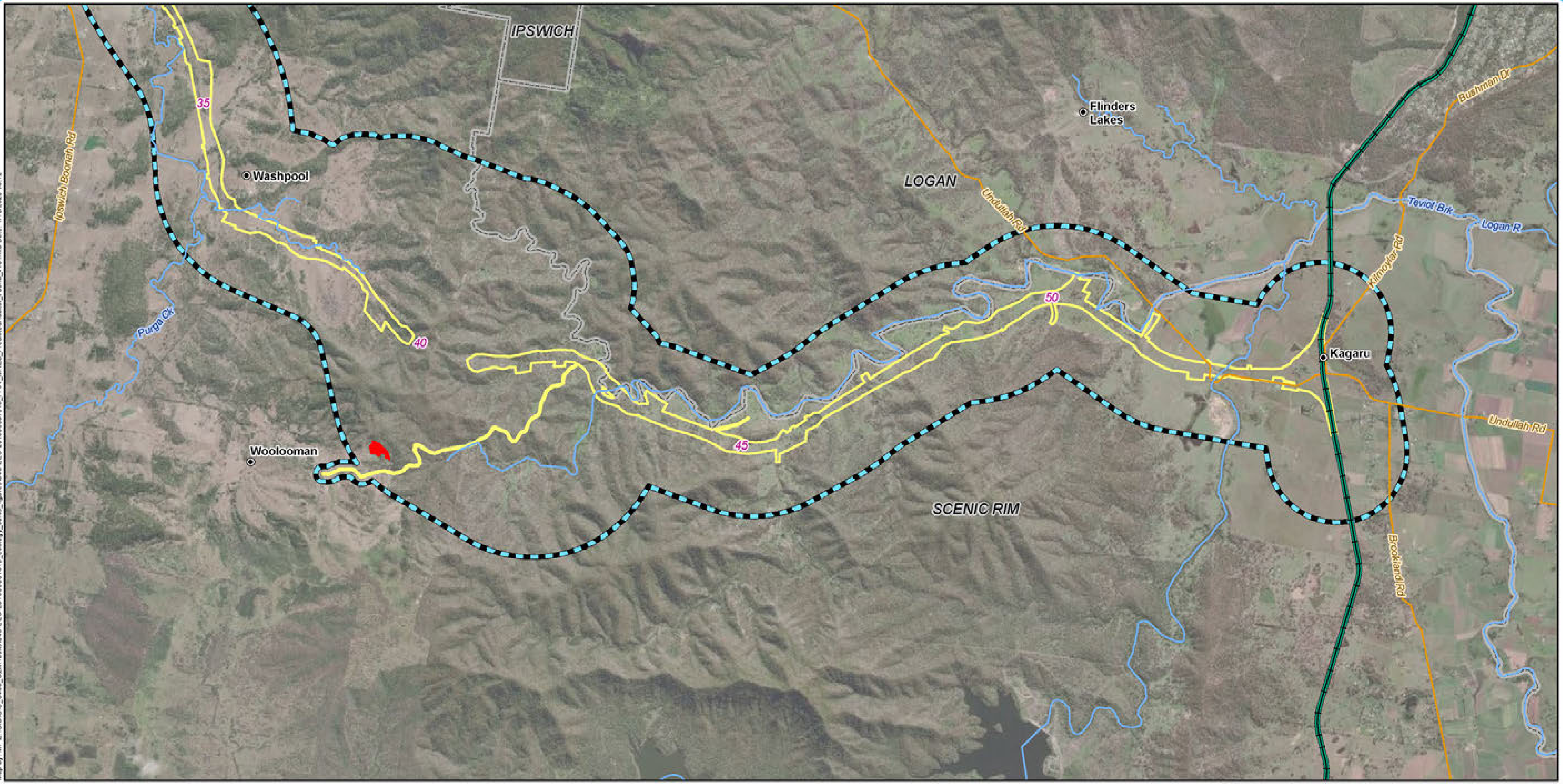
Issue date: 01/10/2020 Version: 0

Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Australian painted snipe (*Rostratula australis*)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Legend

- 5 Chainage (km)
- Localities
- Existing rail
- K2ARB project alignment
- Watercourses
- Major roads
- Minor roads
- EIS disturbance footprint (surface disturbance only)
- MNES study area
- Local Government Areas
- Habitat critical to the survival of the species

Note that due to topography constraints and the realigment of Wild Pig Creek Road and to minimise impacts on Dugandan Creek, there is a small area not within the disturbance footprint between Chainage 42 and 44.

A3 scale: 1:60,000

0 0.5 1 1.5 2 2.5km

Future Freight
Integrating Community, Environment and Engineering

Issue date: 01/10/2020 Version: 0
Coordinate System: GDA 1994 MGA Zone 56

Calvert to Kagaru

Predicted Habitat: Black-breasted button-quail (*Turnix melanogaster*)