

APPENDIX

H

INLAND
RAIL

Hydrology and Flooding Technical Report

PART 2 OF 3

Appendix A

NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT



AR^{TC}

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

APPENDIX

INLAND
RAIL

H

Hydrology and Flooding Technical Report

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NORTH STAR TO NSW/QUEENSLAND BORDER ENVIRONMENTAL IMPACT STATEMENT



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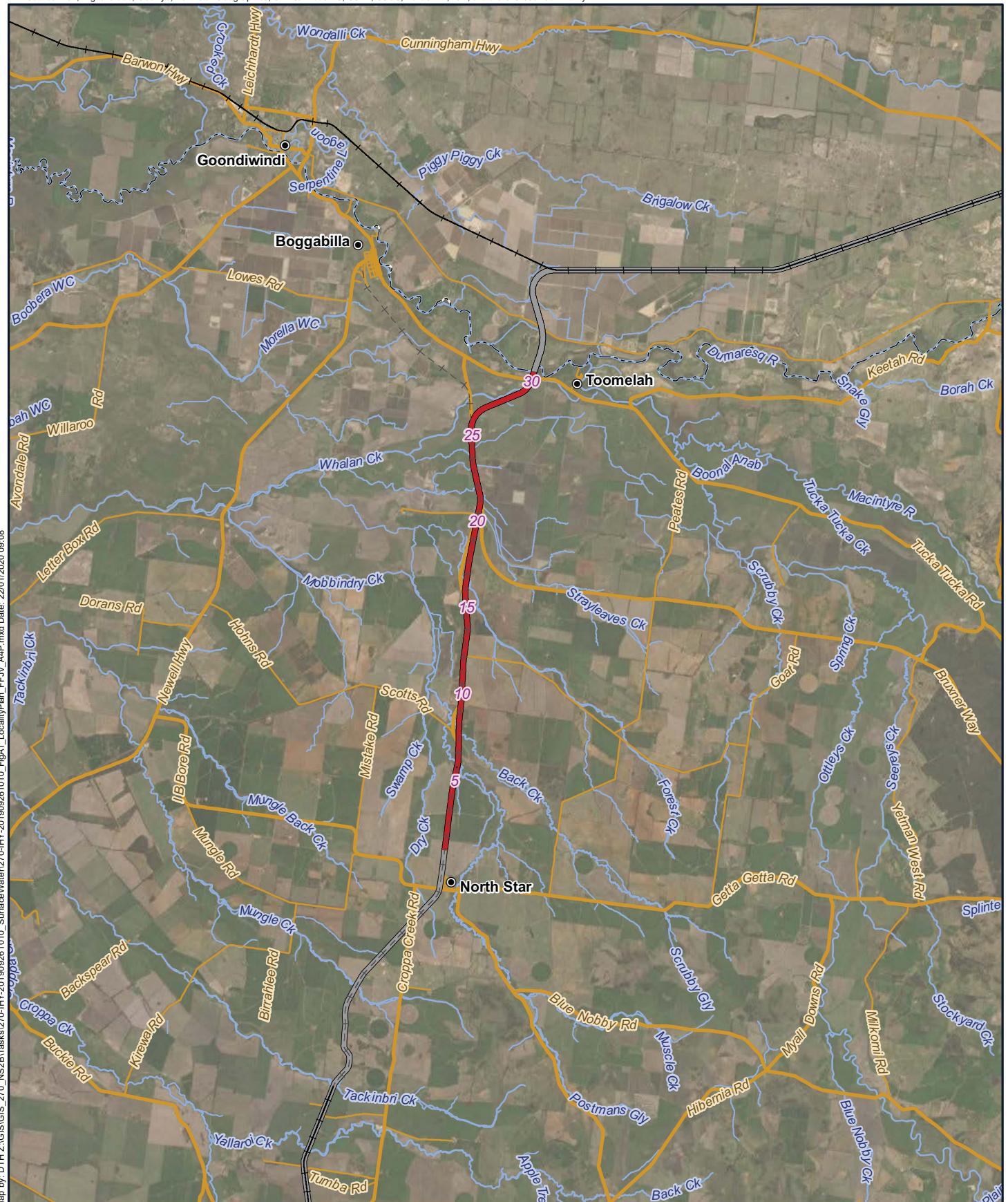
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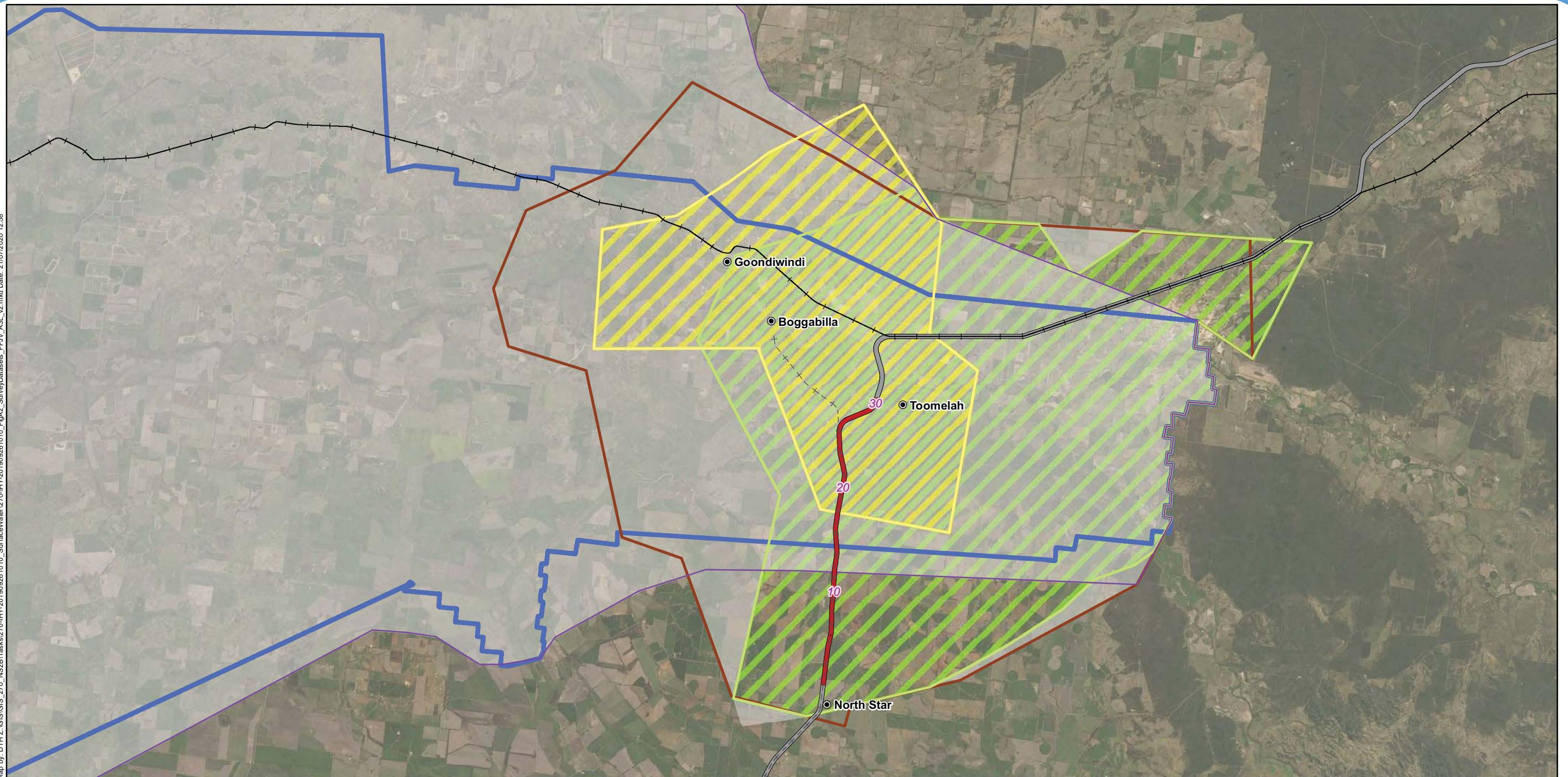


Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Major roads
- Minor roads
- Watercourses

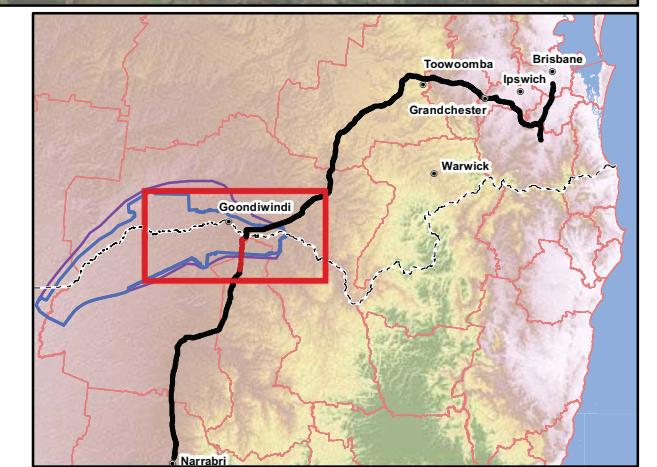


A4 scale: 1:300,000
0 1.5 3 4.5 6 7.5km

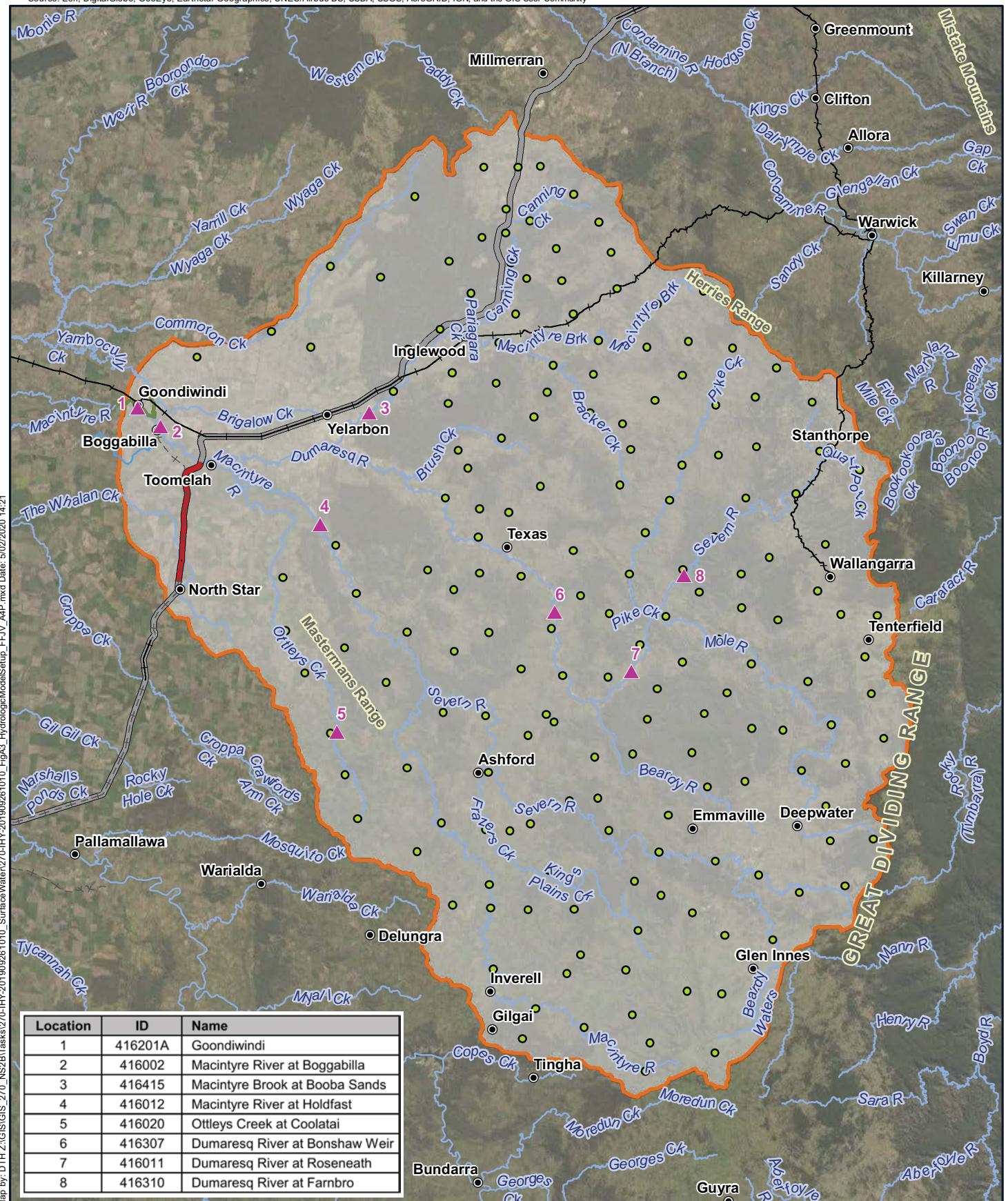


Legend

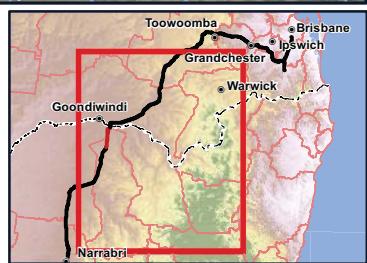
- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- LiDAR extent (2019)
- LiDAR extent (2015)
- 10m LiDAR region
- SRTM region
- DPIE model extents
- Sub-model extent



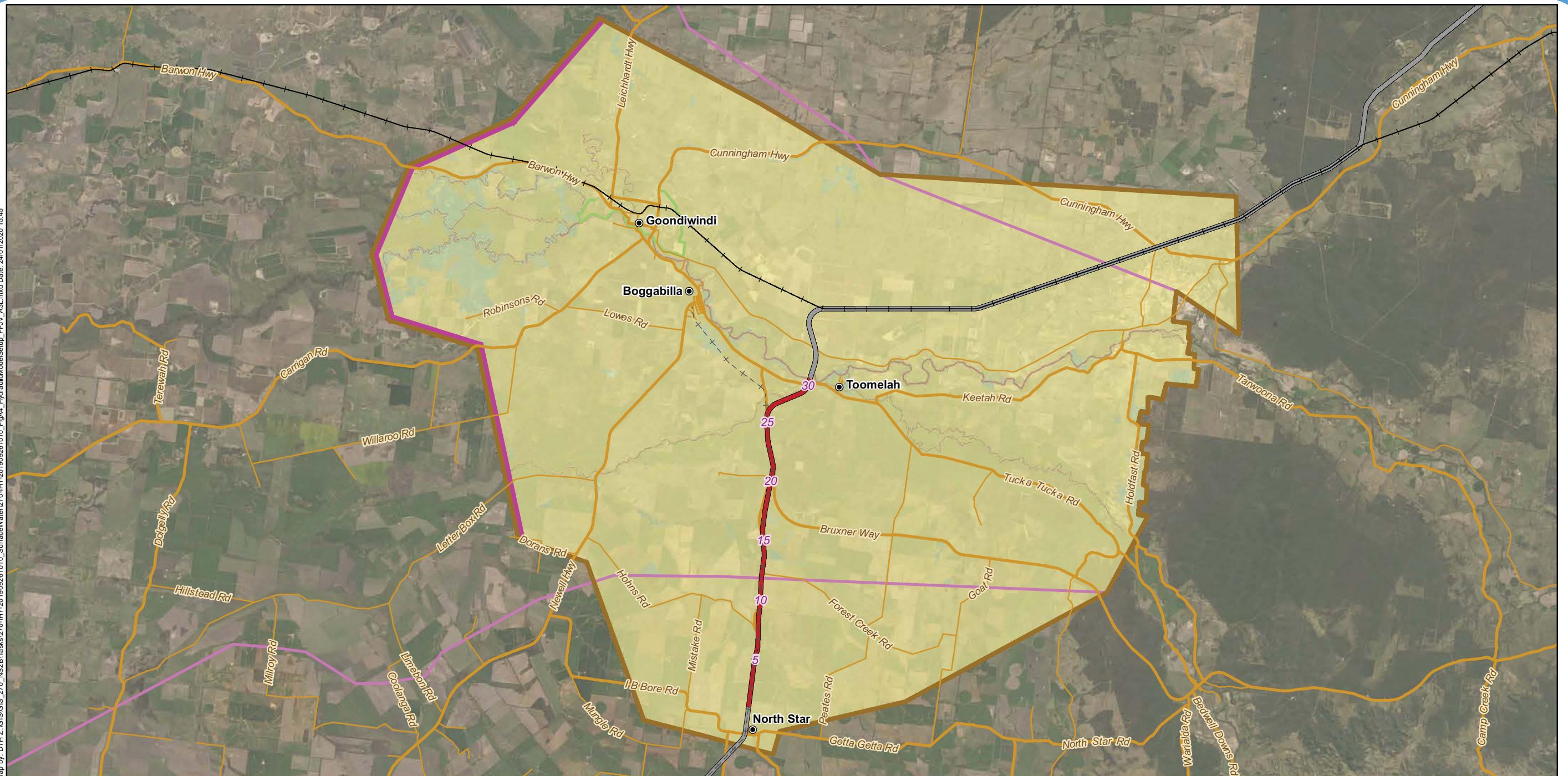
A3 scale: 1:400,000
0 4.5 9 13.5 18 22.5km

**Legend**

- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- ▲ Stream gauge locations
- Sub-catchment centroids
- Catchment boundary



A4 scale: 1:1,200,000
0 7.5 15 22.5 30 37.5 km

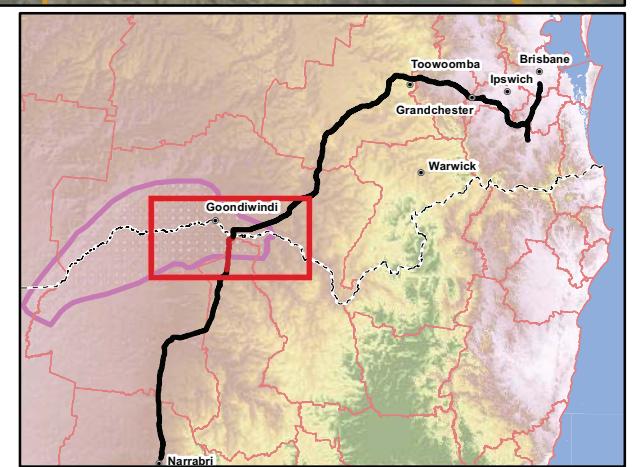


Legend

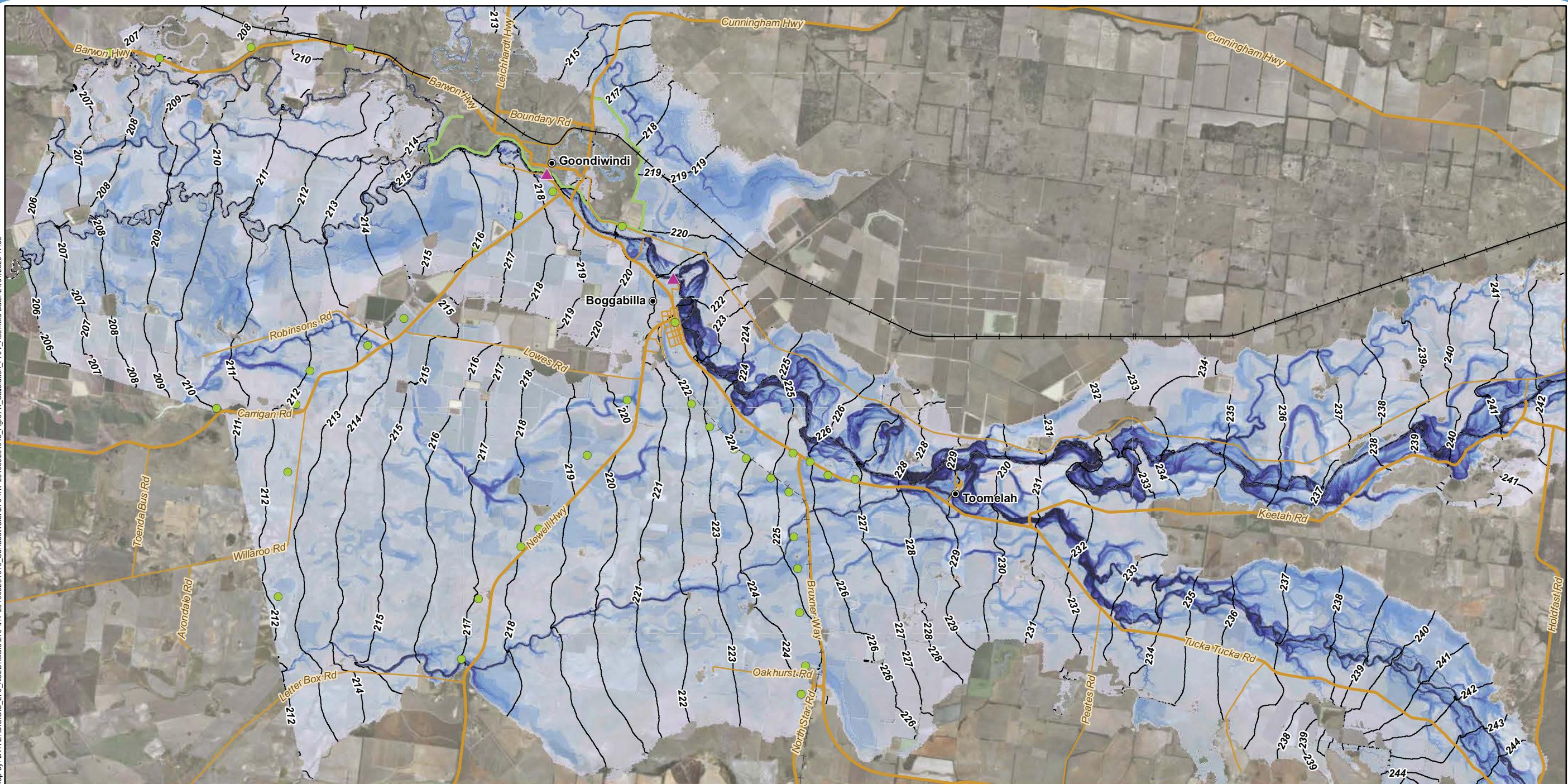
- 5 Chainage (km)
- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Major roads
- Minor roads
- - - NSW/QLD border
- Goondiwindi levee
- DPIE model extents
- Sub-model extent
- Downstream boundary

Materials

- Floodplain
- Vegetated floodplain
- Waterway



A3 scale: 1:350,000
0 4 8 12 16 20km



Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Goondiwindi levee
- 1m contour (mAHM)
- ▲ Stream gauge locations
- Flood marker (1976)

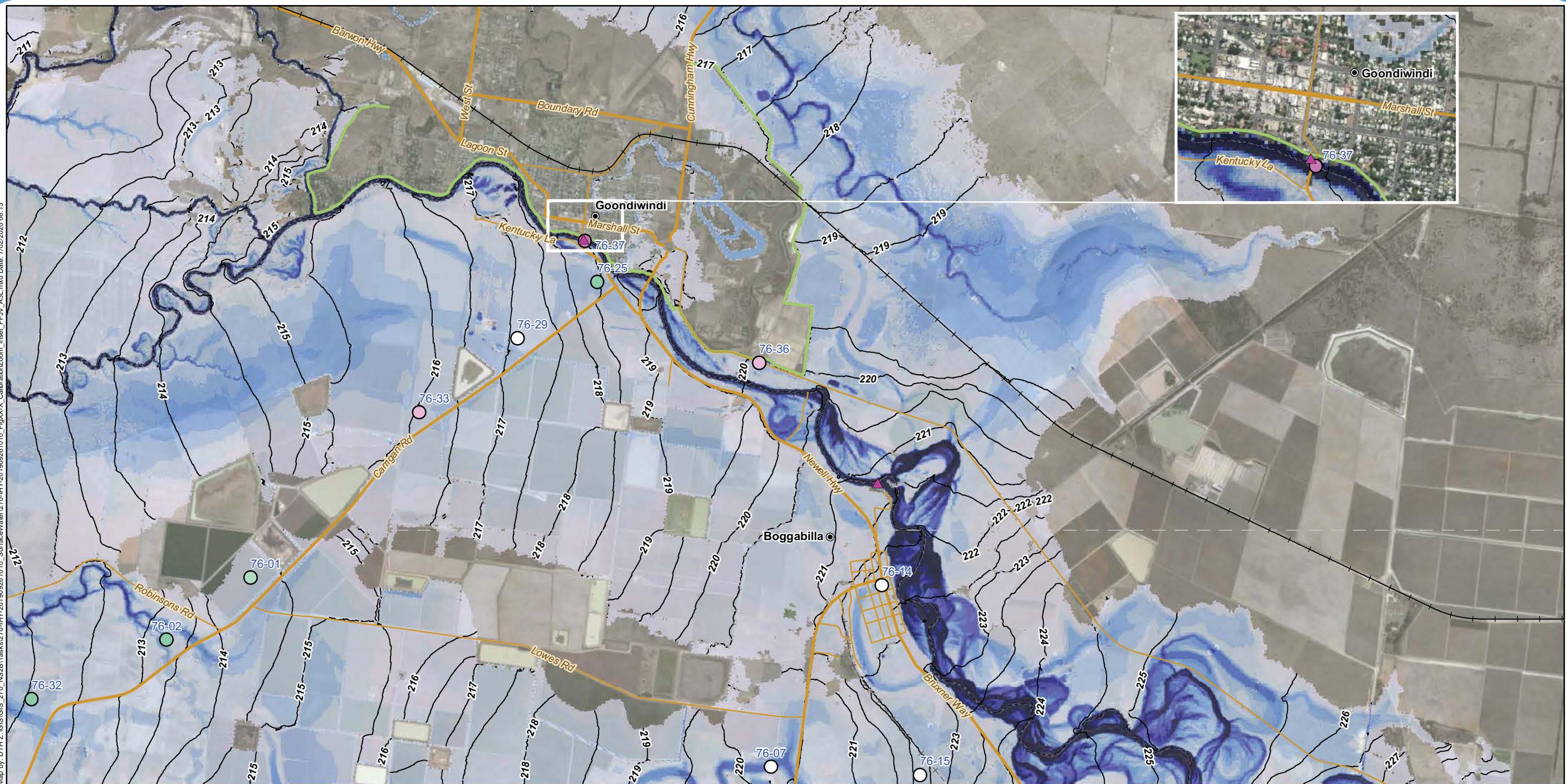
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:175,000

0 2 4 6 8 10km



Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border

- ▲ Stream gauge locations
- Goondiwindi levee
- 0.5m contour (mAHD)

Depth (m)

0 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0

Flood marker difference (m)

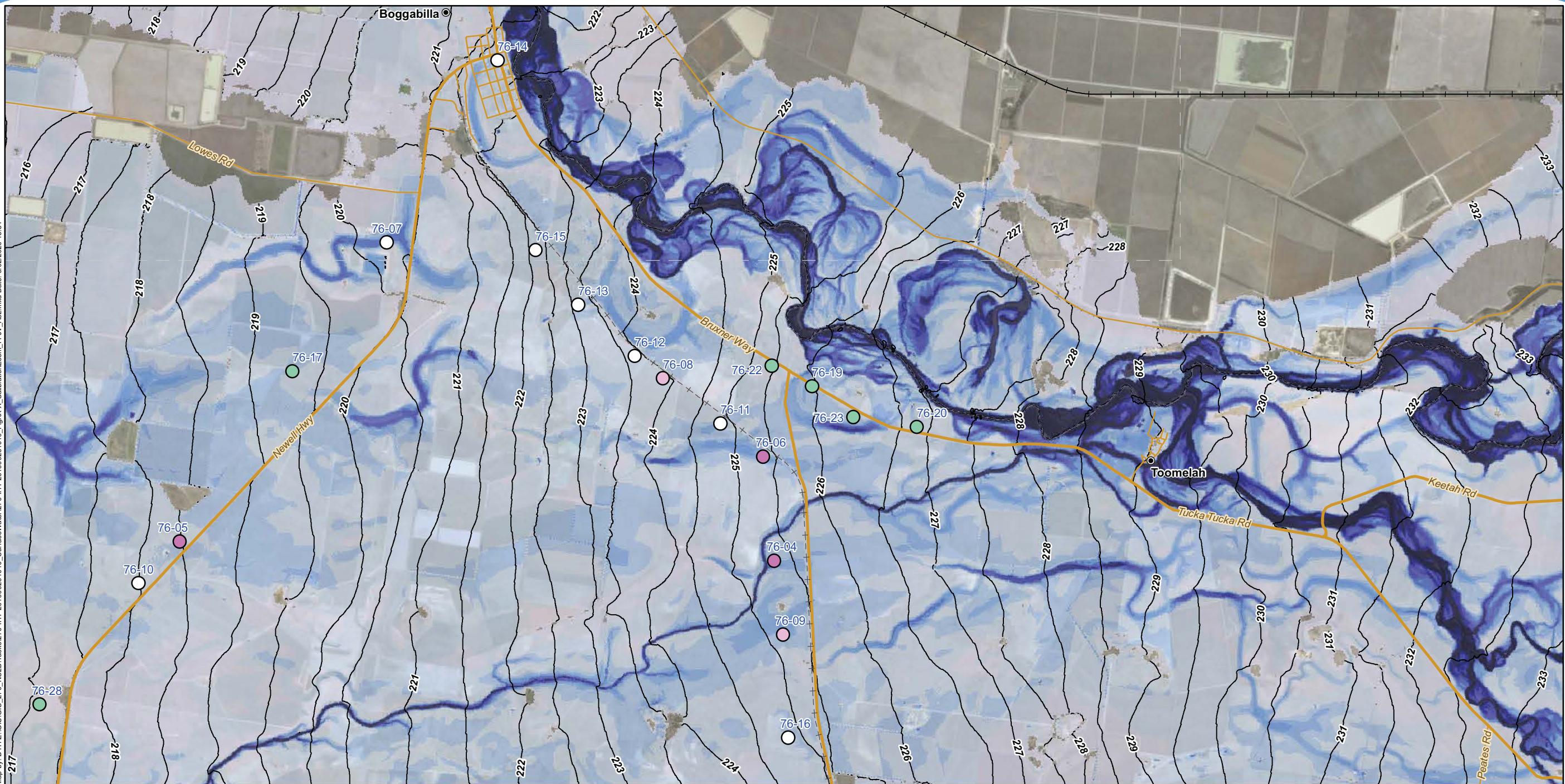
< -0.3m
-0.3 to -0.15m
-0.15 to 0.15m
0.15m to 0.30m
> 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000

0 1 2 3 4 5km



Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- NSW/QLD border

— 0.5m contour (mAHD)

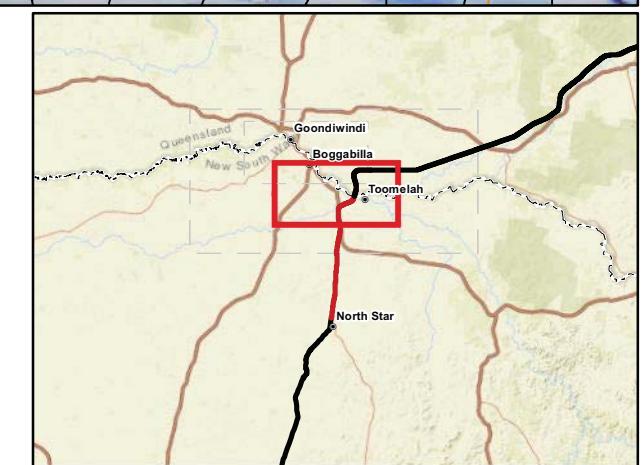
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	

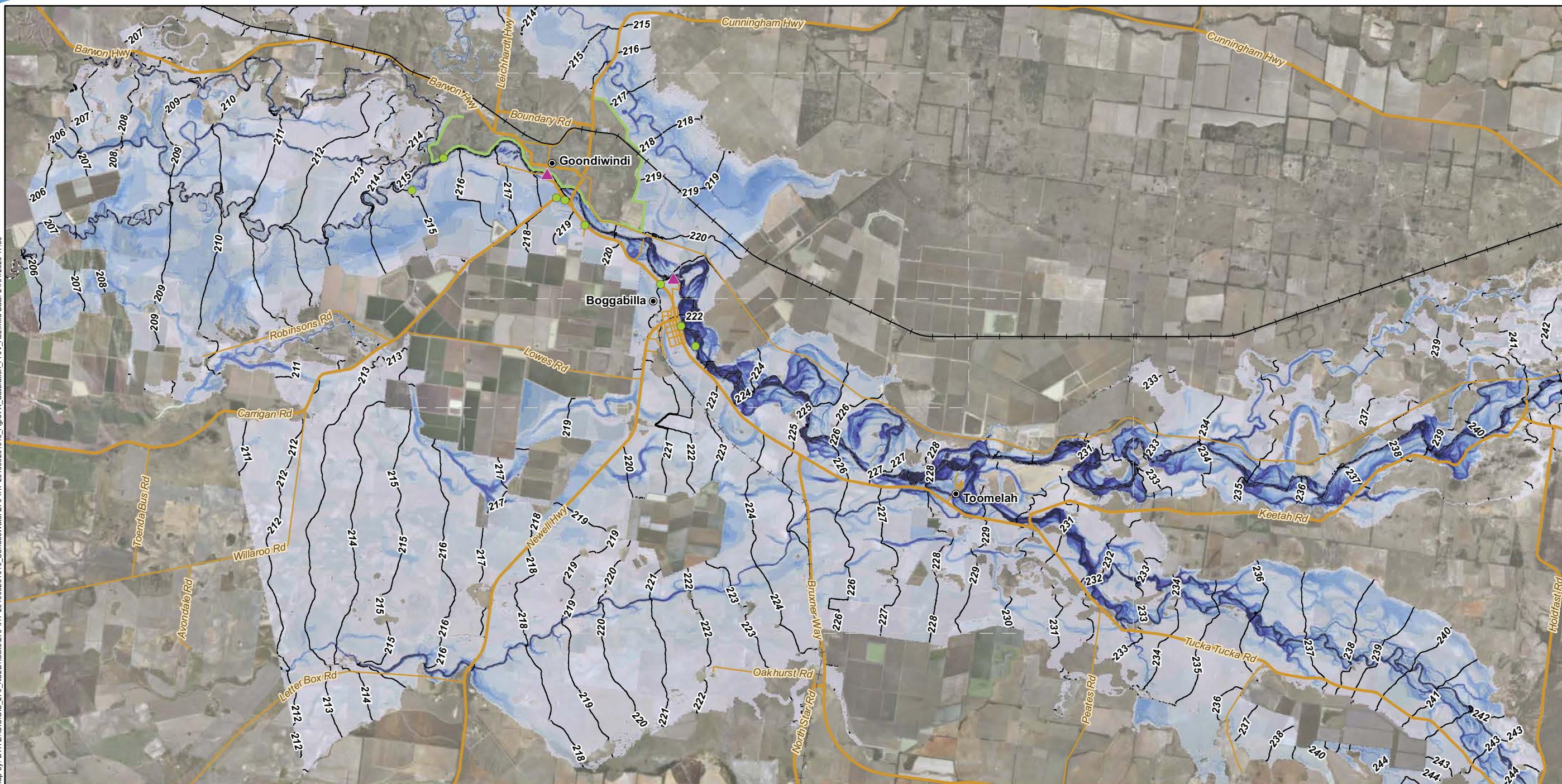
Flood marker difference (m)

< -0.3m
-0.3 to -0.15m
-0.15 to 0.15m
0.15m to 0.30m
> 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000
 0 1 2 3 4 5km

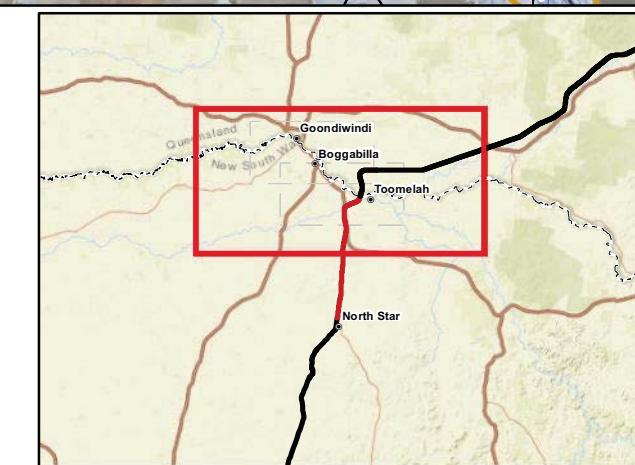


Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Goondiwindi levee
- 1m contour (mAHD)
- ▲ Stream gauge locations
- Flood marker (1996)

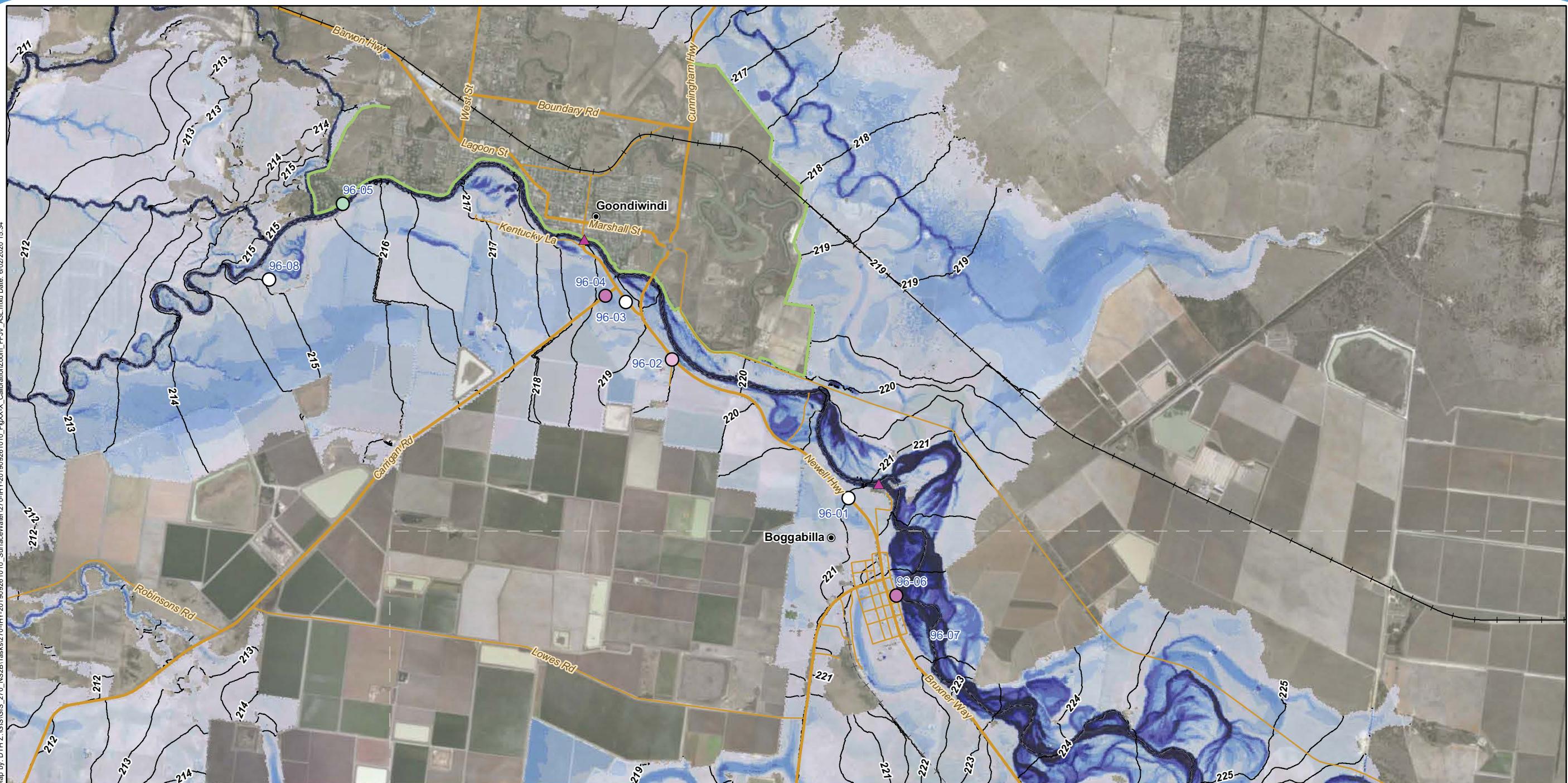
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:175,000
 0 2 4 6 8 10km

North Star to NSW/QLD border
Figure A6-A:
 1996 Calibration Event - Peak Depths and Water Surface Levels



Legend

- Localities
- ▲ Stream gauge locations
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- NSW/QLD border
- Goondiwindi levee
- 0.5m contour (mAHD)

Depth (m)

0 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0

Flood marker difference (m)

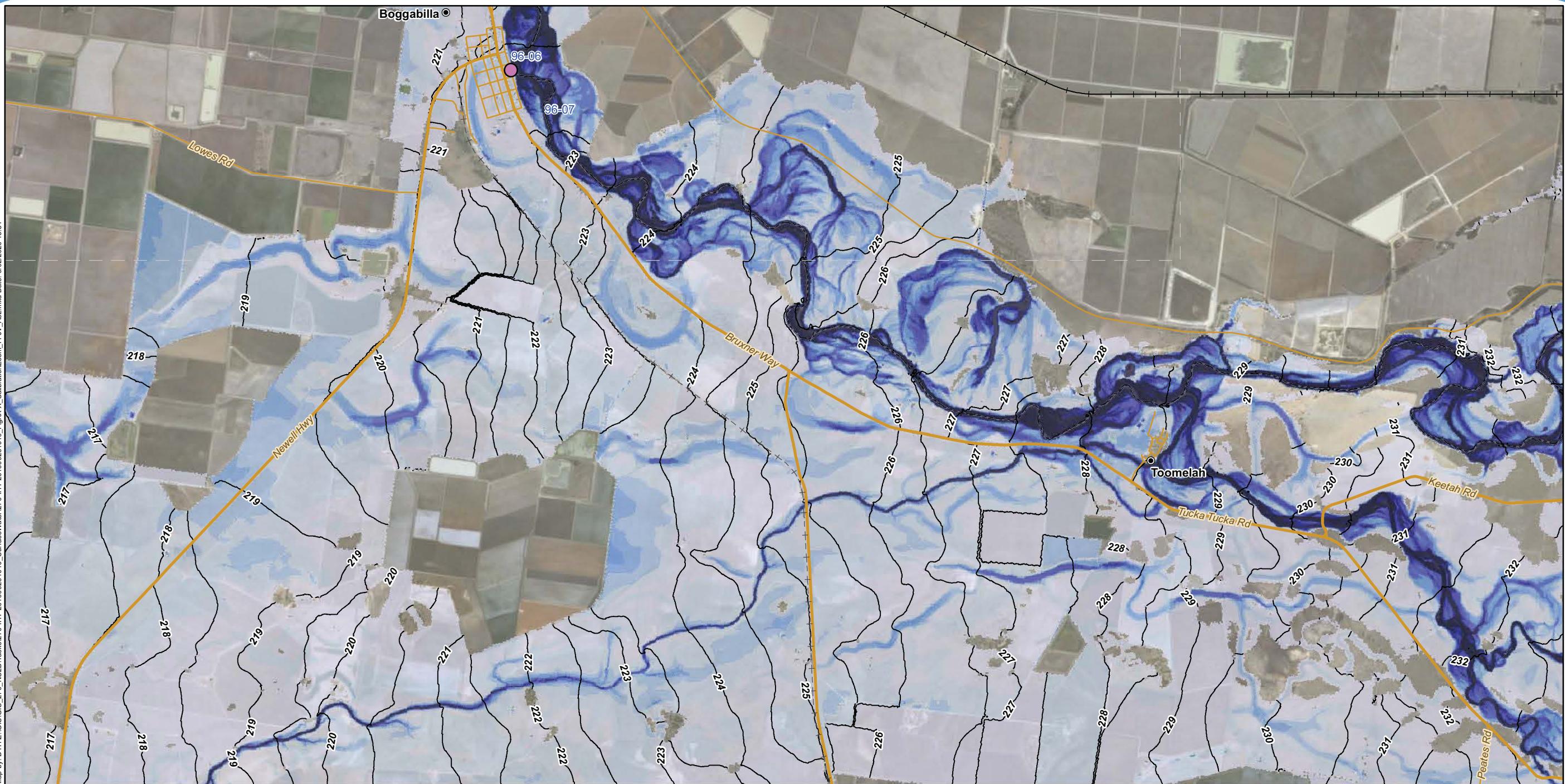
< -0.3m
-0.3 to -0.15m
-0.15 to 0.15m
0.15m to 0.30m
> 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000

0 1 2 3 4 5km



Legend

- Localities
- 0.5m contour (mAHD)
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- NSW/QLD border

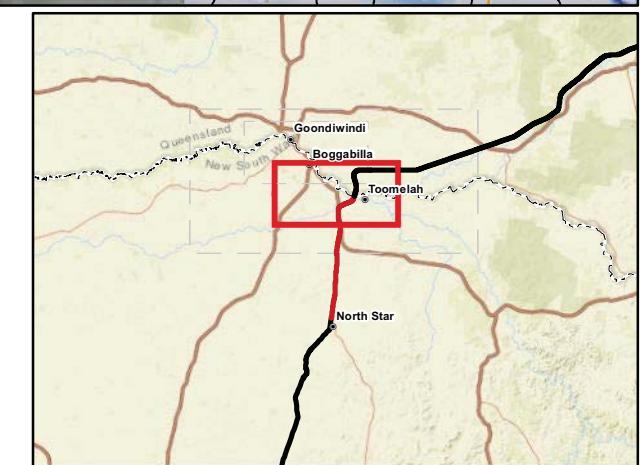
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	

Flood marker difference (m)

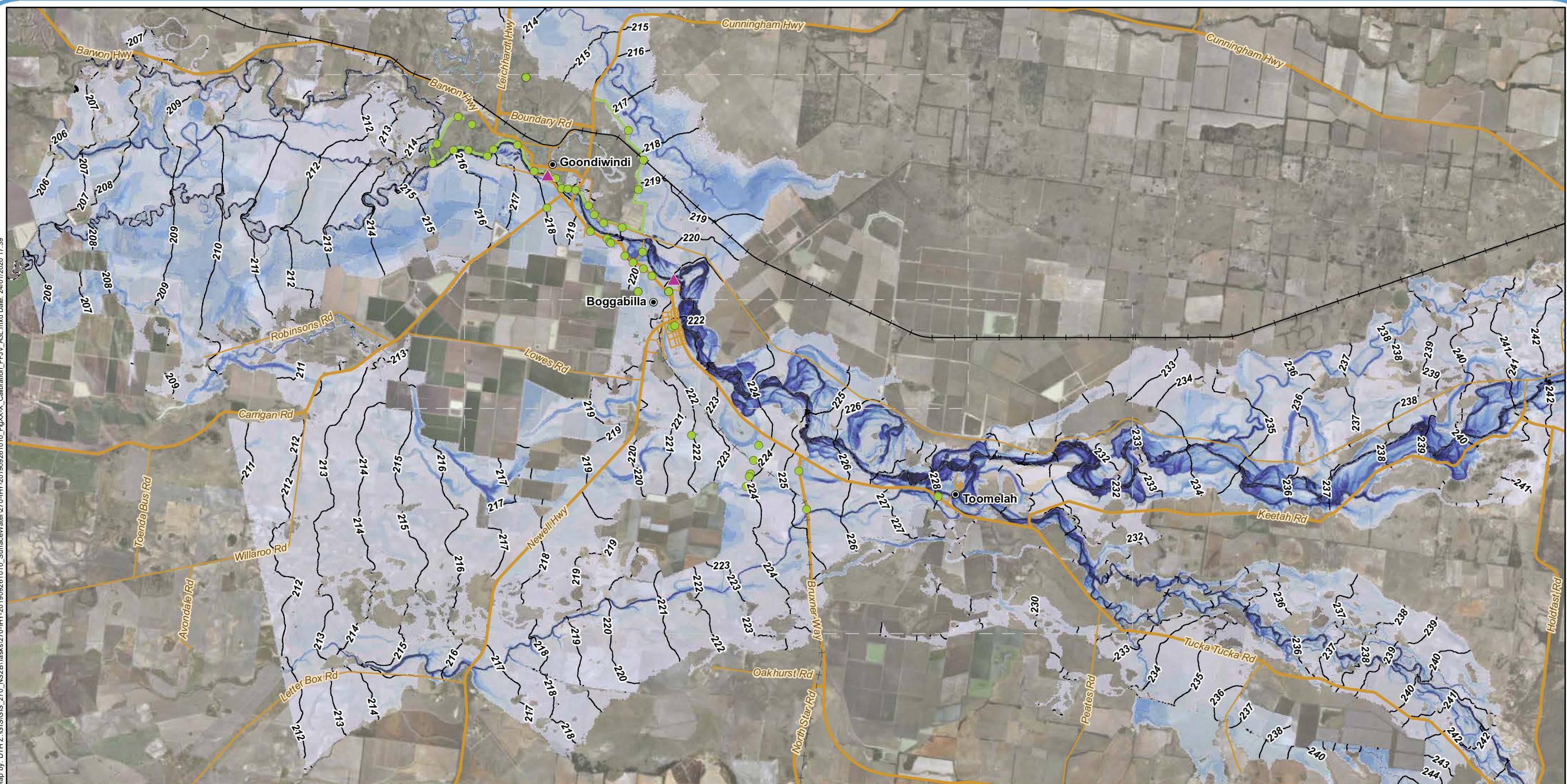
< -0.3m
-0.3 to -0.15m
-0.15 to 0.15m
0.15m to 0.30m
> 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000

0 1 2 3 4 5km



Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Goondiwindi levee
- 1m contour (mAHM)
- ▲ Stream gauge locations
- Flood marker (2011)

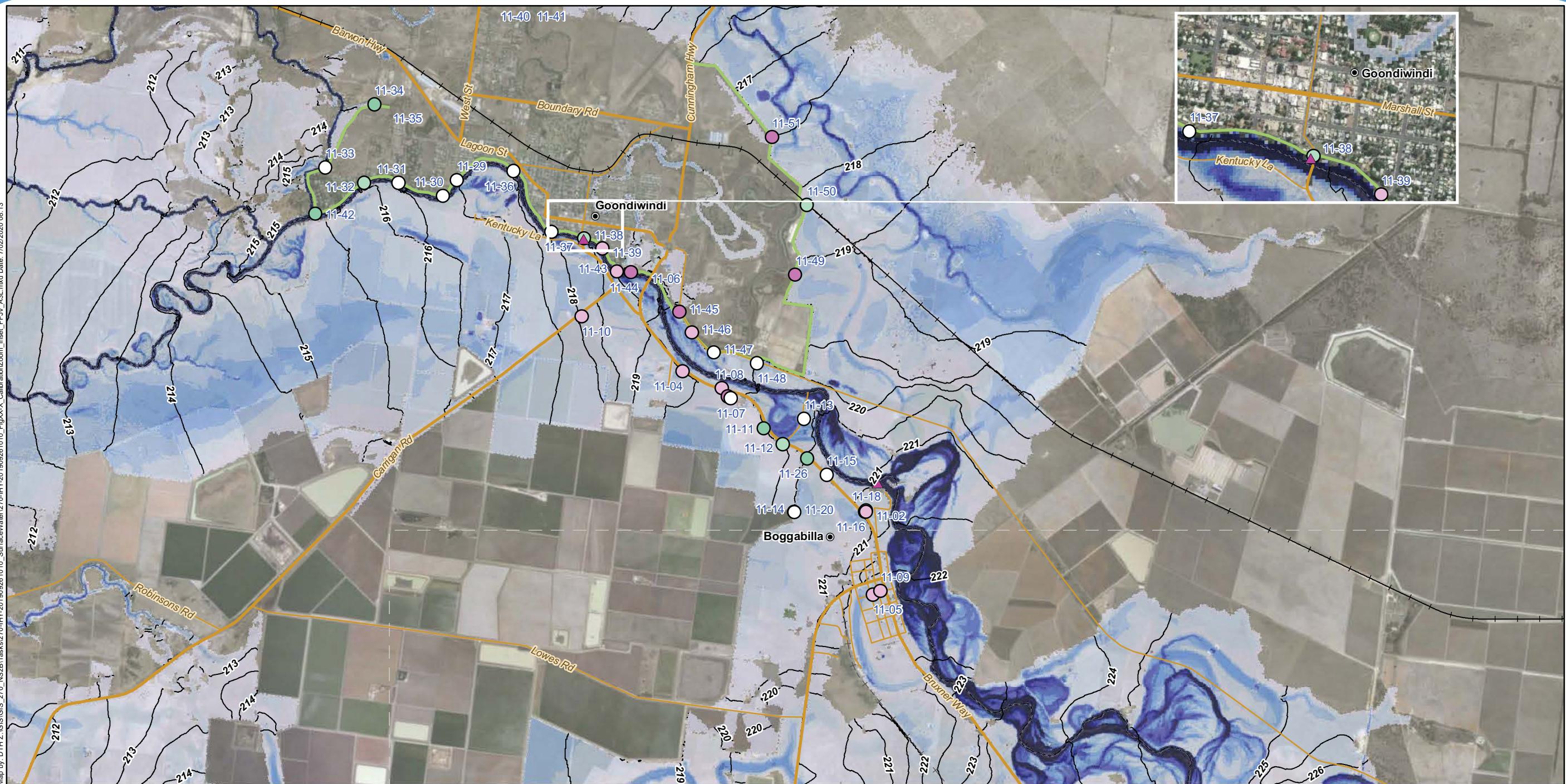
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:175,000

0 2 4 6 8 10km



Legend

- Localities
- ▲ Stream gauge locations
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- NSW/QLD border
- Goondiwindi levee
- 0.5m contour (mAHD)

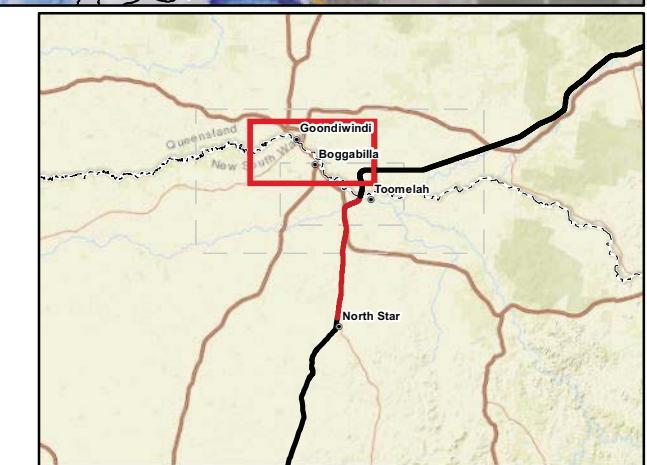
Depth (m)

0 - 0.5
0.5 - 1.0
1.0 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3.0

Flood marker difference (m)

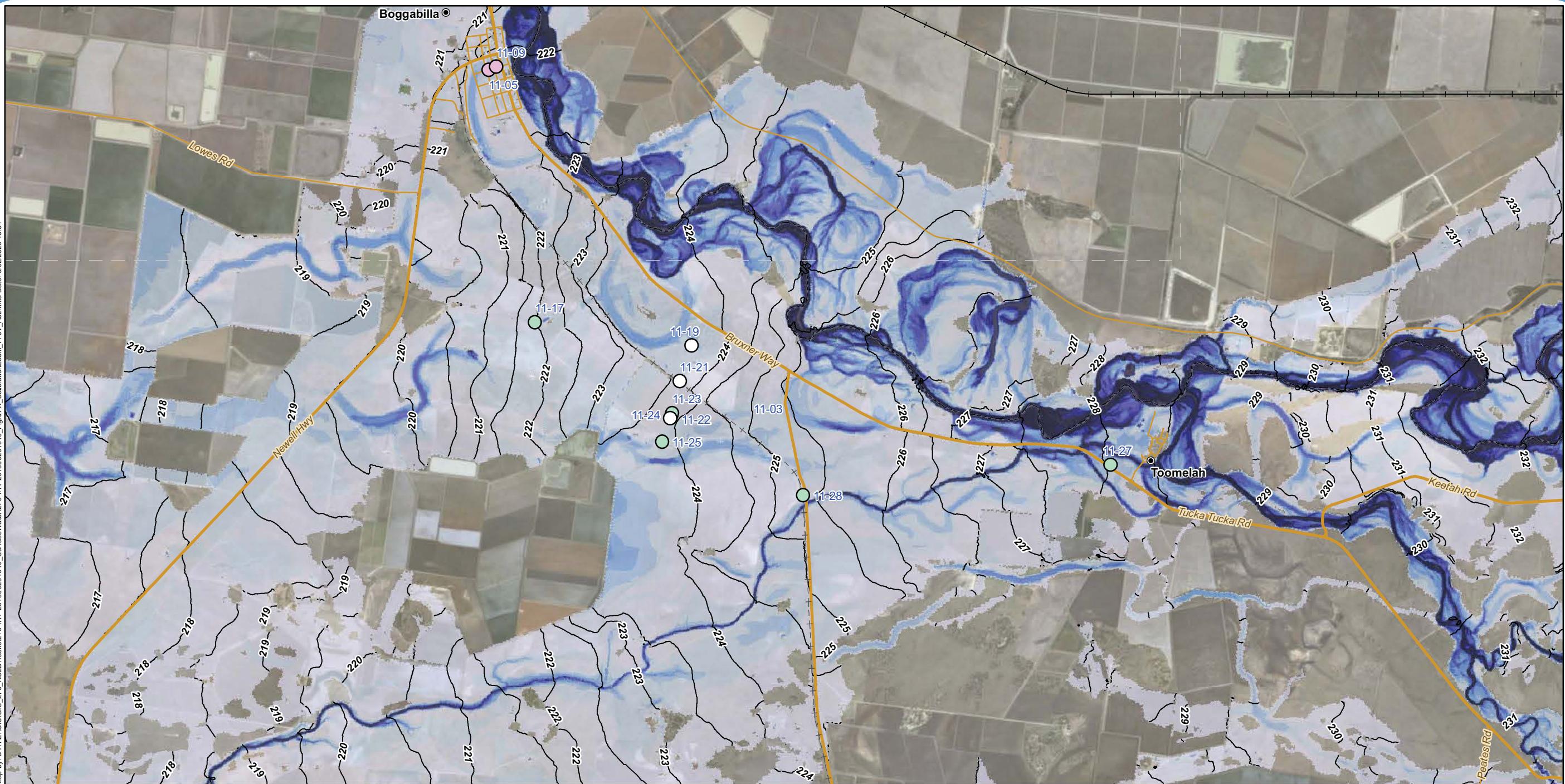
< -0.3m
-0.3 to -0.15m
-0.15 to 0.15m
0.15m to 0.30m
> 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000

0 1 2 3 4 5km



Legend

- Localities
- 0.5m contour (mAHD)
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- NSW/QLD border

— 0.5m contour (mAHD)

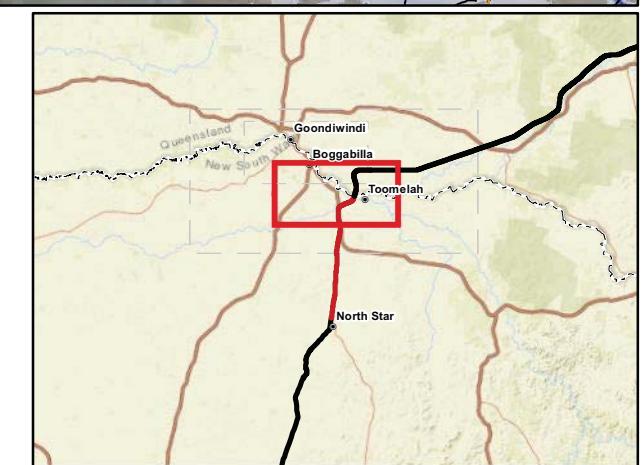
Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	

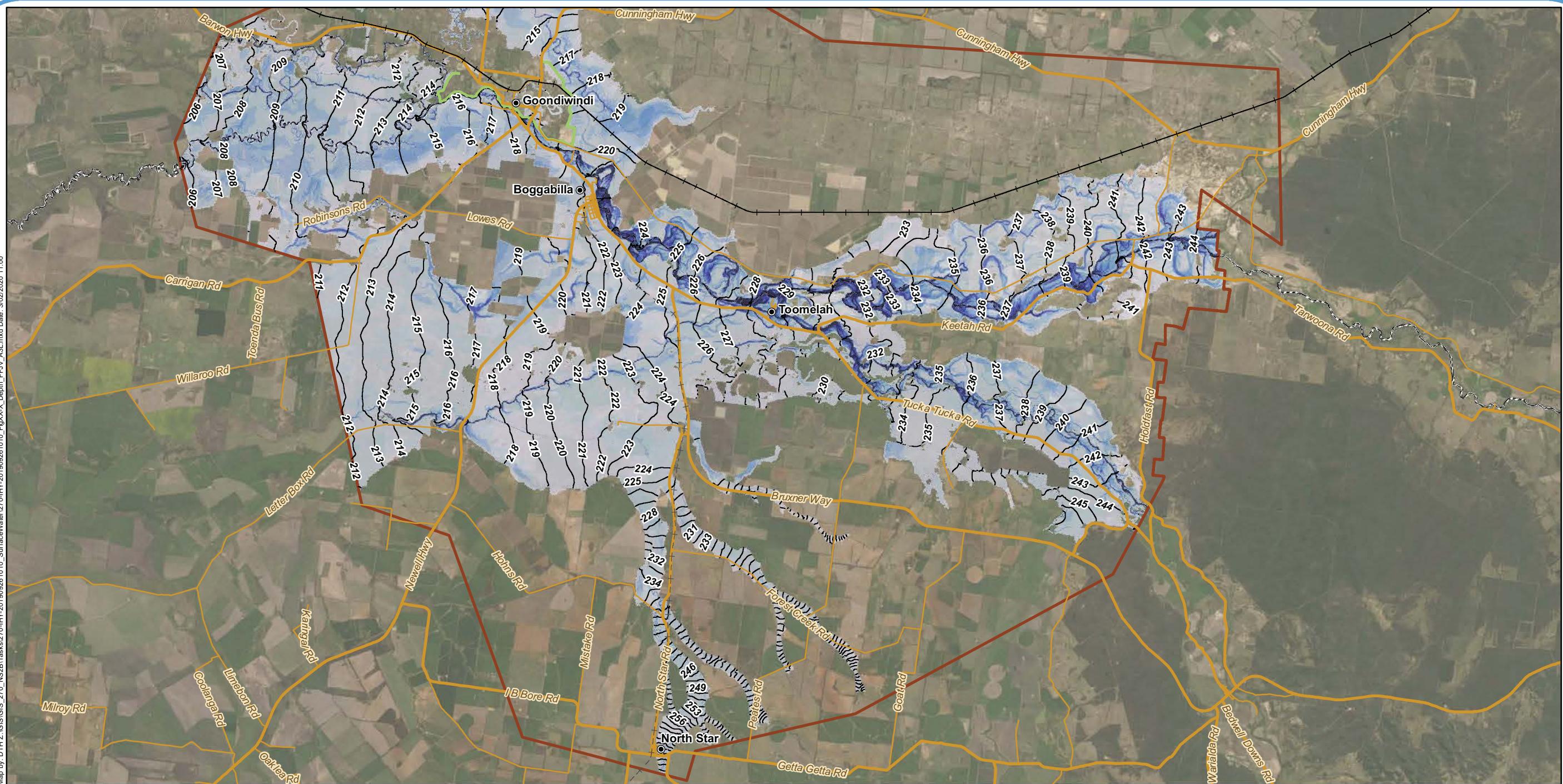
Flood marker difference (m)

● < -0.3m
● -0.3 to -0.15m
○ -0.15 to 0.15m
● 0.15m to 0.30m
● > 0.3m

76-08 Flood marker ID (year/number)



A3 scale: 1:75,000
 0 1 2 3 4 5km

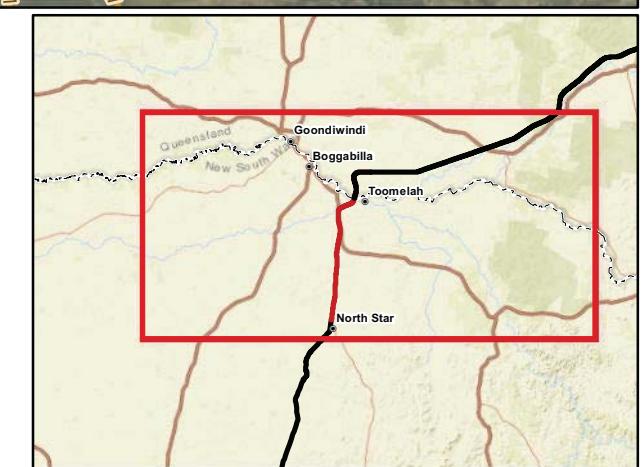


Legend

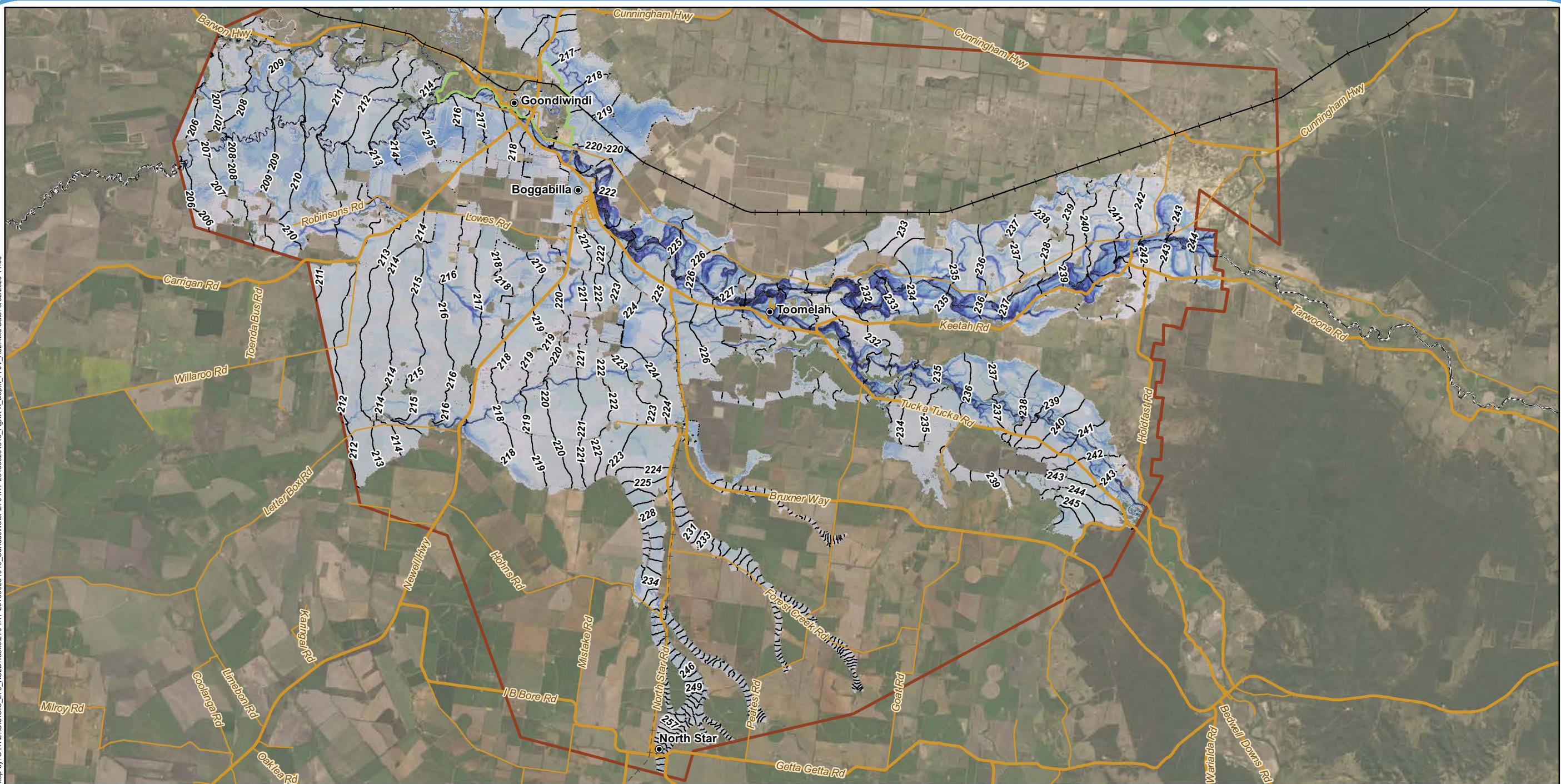
- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:275,000
 0 3 6 9 12 15 km

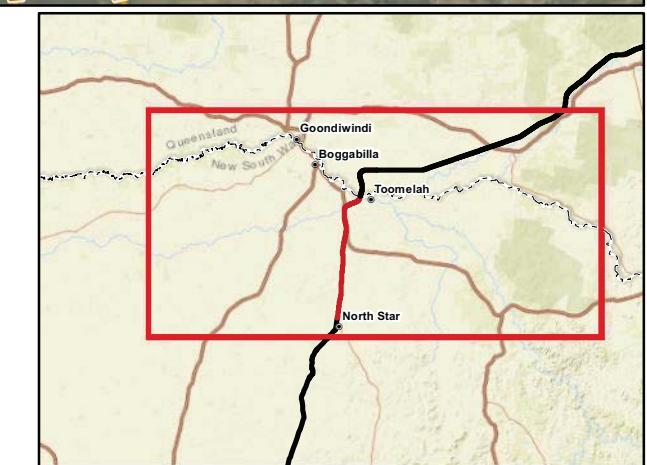


Legend

- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:275,000
 0 3 6 9 12 15 km



Legend

- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- Major roads
- Minor roads
- Watercourses

Depth (m)

0 - 0.5	2.0 - 2.5	4.0 - 4.5
0.5 - 1.0	2.5 - 3.0	4.5 - 5.0
1.0 - 1.5	3.0 - 3.5	> 5.0
1.5 - 2.0	3.5 - 4.0	0.5m contour (mAHD)



A4 scale: 1:100,000

0 0.6 1.2 1.8 2.4 3 km



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

North Star to NSW/QLD border

Figure A8-B-2: Existing Case:
 2019 LiDAR - Peak water levels - 1% AEP Event



Legend

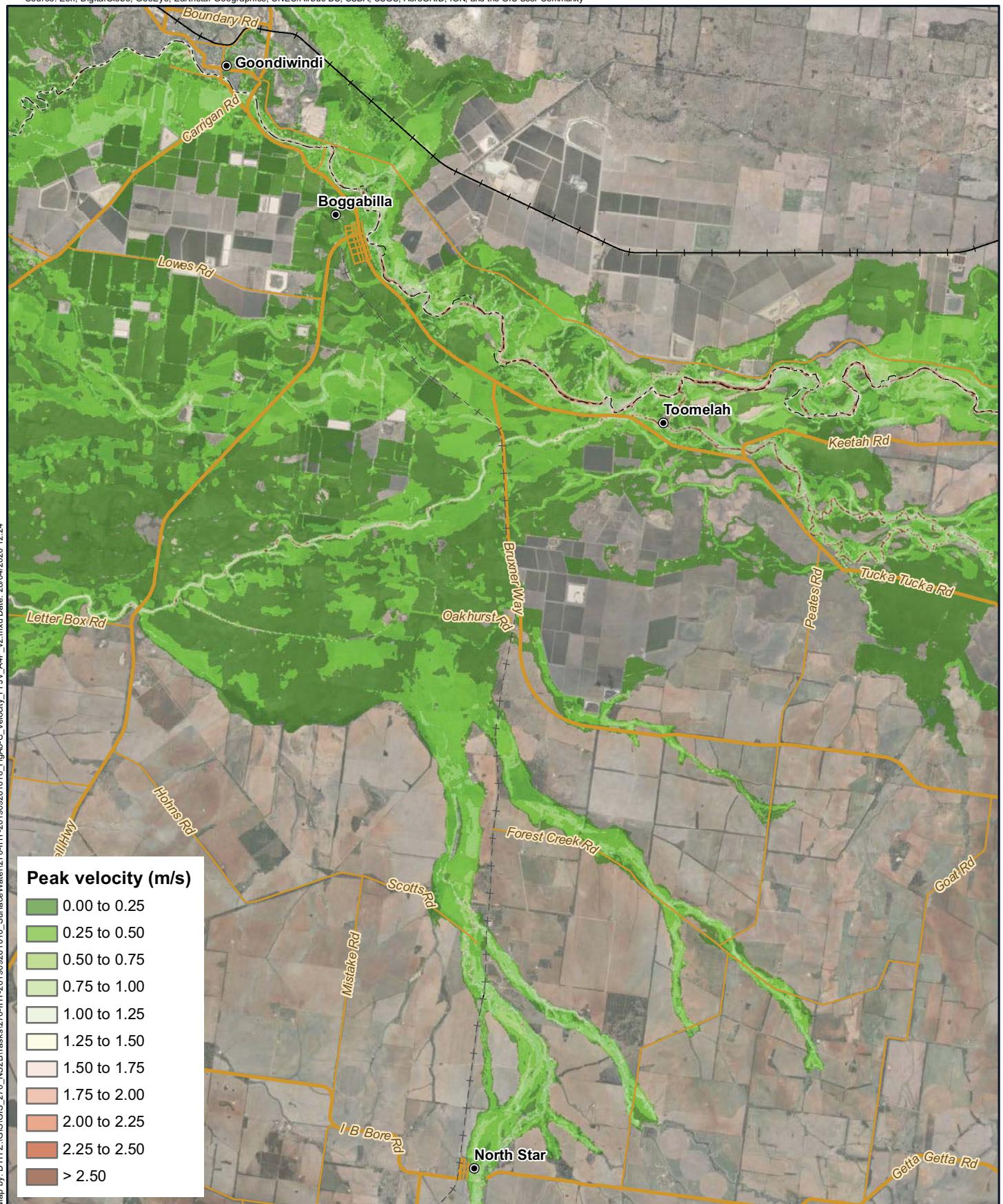
- Localities
- +-- Existing rail (non-operational)
- Major roads
- Minor roads
- Watercourses
- NSW/QLD border

Depth (m)

0 - 0.5	2.0 - 2.5	4.0 - 4.5
0.5 - 1.0	2.5 - 3.0	4.5 - 5.0
1.0 - 1.5	3.0 - 3.5	> 5.0
1.5 - 2.0	3.5 - 4.0	0.5m contour (mAHD)

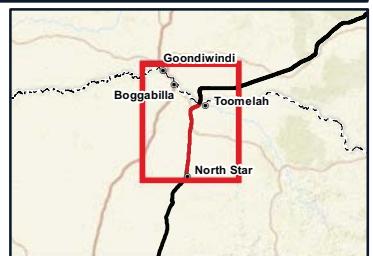


A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

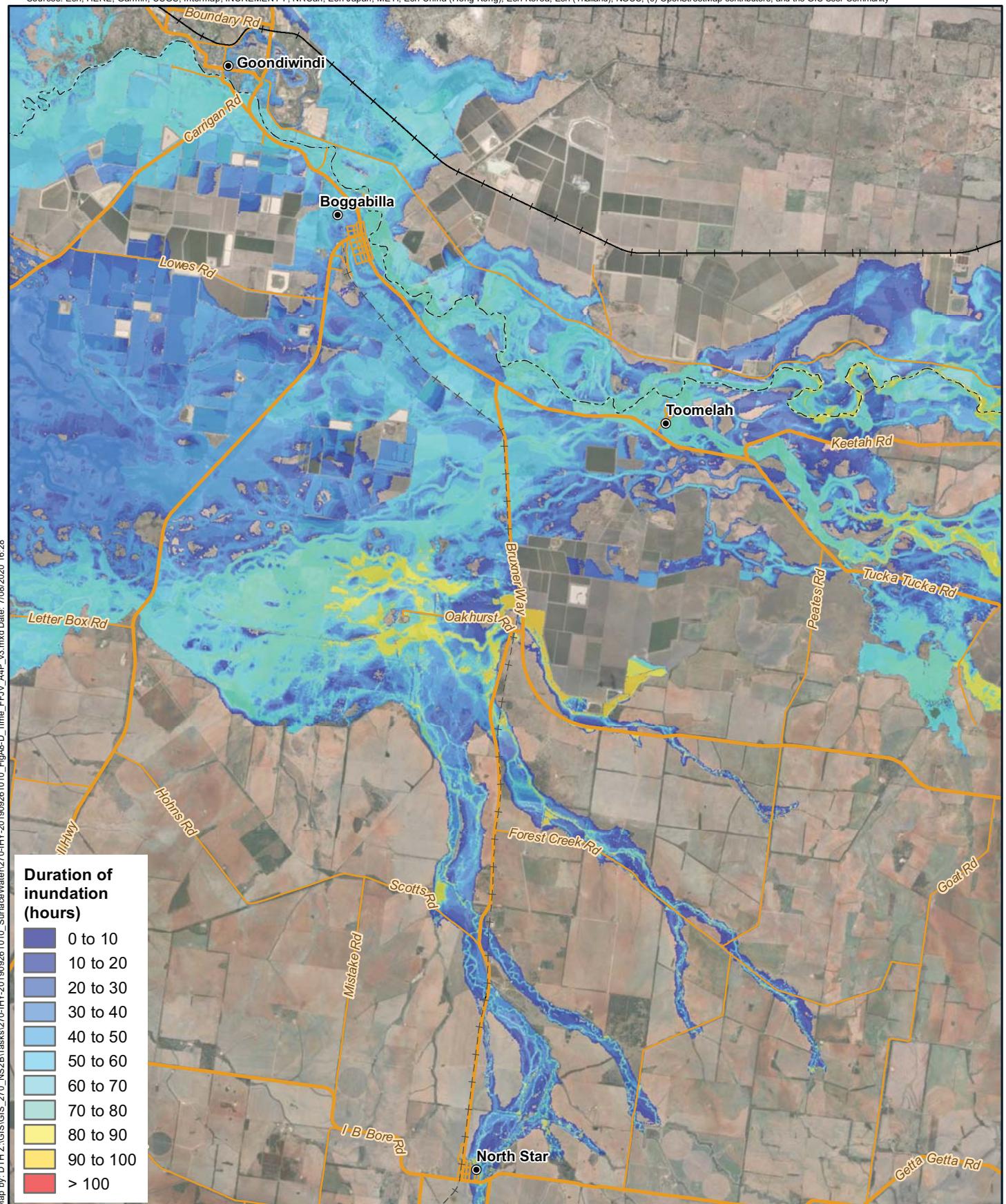


Legend

- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border

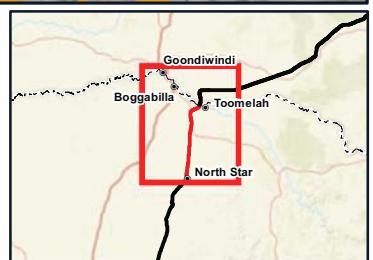


A4 scale: 1:200,000
 0 1 2 3 4 5km

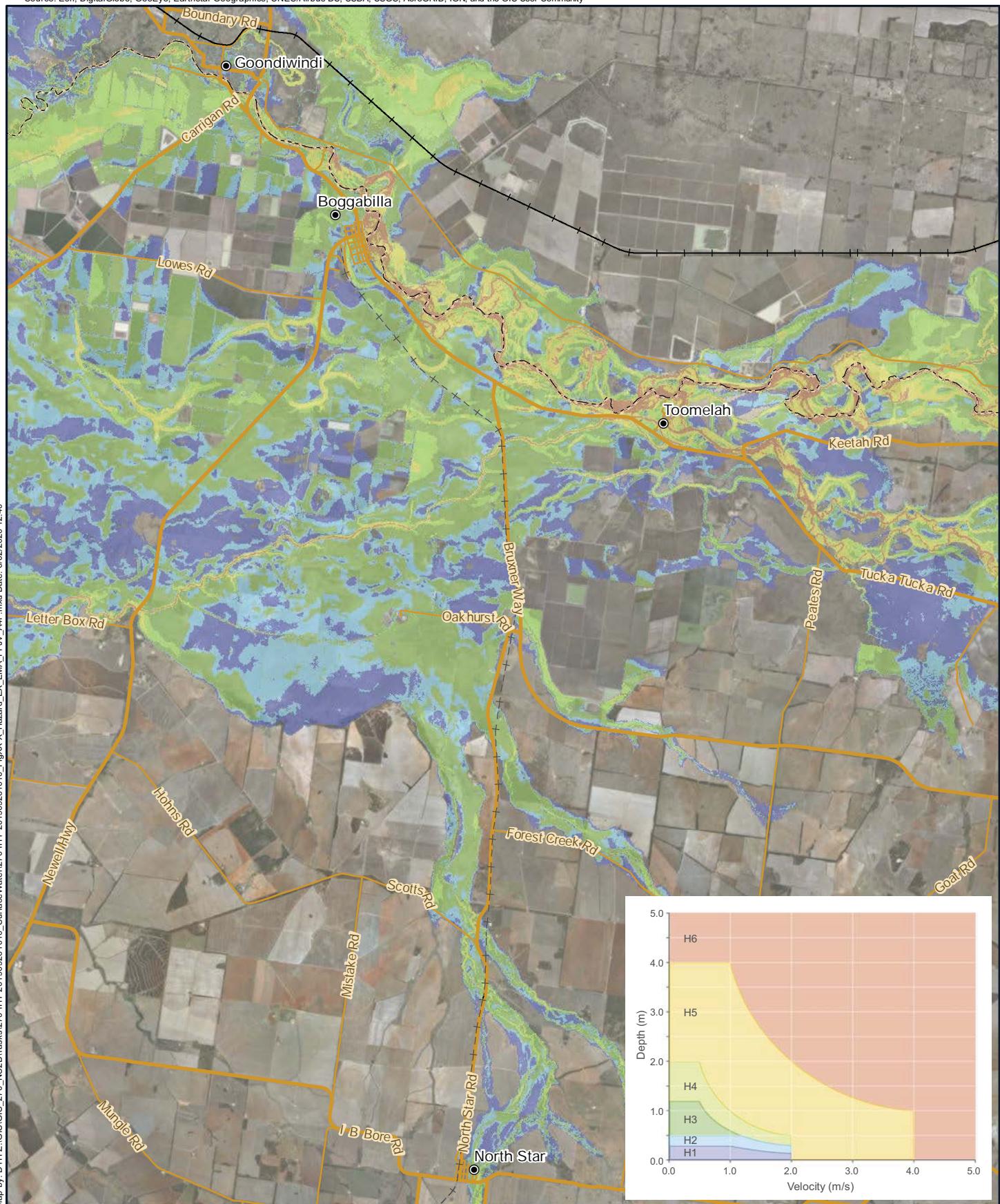


Legend

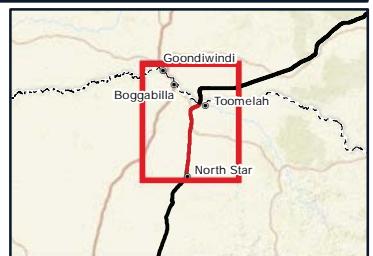
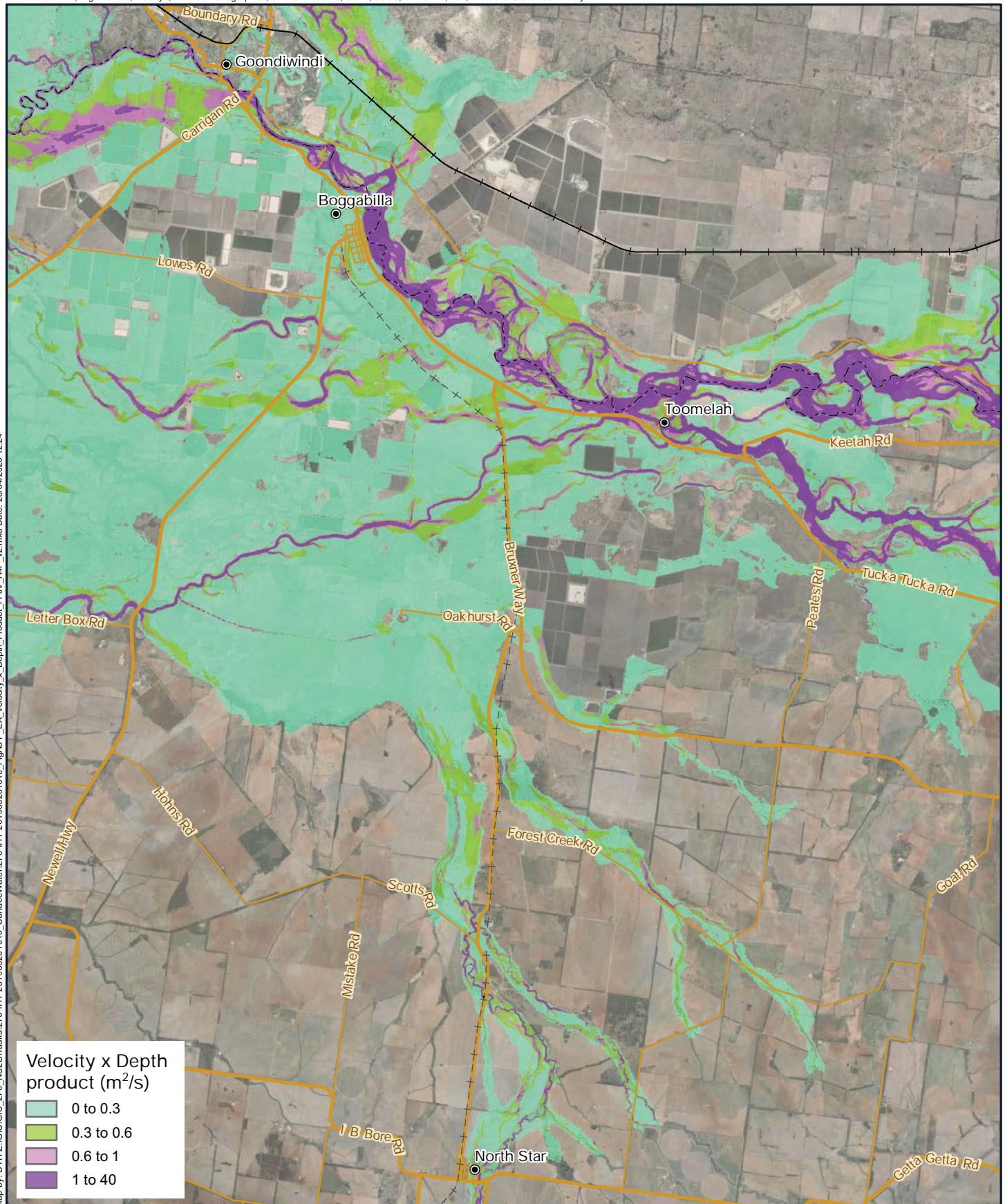
- | | |
|--------------------------------------|----------------------|
| ● Localities | — Major roads |
| —+— Existing rail (operational) | — Minor roads |
| -+-- Existing rail (non-operational) | - - - NSW/QLD border |



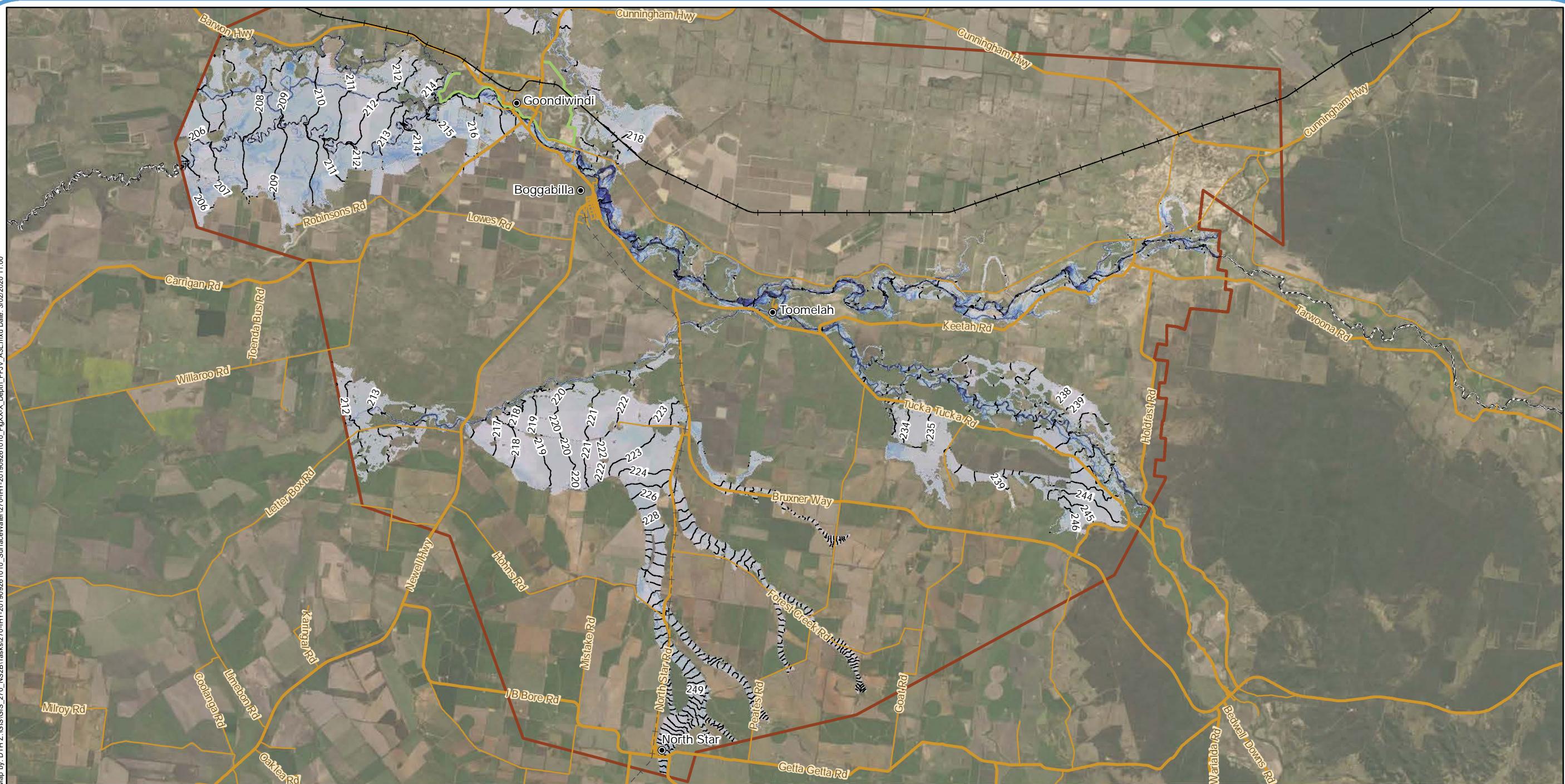
A4 scale: 1:200,000
 0 1 2 3 4 5km



A4 scale: 1:200,000
 0 1 2 3 4 5km

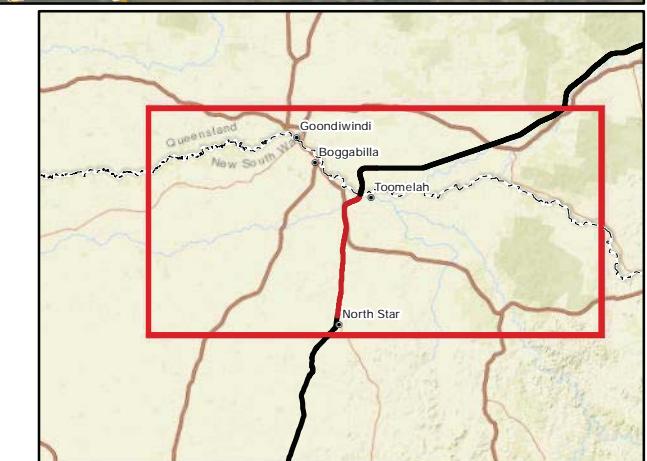
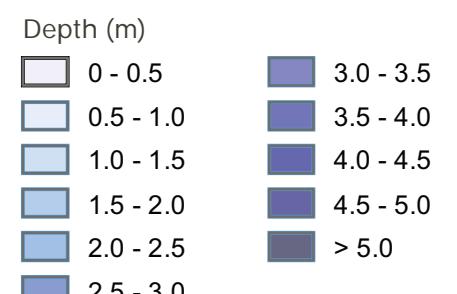


A4 scale: 1:200,000
 0 1 2 3 4 5km

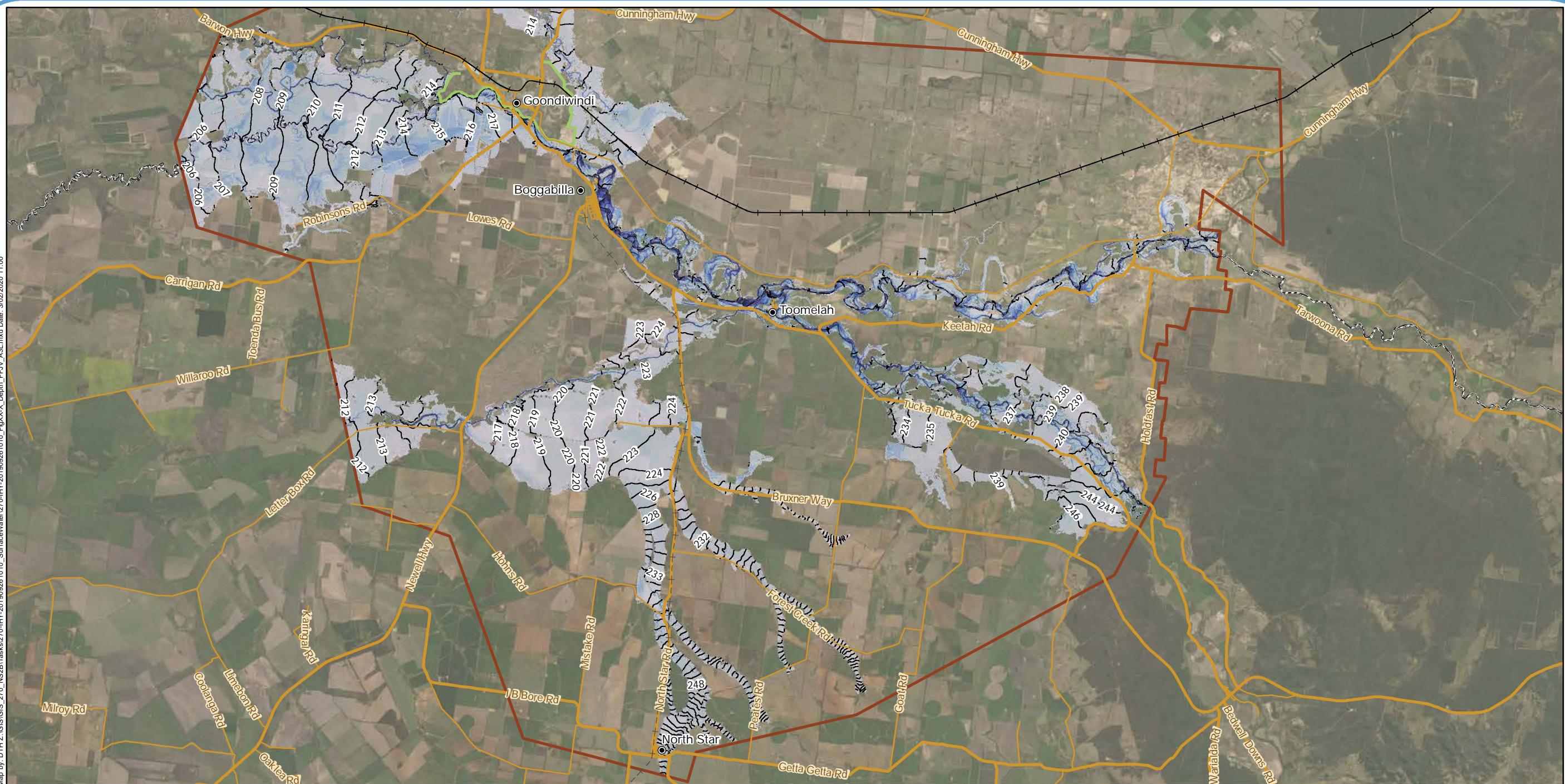


- Legend
- Localities
 - Existing rail (operational)
 - + Existing rail (non-operational)
 - Major roads
 - Minor roads
 - - - NSW/QLD border

- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

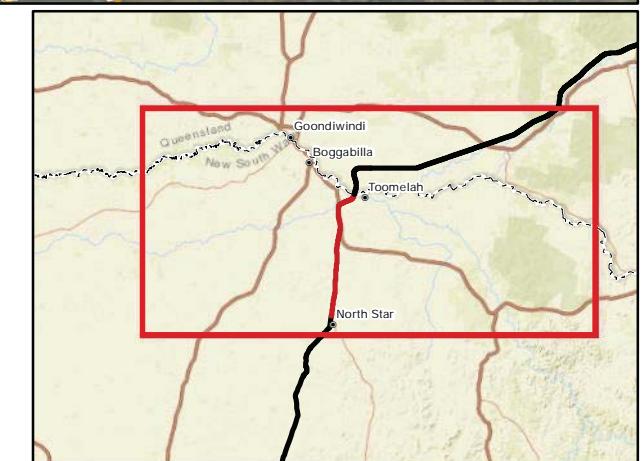
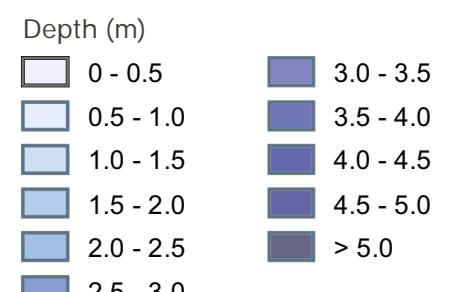


A3 scale: 1:275,000
 0 3 6 9 12 15 km

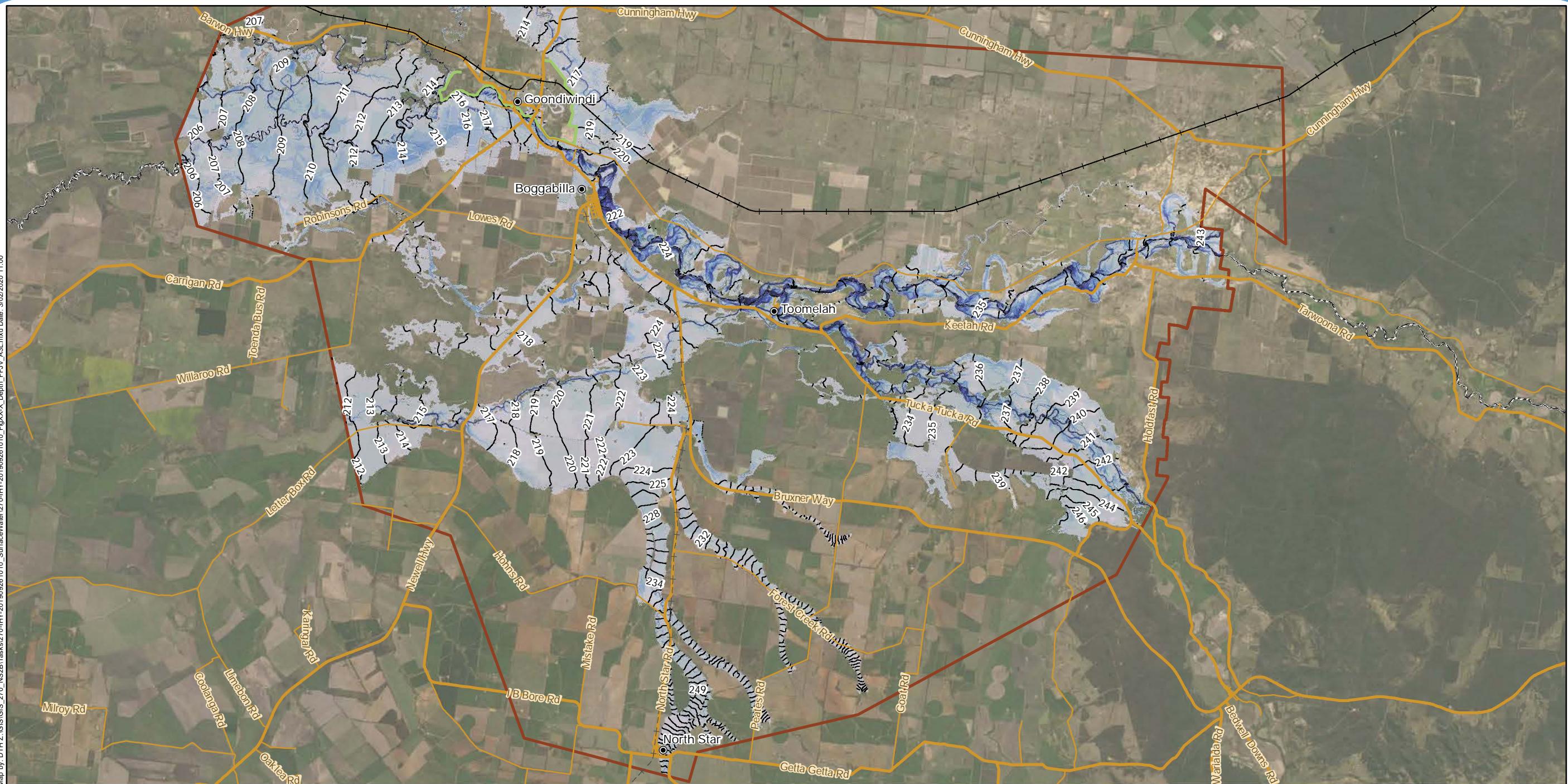


- Legend
- Localities
 - Existing rail (operational)
 - + Existing rail (non-operational)
 - Major roads
 - Minor roads
 - - - NSW/QLD border

- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model



A3 scale: 1:275,000
 0 3 6 9 12 15 km

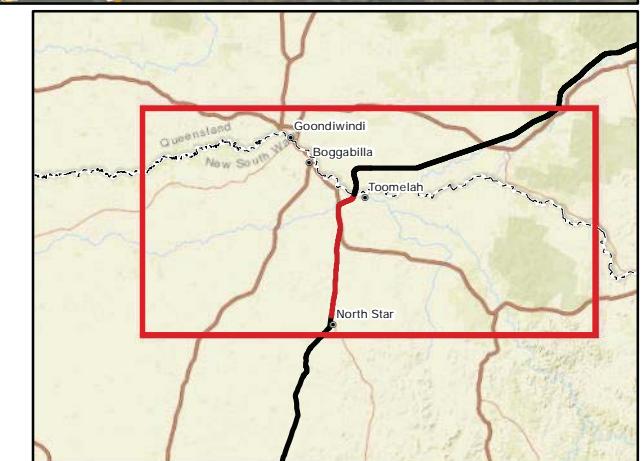


Legend

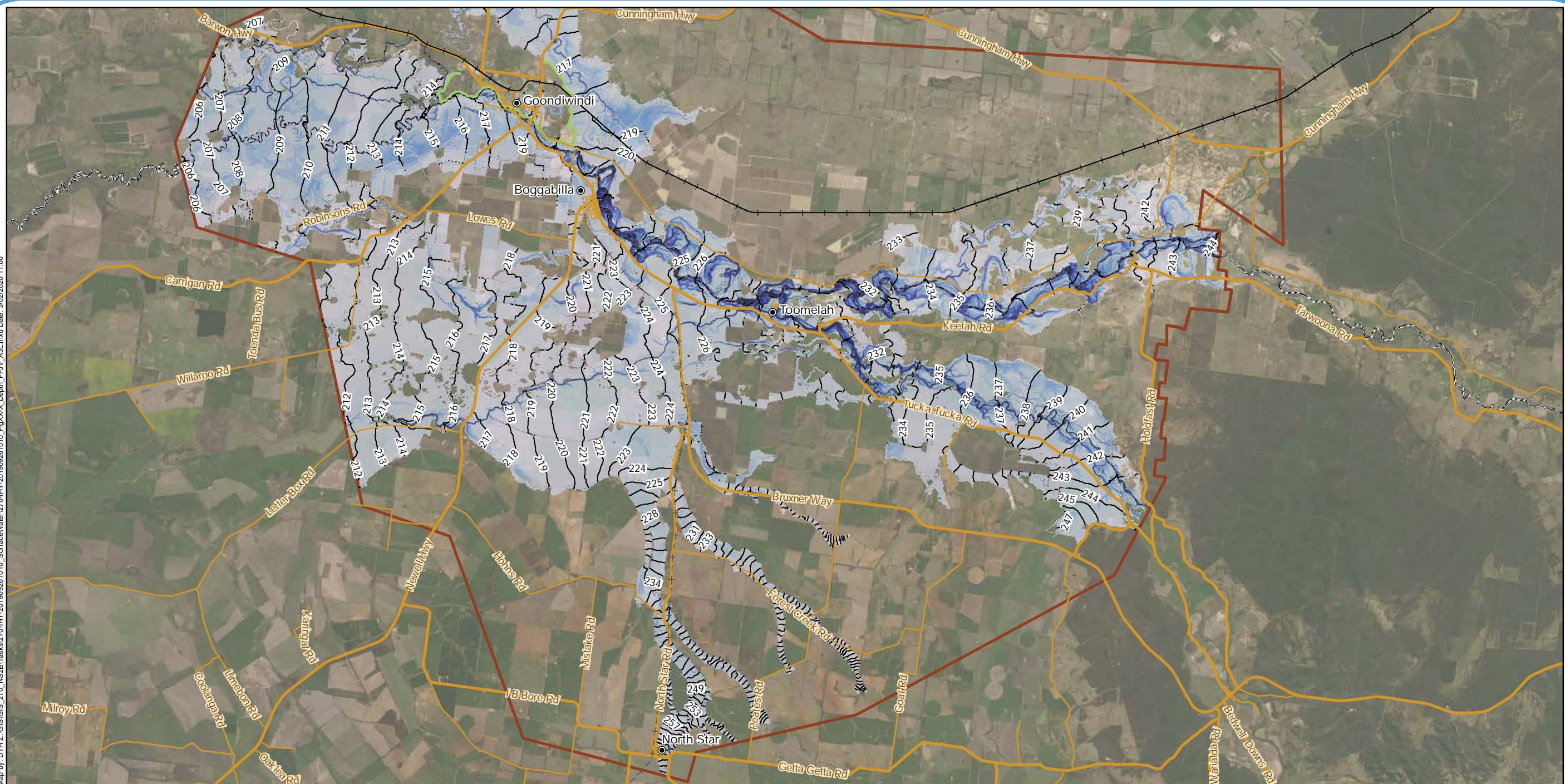
- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	

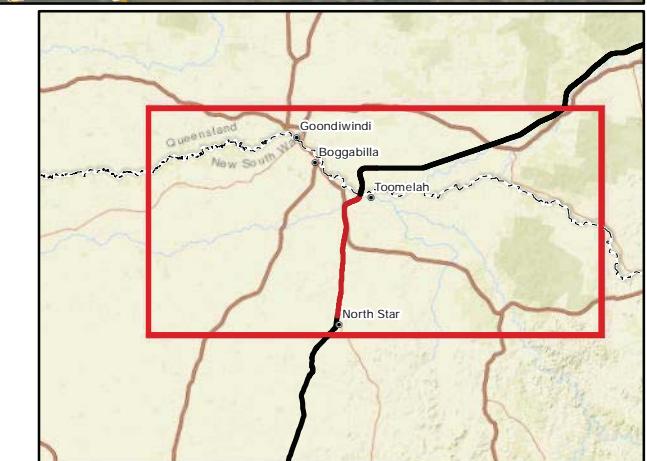
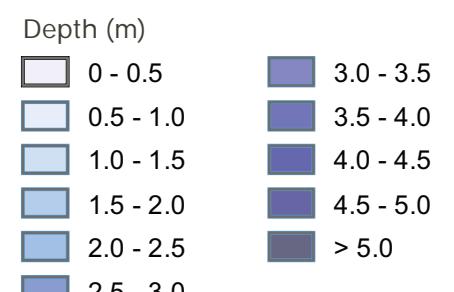


A3 scale: 1:275,000
 0 3 6 9 12 15 km

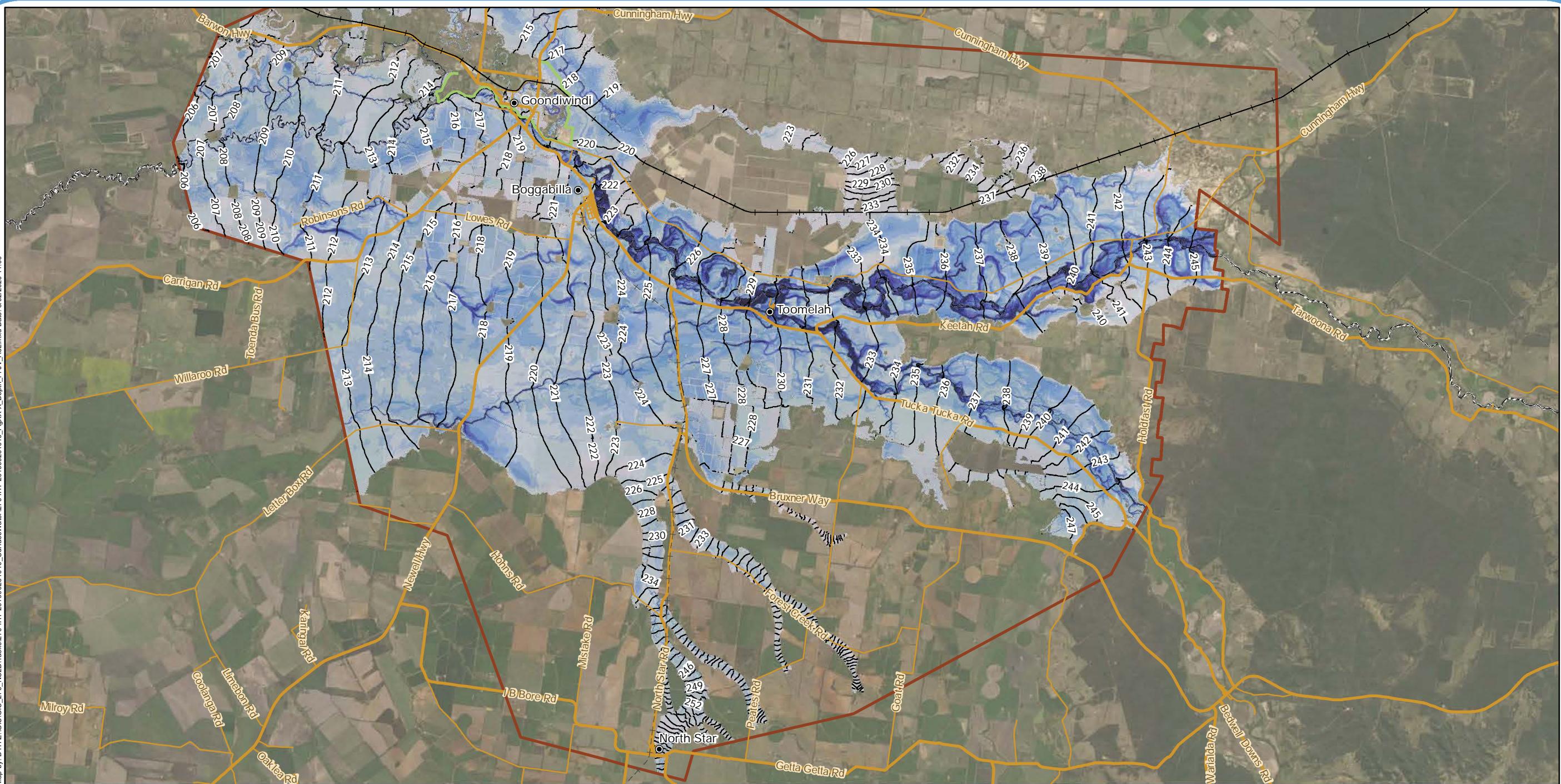


- Legend
- Localities
 - Existing rail (operational)
 - + Existing rail (non-operational)
 - Major roads
 - Minor roads
 - - - NSW/QLD border

- Watercourses
- Goondiwindi levee
- 1m contour (mAHM)
- Extent of hydraulic model



A3 scale: 1:275,000
 0 3 6 9 12 15 km

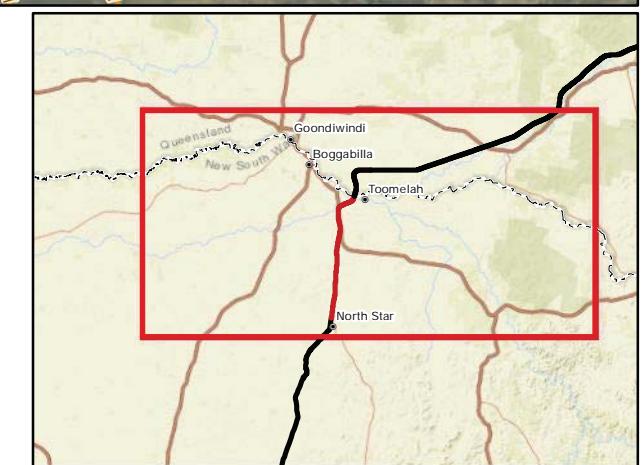


Legend

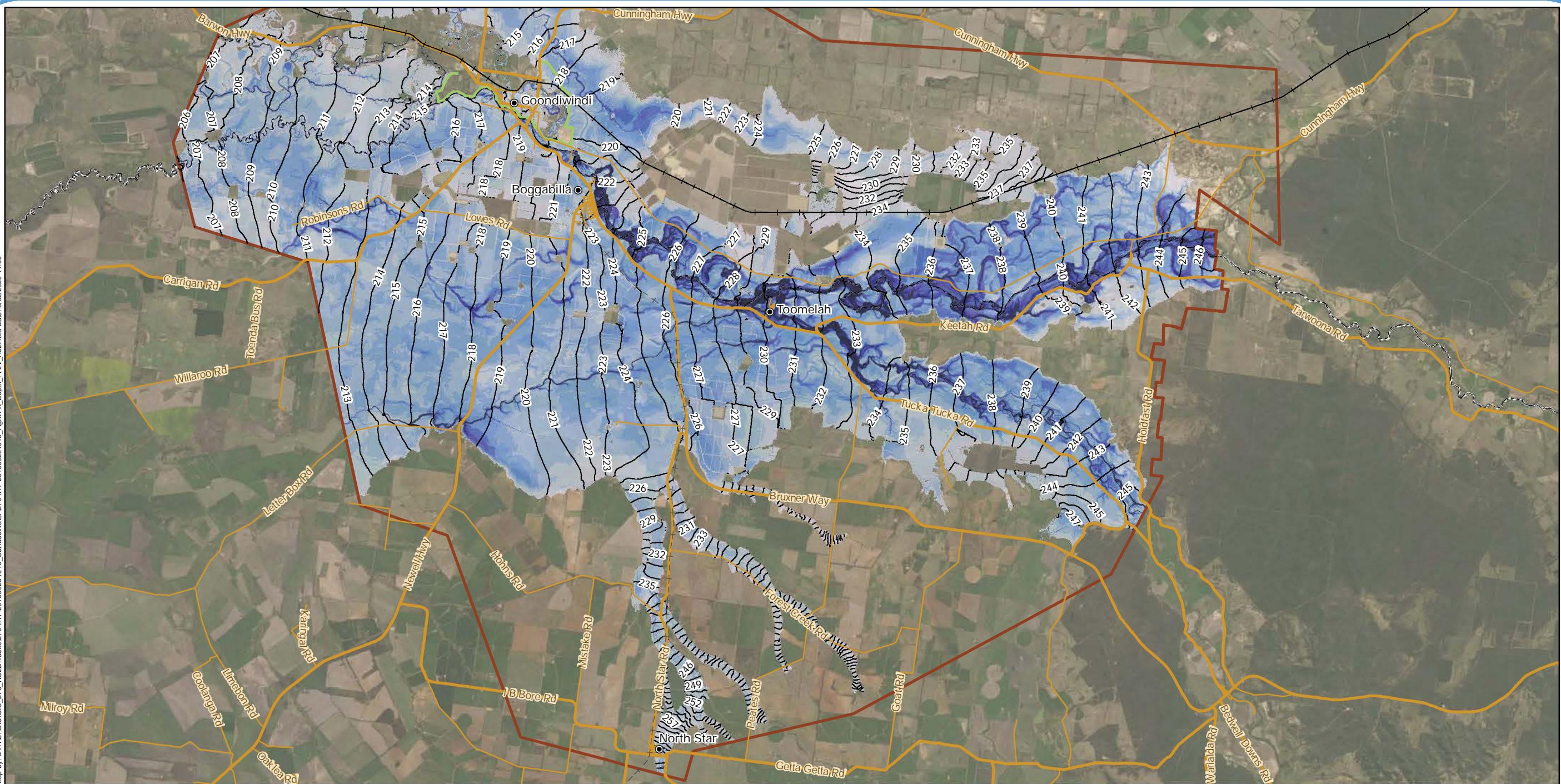
- Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- Major roads
- Minor roads
- - - NSW/QLD border
- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

Depth (m)

0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



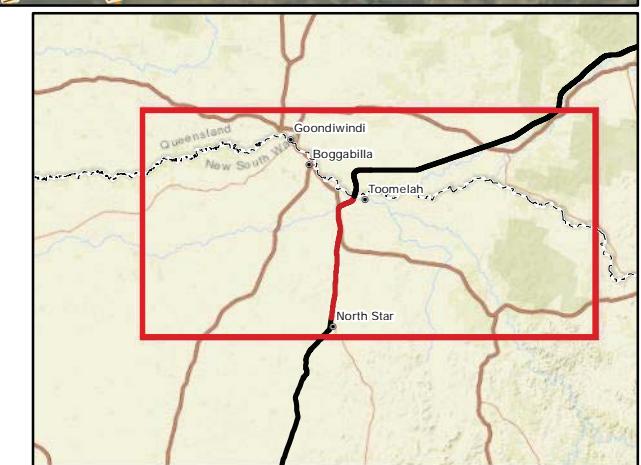
A3 scale: 1:275,000
 0 3 6 9 12 15 km



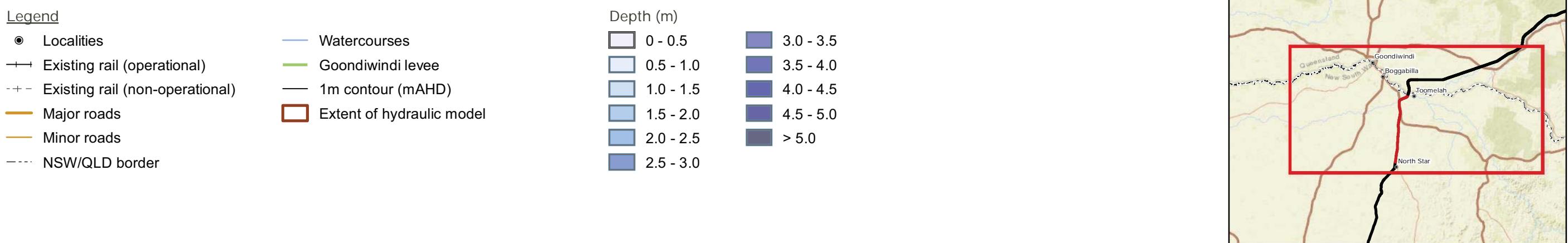
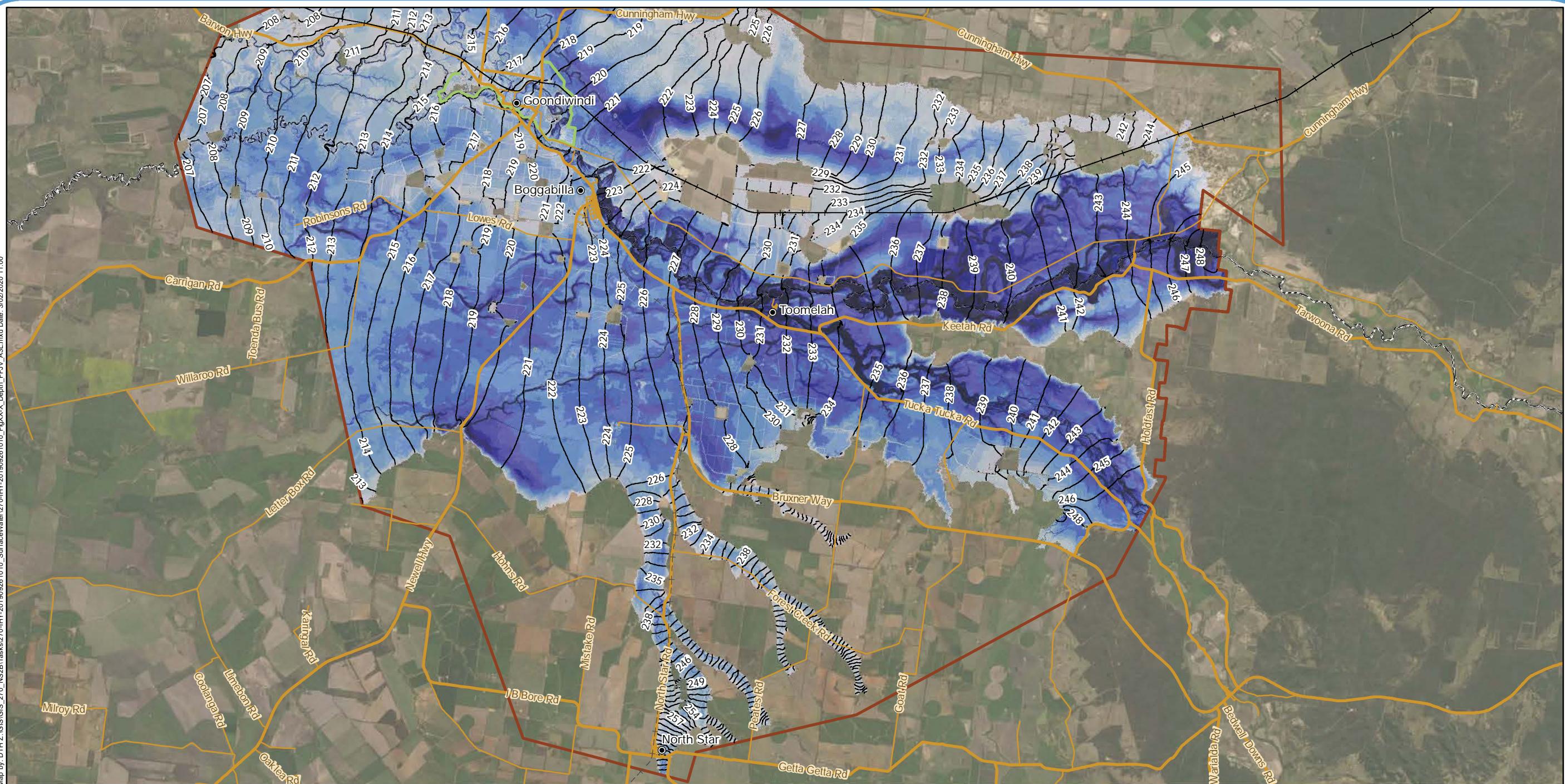
- Legend**
- Localities
 - Existing rail (operational)
 - + Existing rail (non-operational)
 - Major roads
 - Minor roads
 - - - NSW/QLD border

- Watercourses
- Goondiwindi levee
- 1m contour (mAHD)
- Extent of hydraulic model

Depth (m)	
0 - 0.5	3.0 - 3.5
0.5 - 1.0	3.5 - 4.0
1.0 - 1.5	4.0 - 4.5
1.5 - 2.0	4.5 - 5.0
2.0 - 2.5	> 5.0
2.5 - 3.0	



A3 scale: 1:275,000
 0 3 6 9 12 15 km



A3 scale: 1:275,000

0 3 6 9 12 15 km



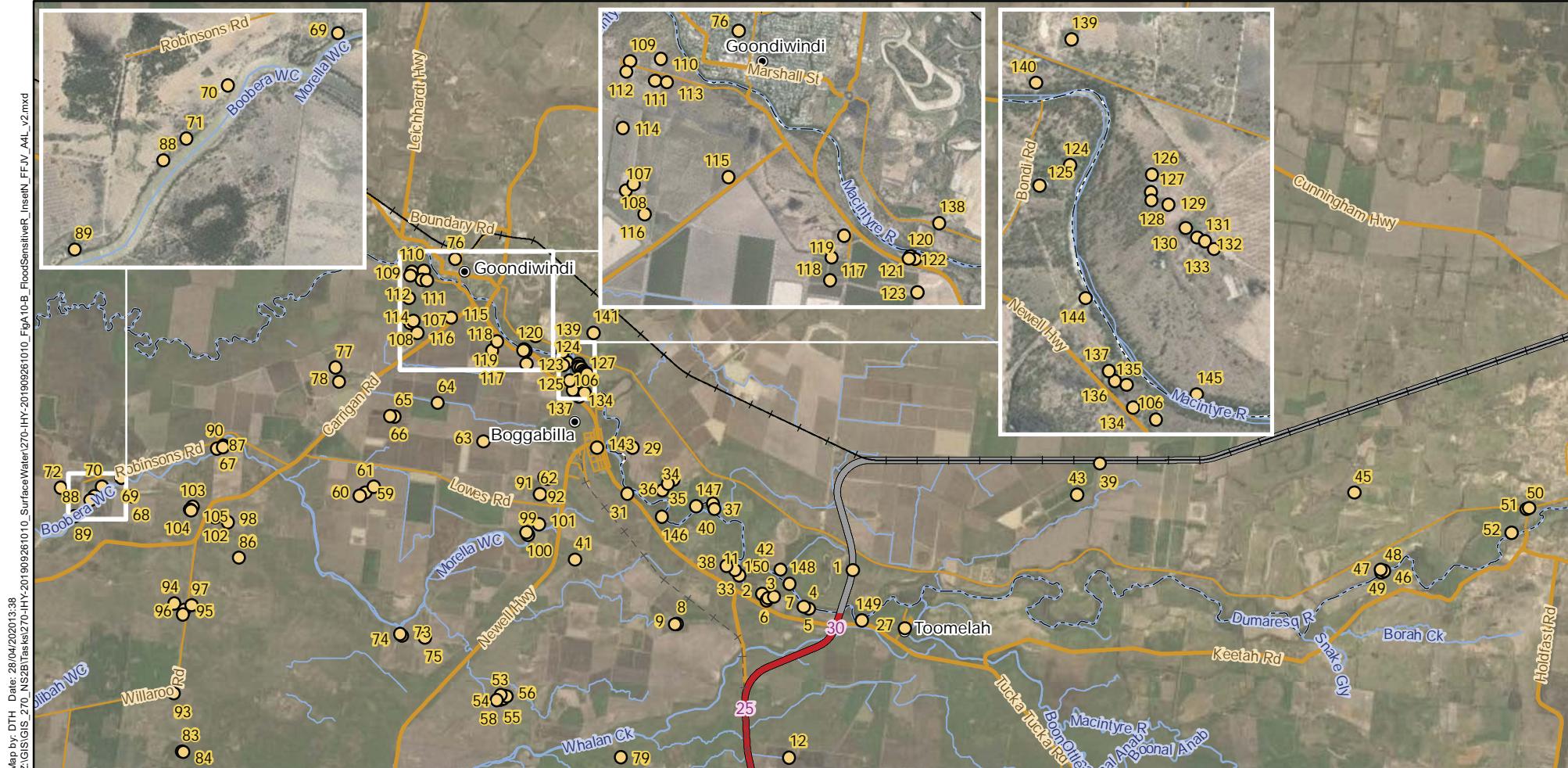
Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Flood sensitive receptor
- Major roads
- Minor roads
- Watercourses



A4 scale: 1:225,000
 0 2 4 6 8 10 km

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
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



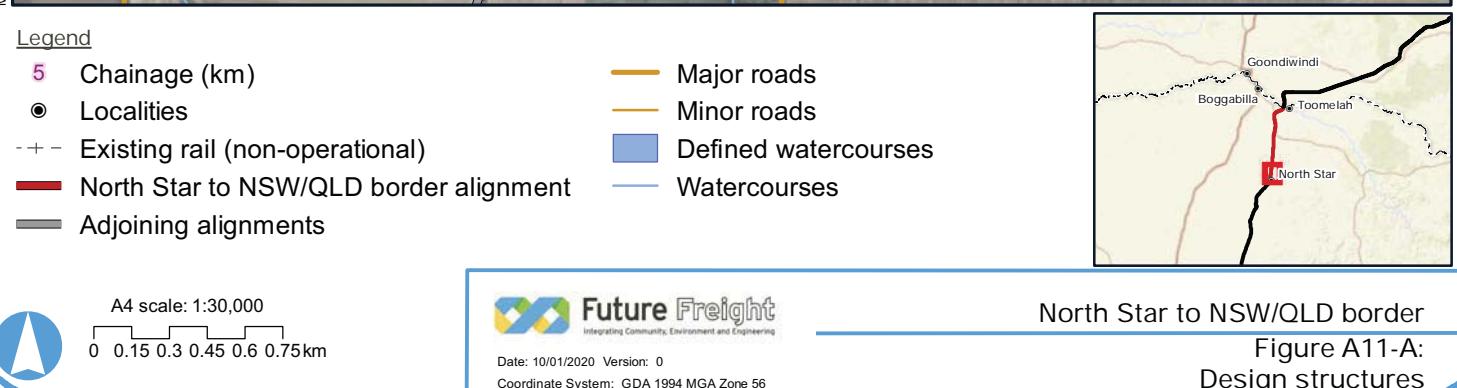
Legend

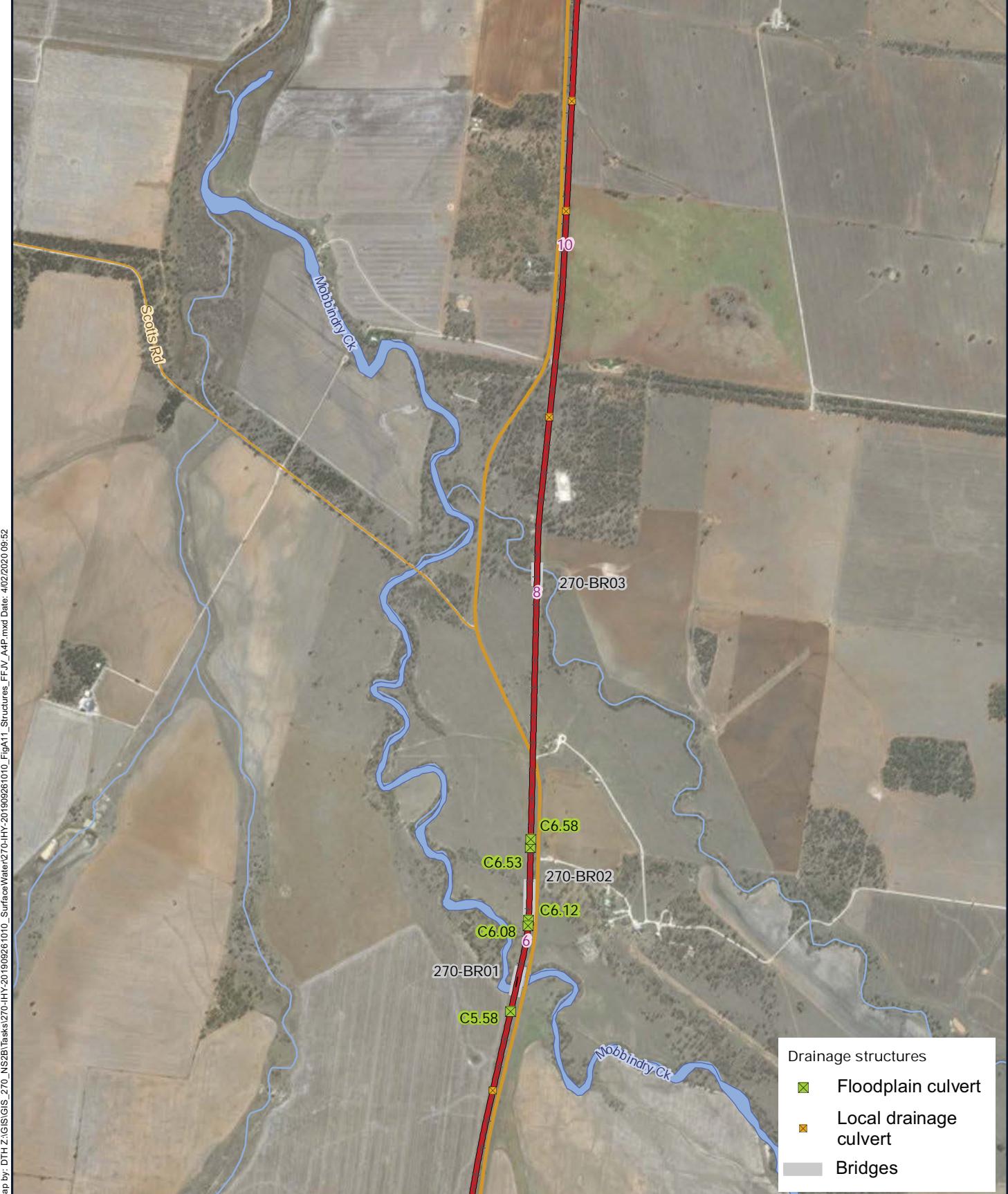
- 5 Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Flood sensitive receptor
- Major roads
- Minor roads
- Watercourses



A4 scale: 1:225,000

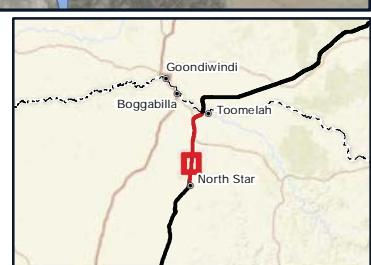
0 2 4 6 8 10 km



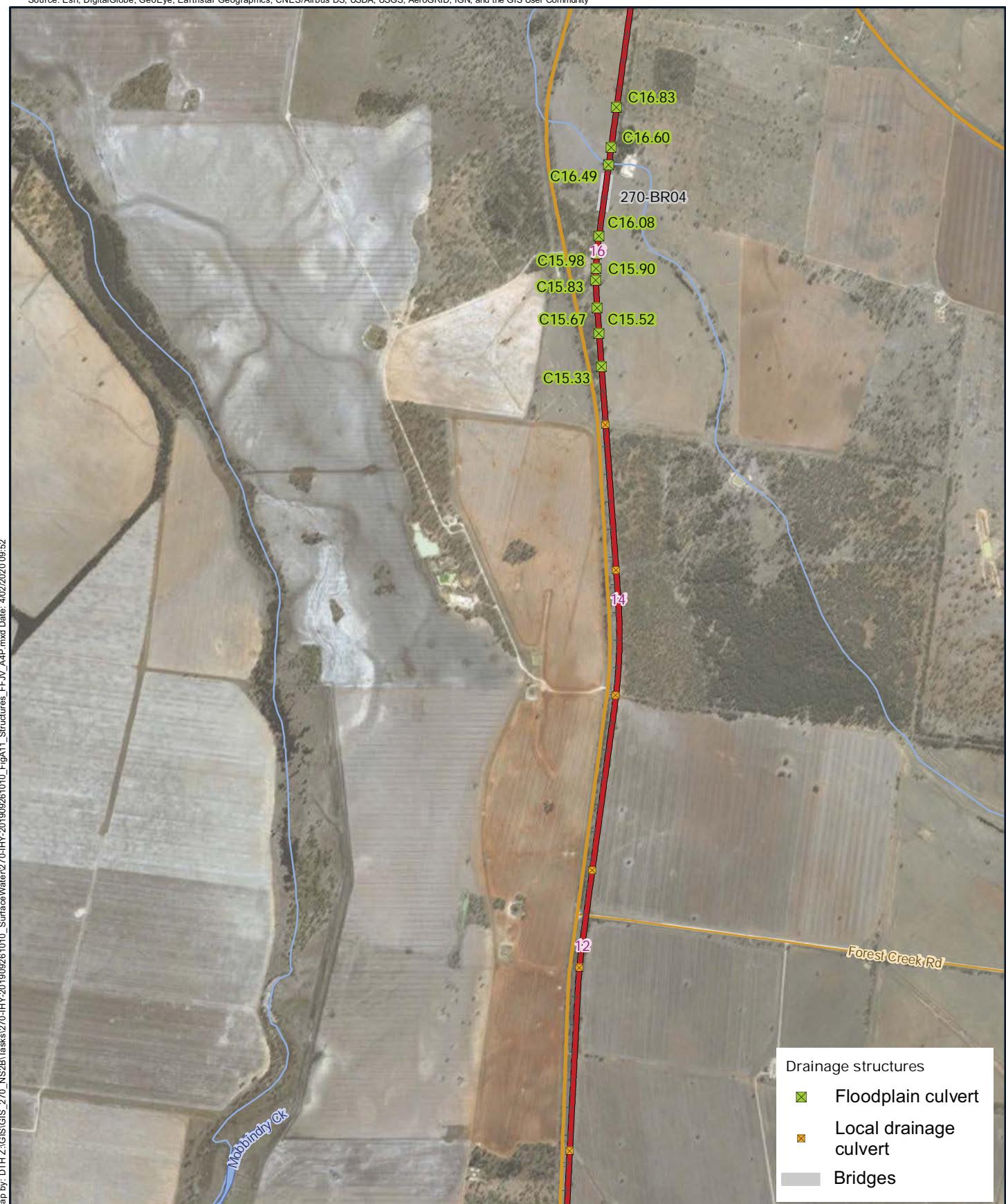


Legend

- | | |
|--|----------------------|
| 5 Chainage (km) | Major roads |
| — Existing rail (operational) | Minor roads |
| - - - Existing rail (non-operational) | Defined watercourses |
| — North Star to NSW/QLD border alignment | Watercourses |

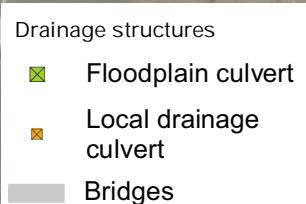


A4 scale: 1:30,000
 0 0.15 0.3 0.45 0.6 0.75 km

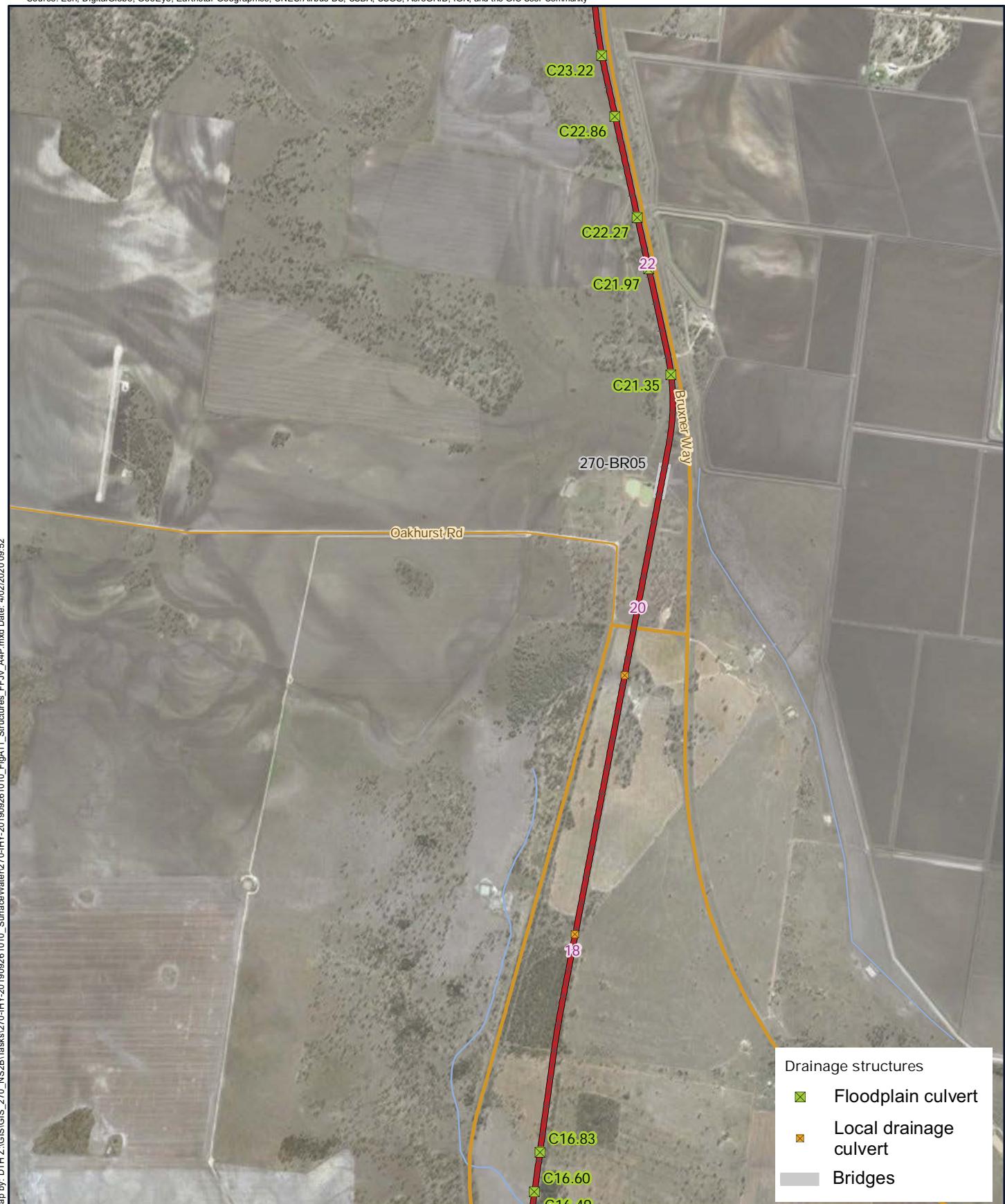


Legend

- | | |
|--|----------------------|
| 5 Chainage (km) | Major roads |
| - + - Existing rail (non-operational) | Minor roads |
| — North Star to NSW/QLD border alignment | Defined watercourses |
| | Watercourses |

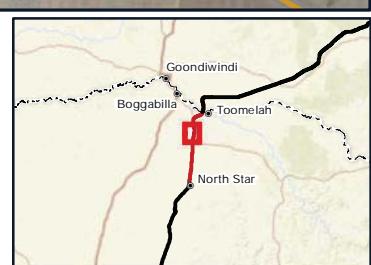


A4 scale: 1:30,000
0 0.15 0.3 0.45 0.6 0.75 km



Legend

- | | |
|--|----------------------|
| 5 Chainage (km) | Major roads |
| - + - Existing rail (non-operational) | Minor roads |
| — North Star to NSW/QLD border alignment | Defined watercourses |
| | Watercourses |

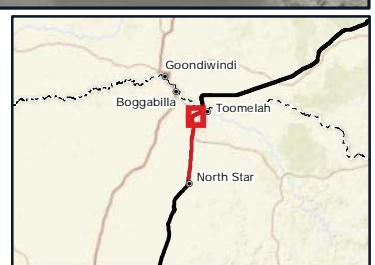


A4 scale: 1:30,000
0 0.15 0.3 0.45 0.6 0.75 km



Legend

- | | | | |
|----------|--|------------|----------------------|
| 5 | Chainage (km) | — | Major roads |
| - + - | Existing rail (non-operational) | --- | NSW/QLD border |
| — | North Star to NSW/QLD border alignment | ■ | Defined watercourses |
| — | Adjoining alignments | — | Watercourses |

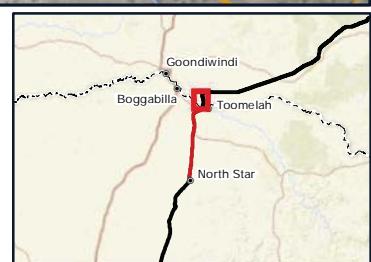


A4 scale: 1:30,000
 0 0.15 0.3 0.45 0.6 0.75 km

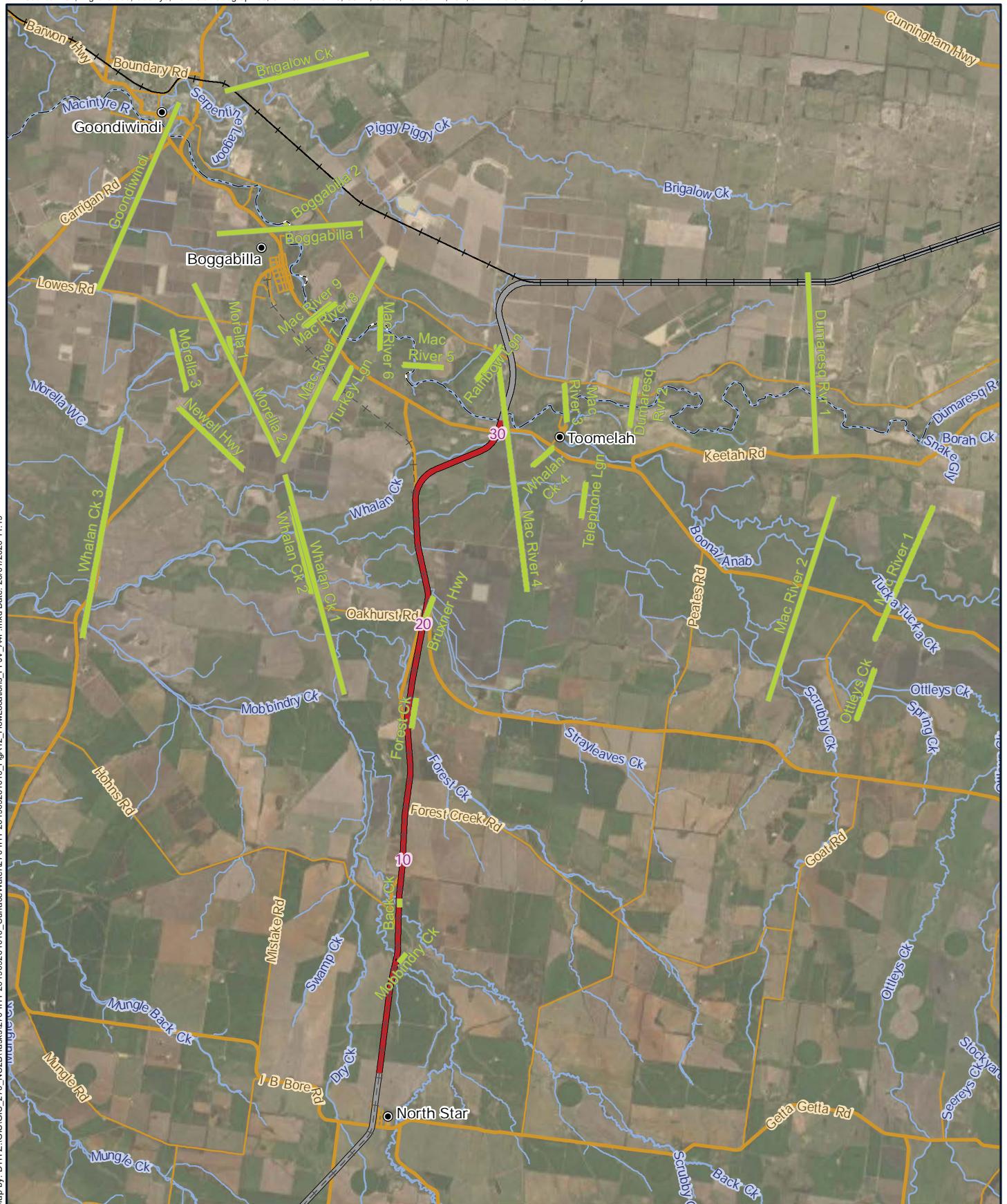


Legend

- | | |
|--|----------------------|
| 5 Chainage (km) | Major roads |
| — North Star to NSW/QLD border alignment | Minor roads |
| — Adjoining alignments | --- |
| | NSW/QLD border |
| | Defined watercourses |
| | Watercourses |



A4 scale: 1:30,000
 0 0.15 0.3 0.45 0.6 0.75 km

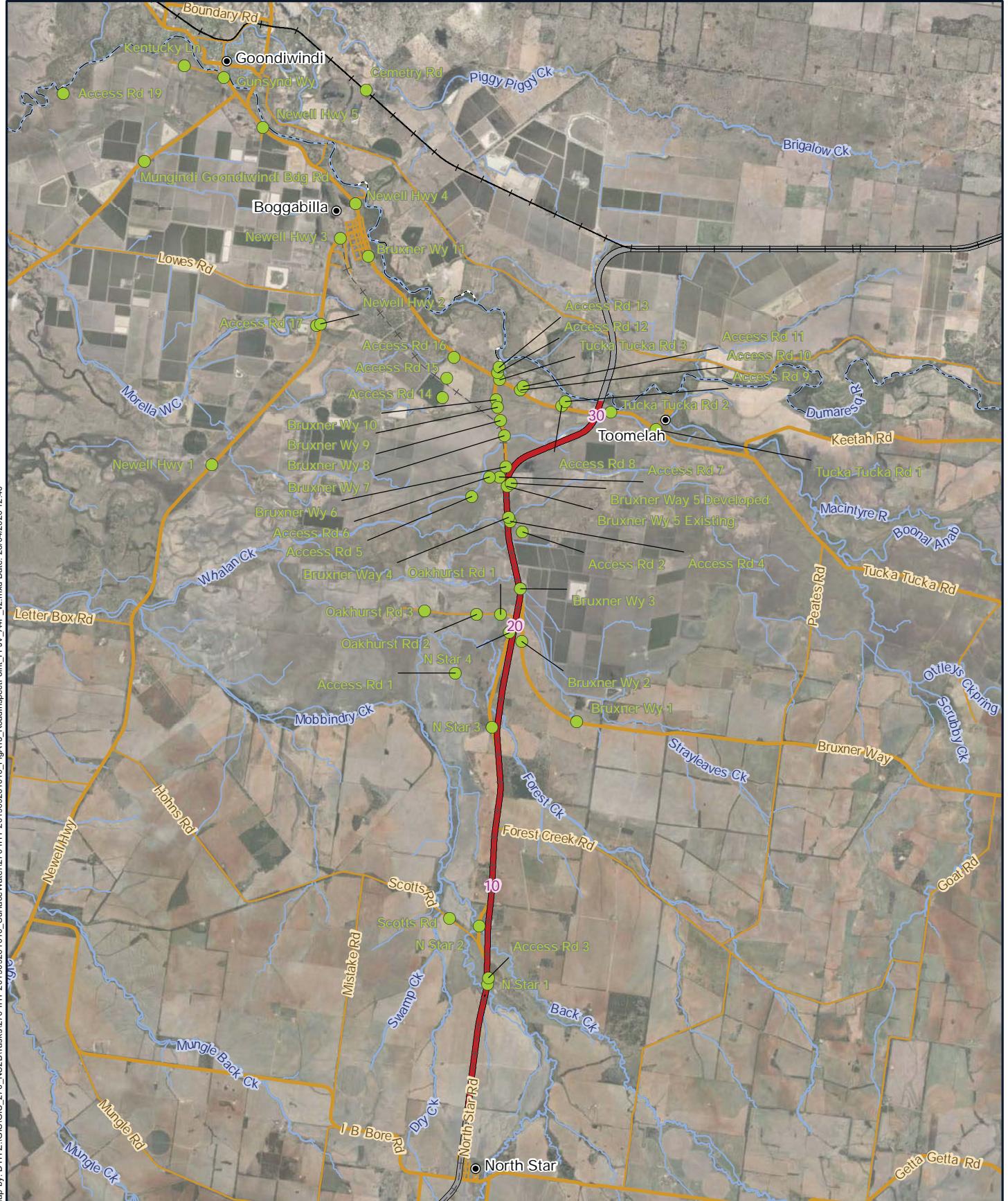


Legend

- Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Major roads
- Minor roads
- Watercourses
- Flow distribution inspection locations



A4 scale: 1:220,000
0 1 2 3 4 5km

Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

● Road inspection locations

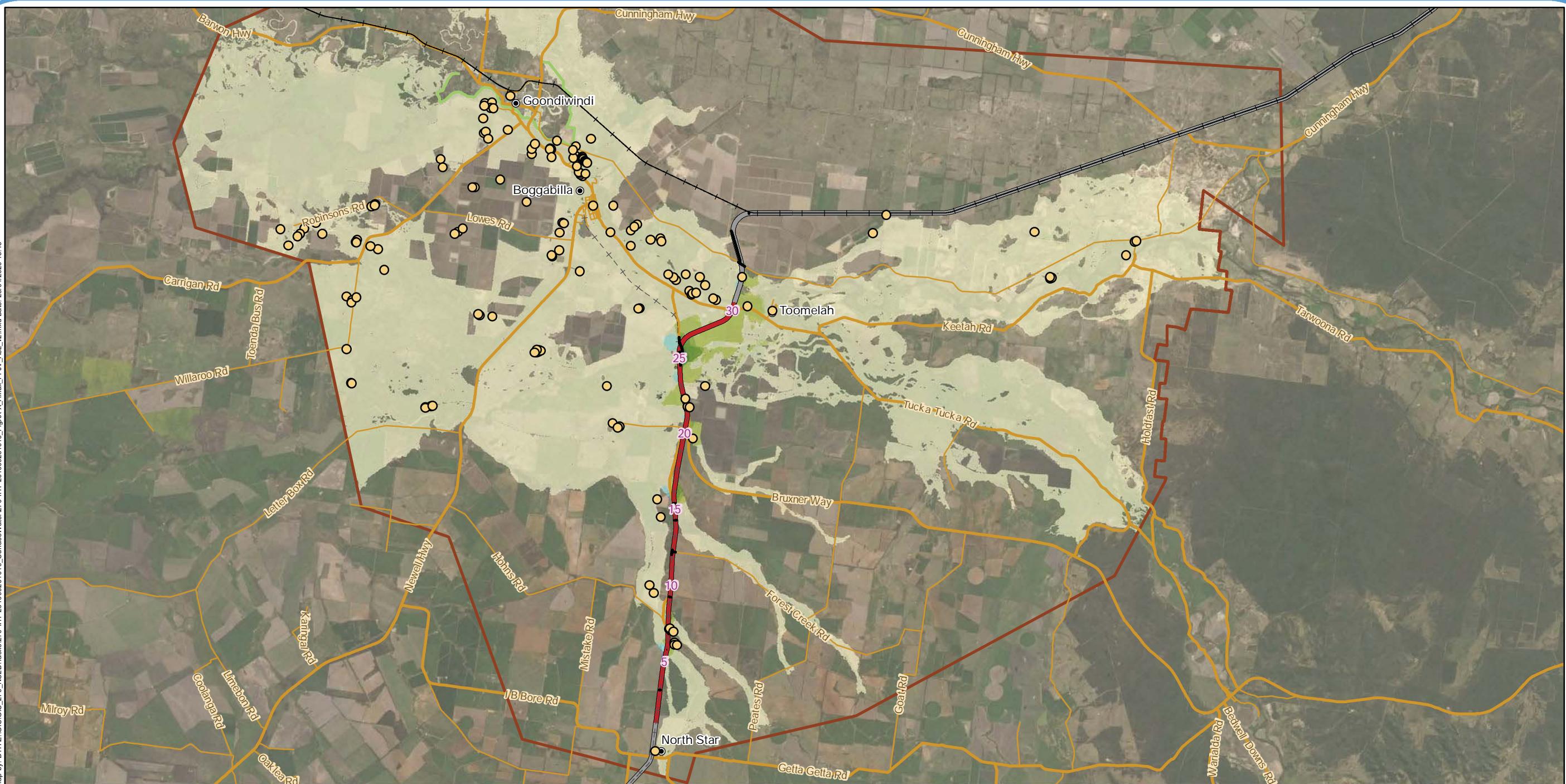
— Major roads

— Minor roads

— Watercourses



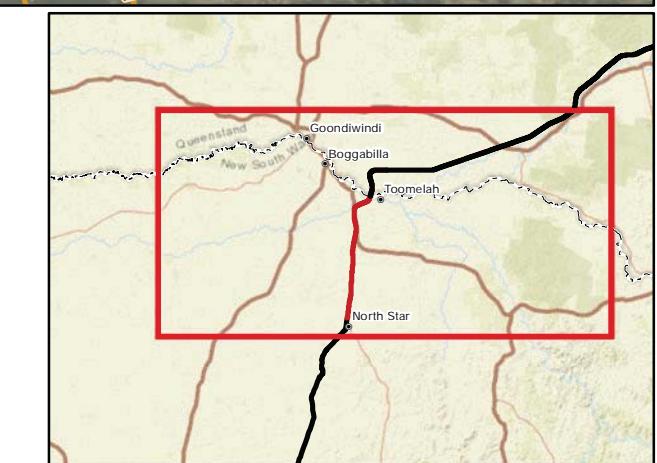
A4 scale: 1:200,000
0 1 2 3 4 5km



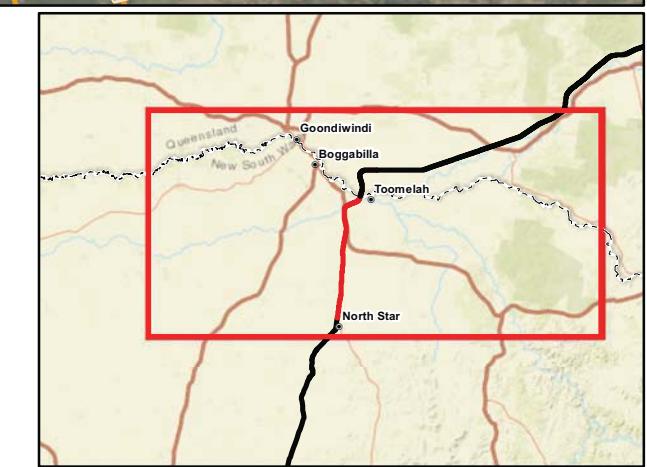
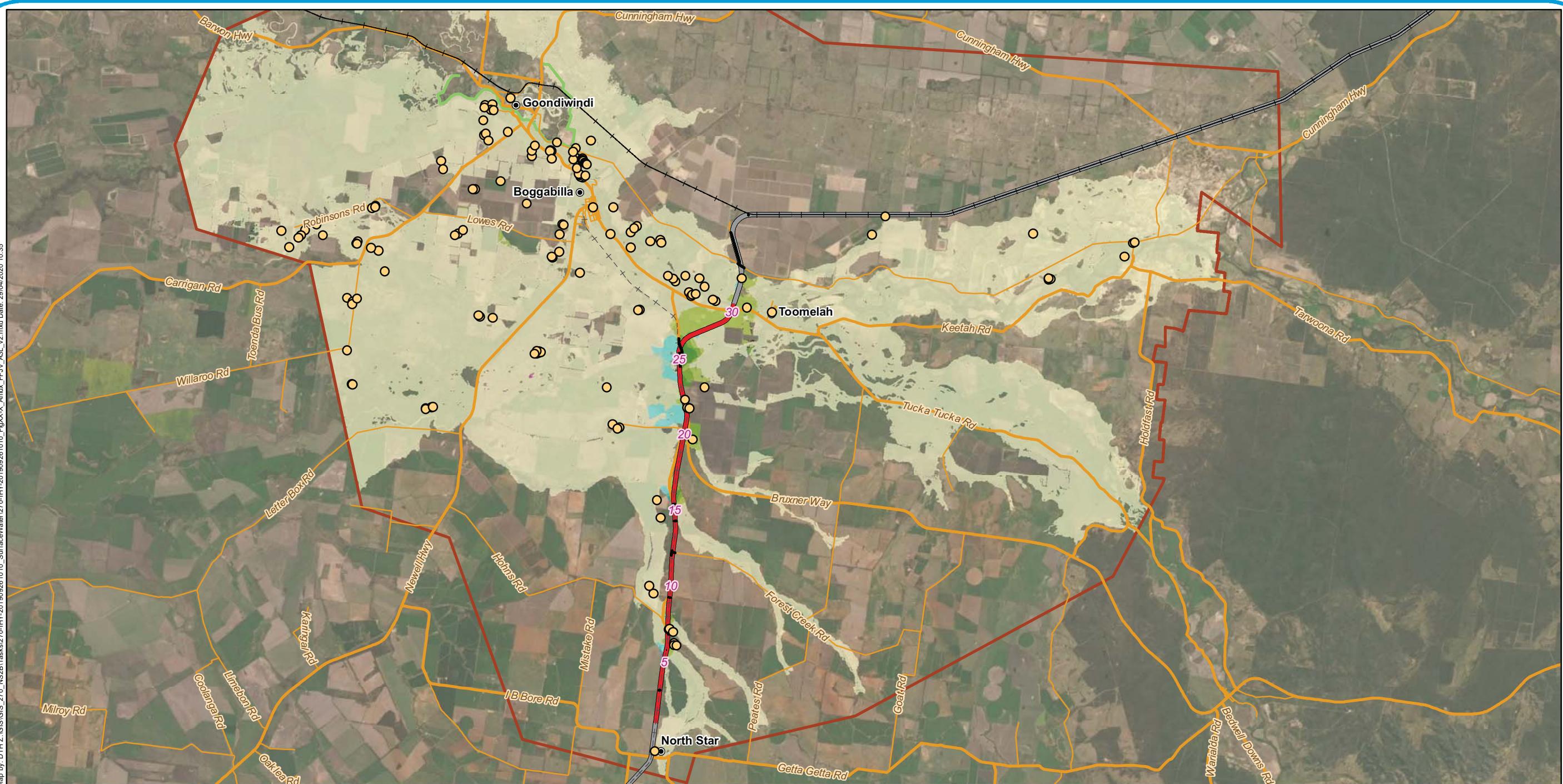
Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads

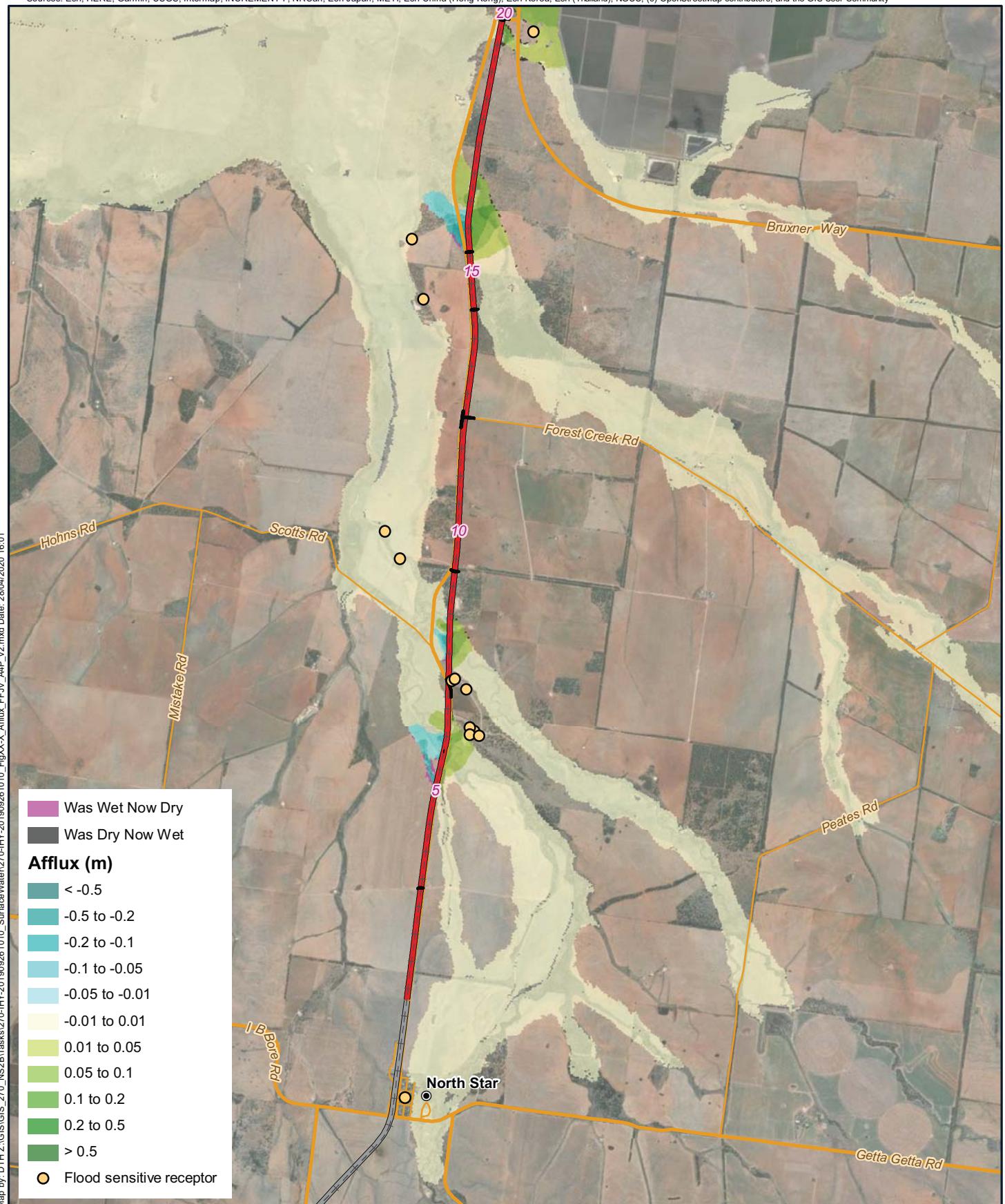
Afflux (m)	
Goondiwindi levee	< -0.5
Extent of hydraulic model	0.01 to 0.05
Was Wet Now Dry	-0.5 to -0.2
Was Dry Now Wet	0.05 to 0.1
Flood sensitive receptor	-0.2 to -0.1
	-0.1 to 0.2
	-0.05 to -0.01
	0.1 to 0.2
	0.2 to 0.5
	> 0.5
	-0.01 to 0.01



A3 scale: 1:275,000
 0 4 8 12 16 20km



A3 scale: 1:275,000
 0 4 8 12 16 20km



Legend

- 5 Chainage (km)
- (●) Localities
- Existing rail (operational)
- + Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

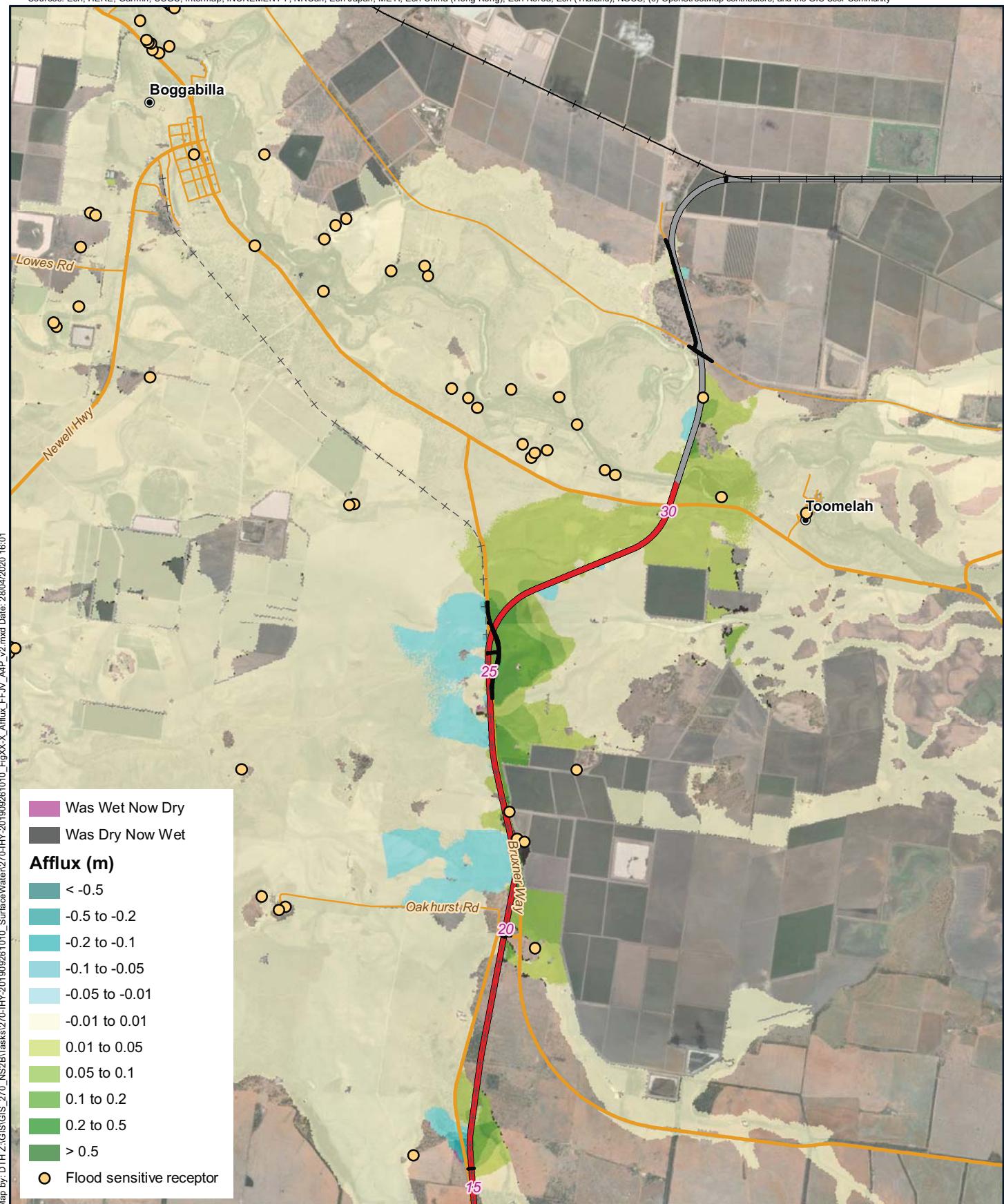


Date: 28/04/2020 Version: 2
 Coordinate System: GDA 1994 MGA Zone 56



North Star to NSW/QLD border

Figure A14-B-2: Developed Case:
 2019 LiDAR - Afflux - 1% AEP Event



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

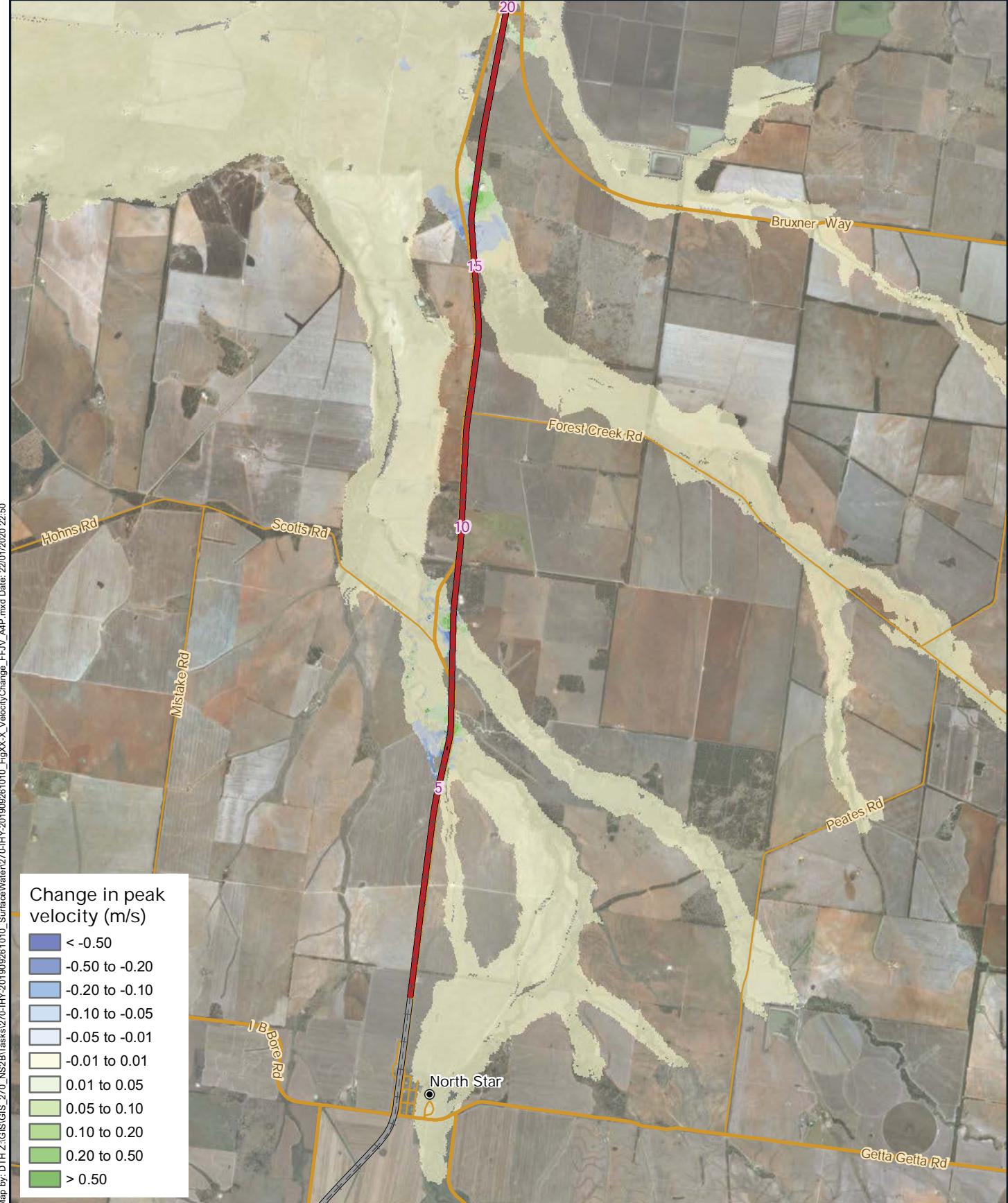


Date: 28/04/2020 Version: 2
 Coordinate System: GDA 1994 MGA Zone 56

North Star to NSW/QLD border

Figure A14-B-3: Developed Case:
 2019 LiDAR - Afflux - 1% AEP Event





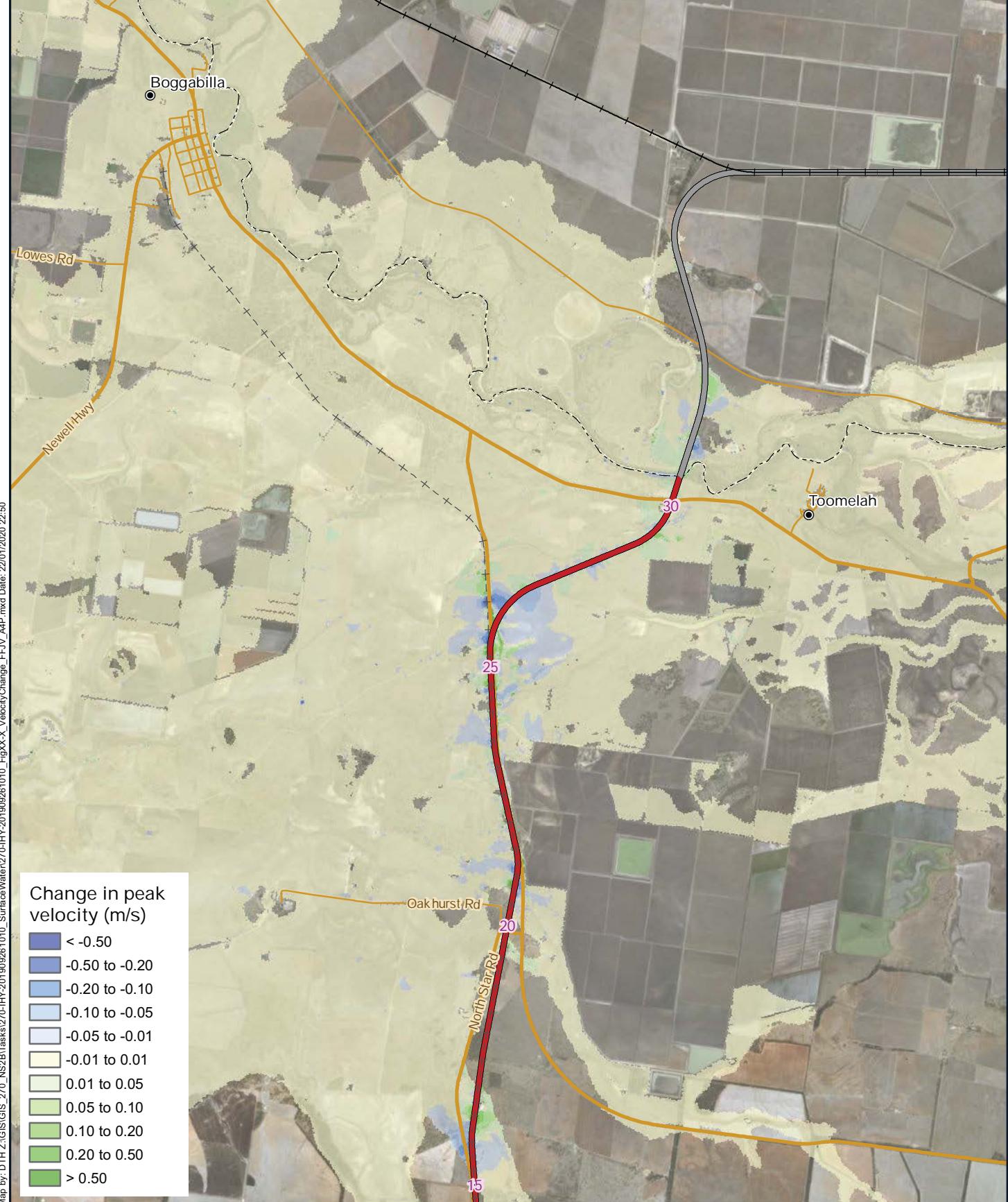
Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



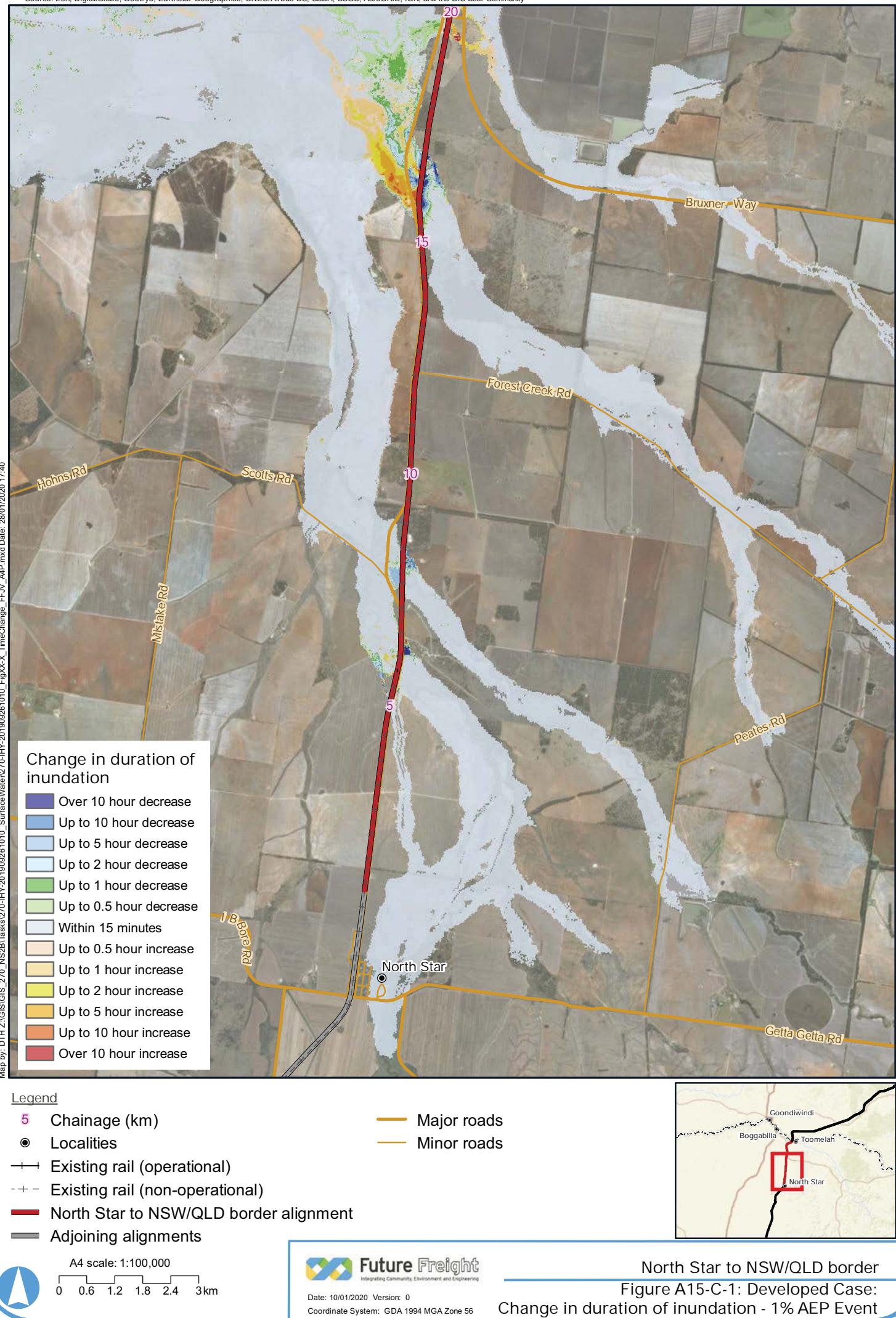
A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

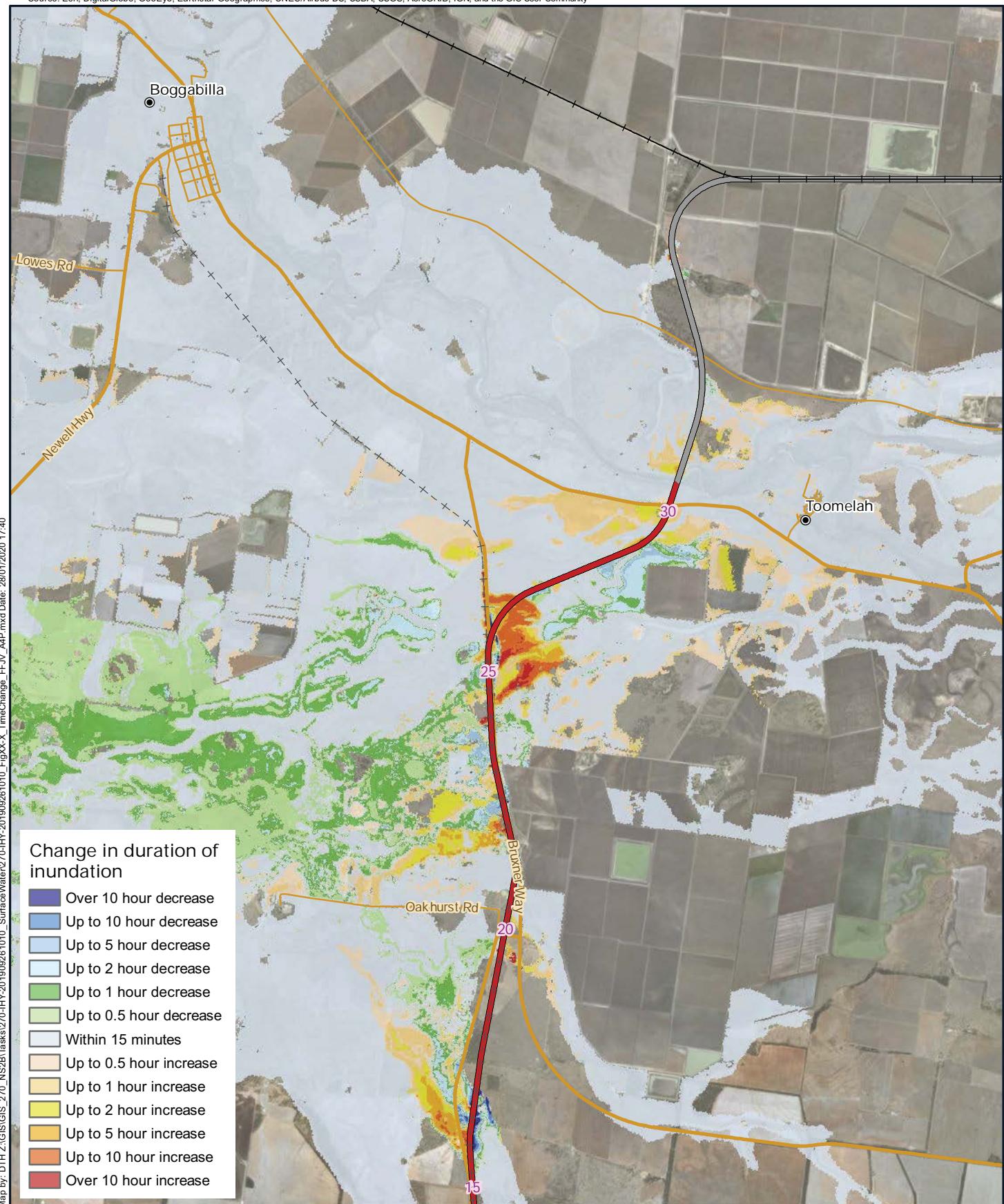


Date: 10/01/2020 Version: 0
 Coordinate System: GDA 1994 MGA Zone 56



North Star to NSW/QLD border
 Figure A15-B-2: Developed Case:
 Change in peak velocities - 1% AEP Event





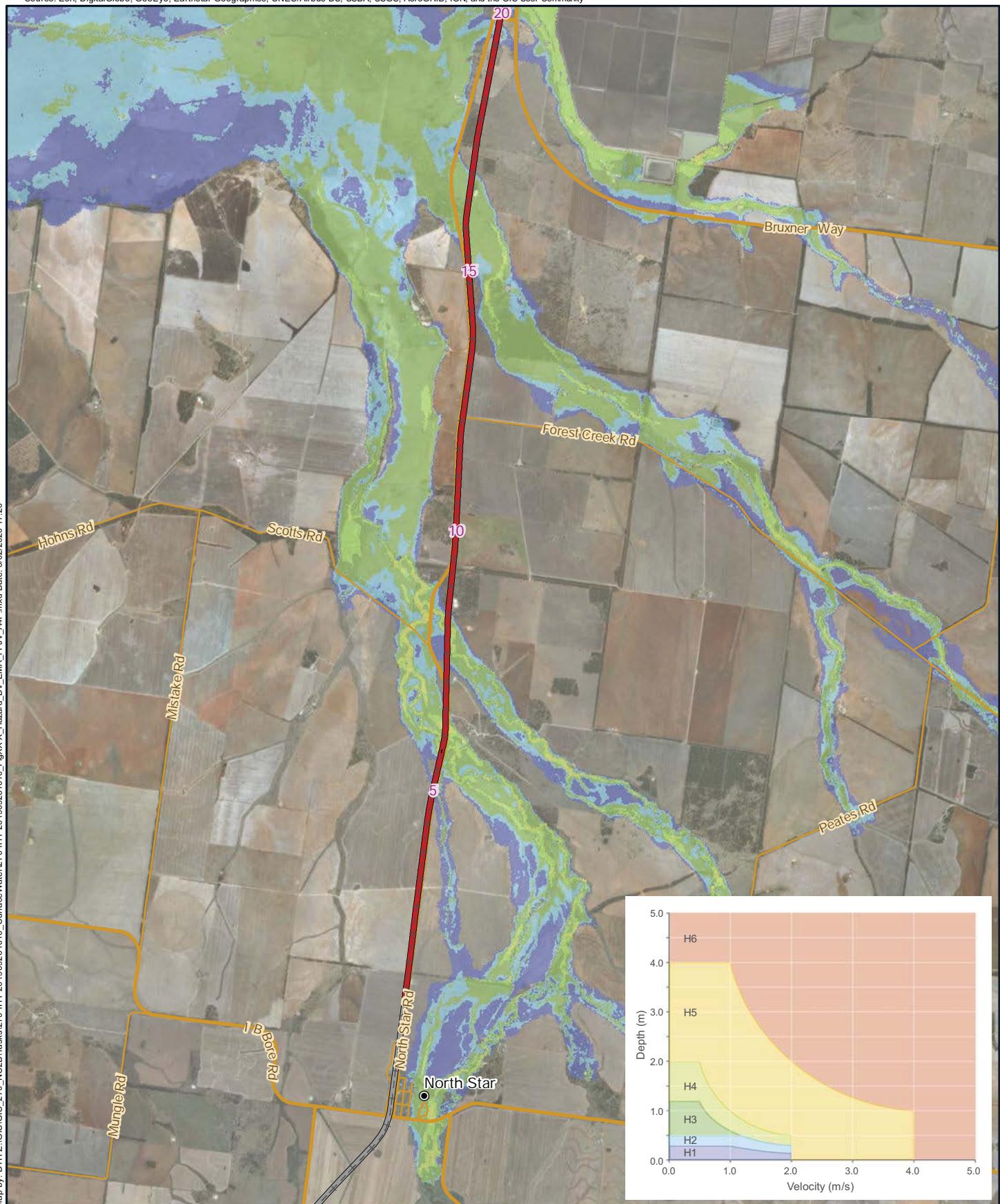
Legend

- 5 Chainage (km)
- Localities
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

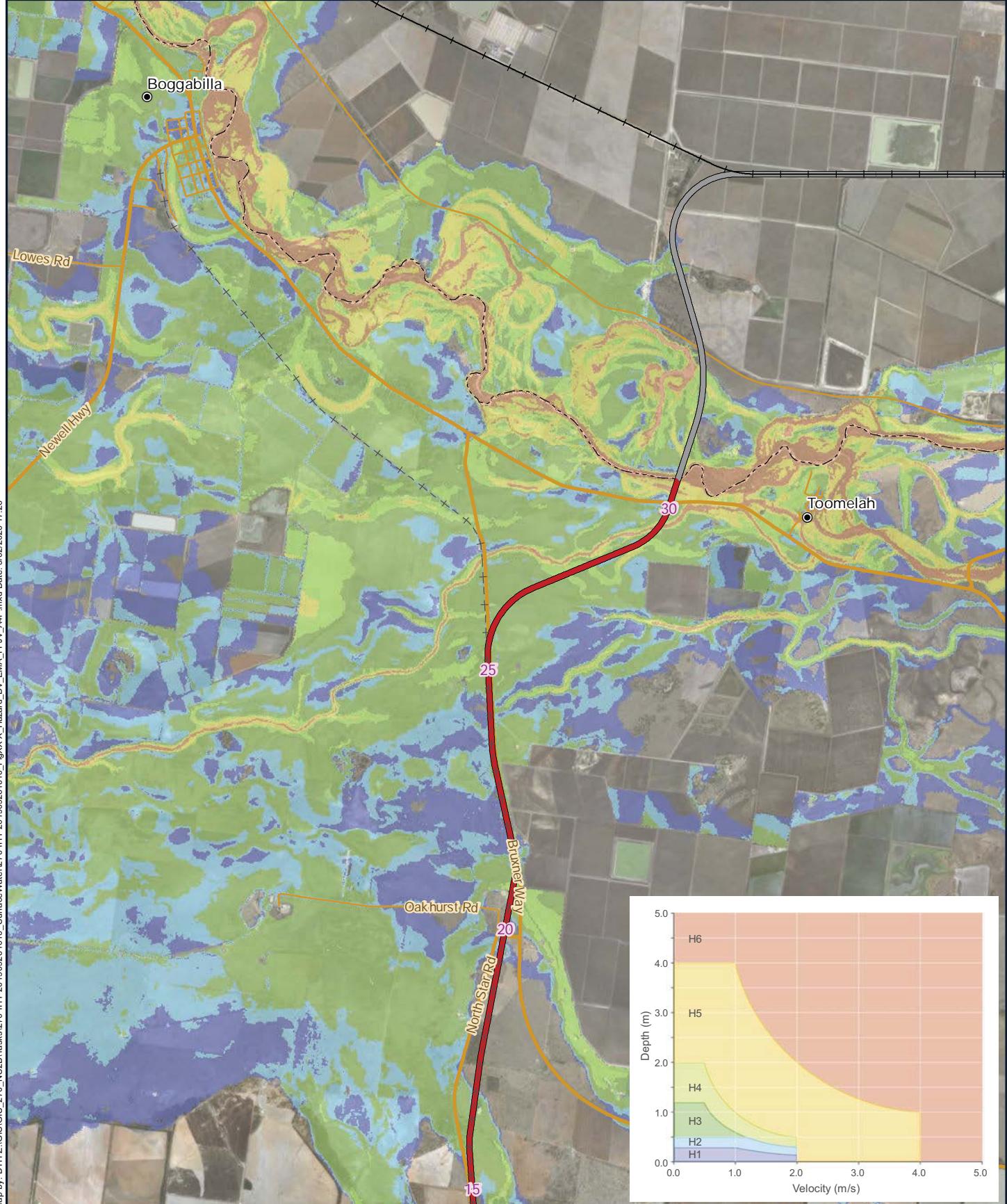
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



Legend

- 5 Chainage (km)
- Localities
- + - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

- Major roads
- Minor roads
- - - NSW/QLD border



Source: Australian Disaster Resilience Handbook – Guideline 7-3 (AIDR 2017)



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

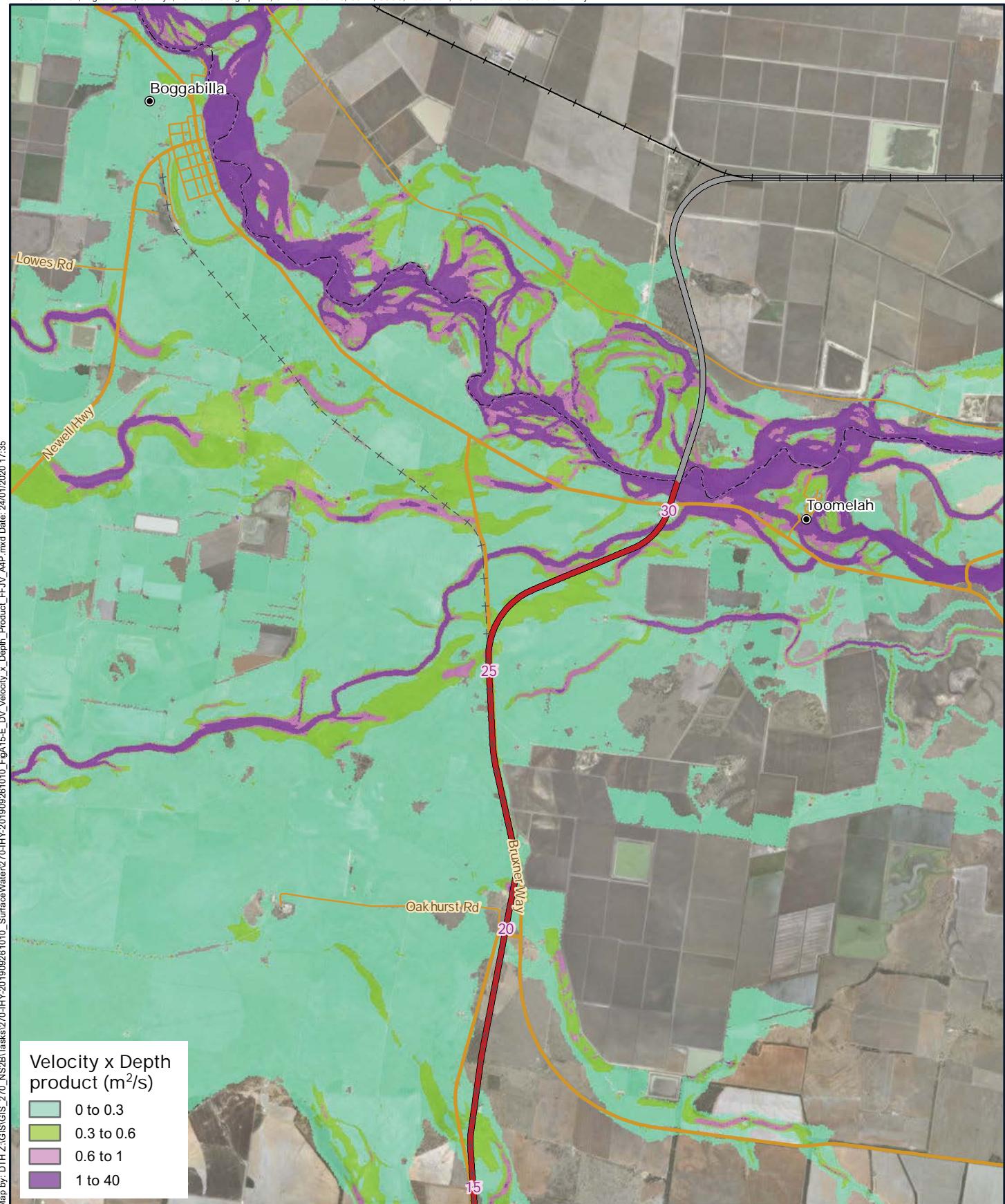


Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- + - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Major roads
- Minor roads

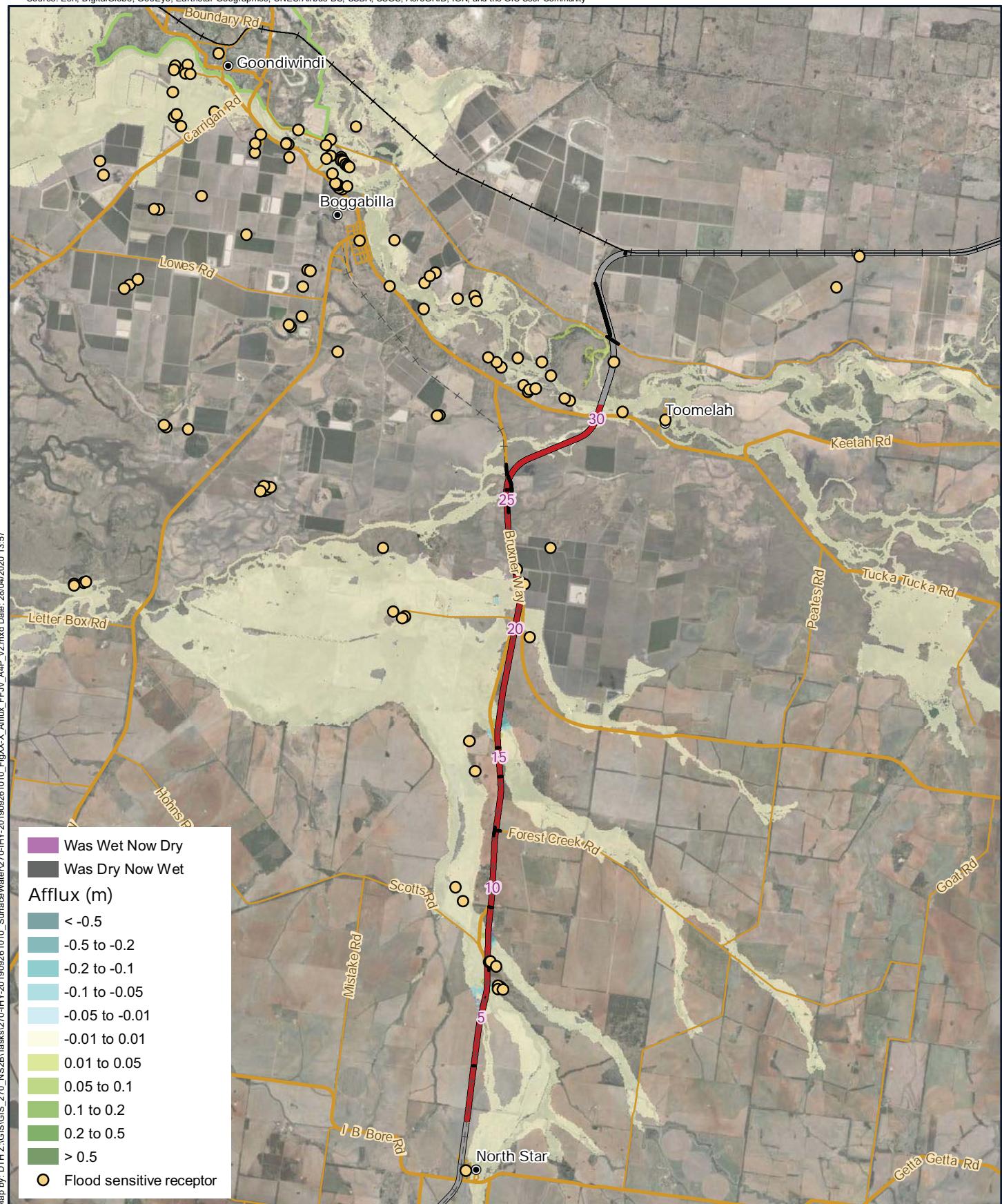


A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

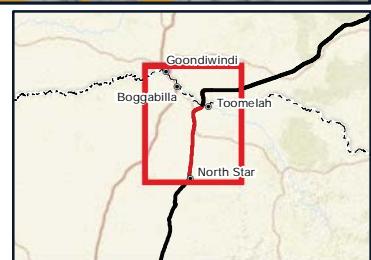




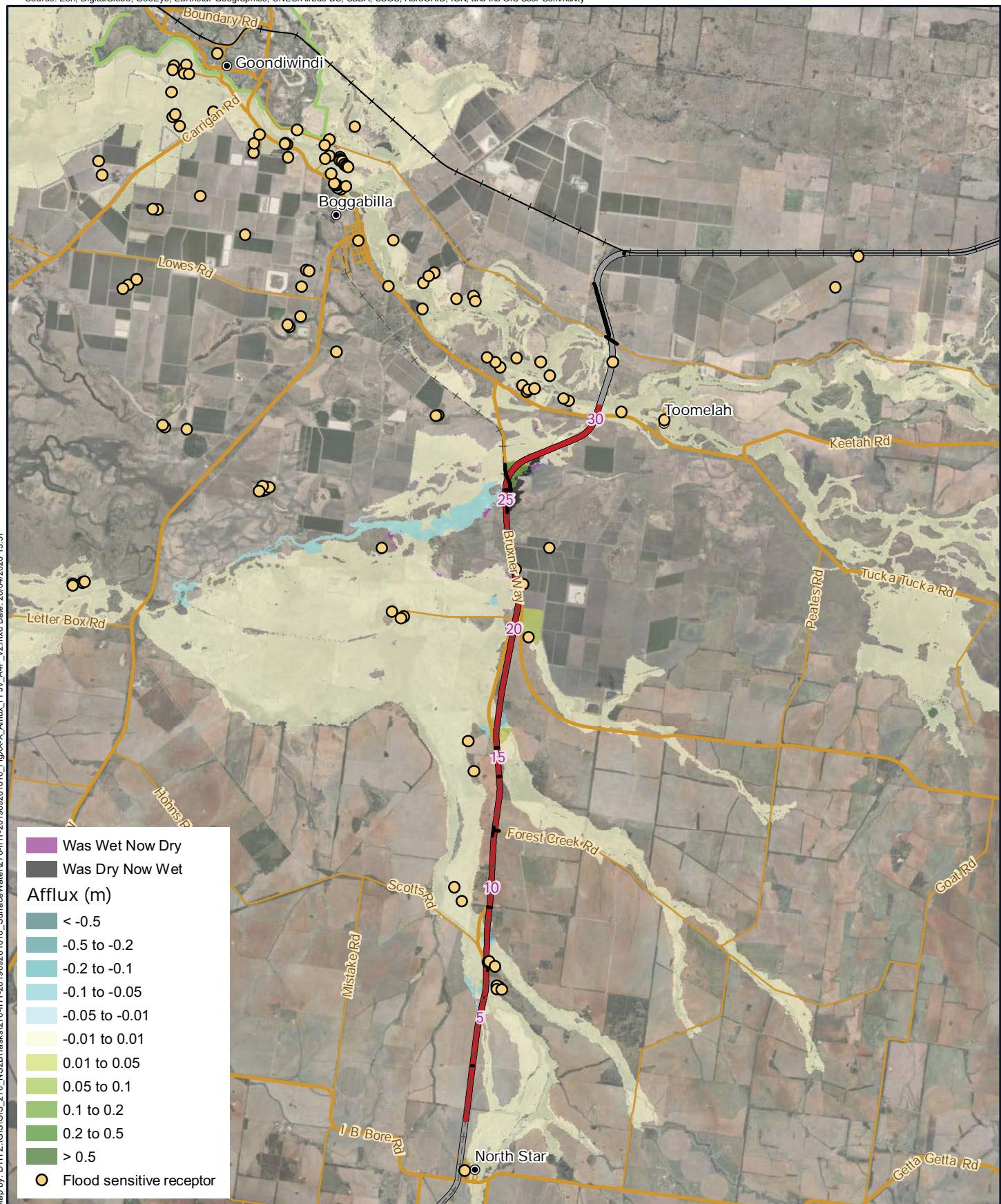
Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

- Proposed roadworks
- Major roads
- Minor roads
- Goondiwindi levee

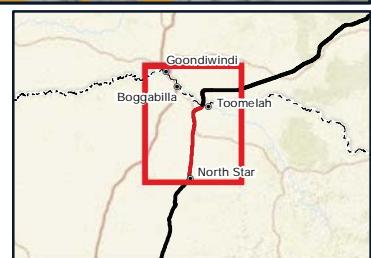


A4 scale: 1:200,000
 0 1 2 3 4 5km

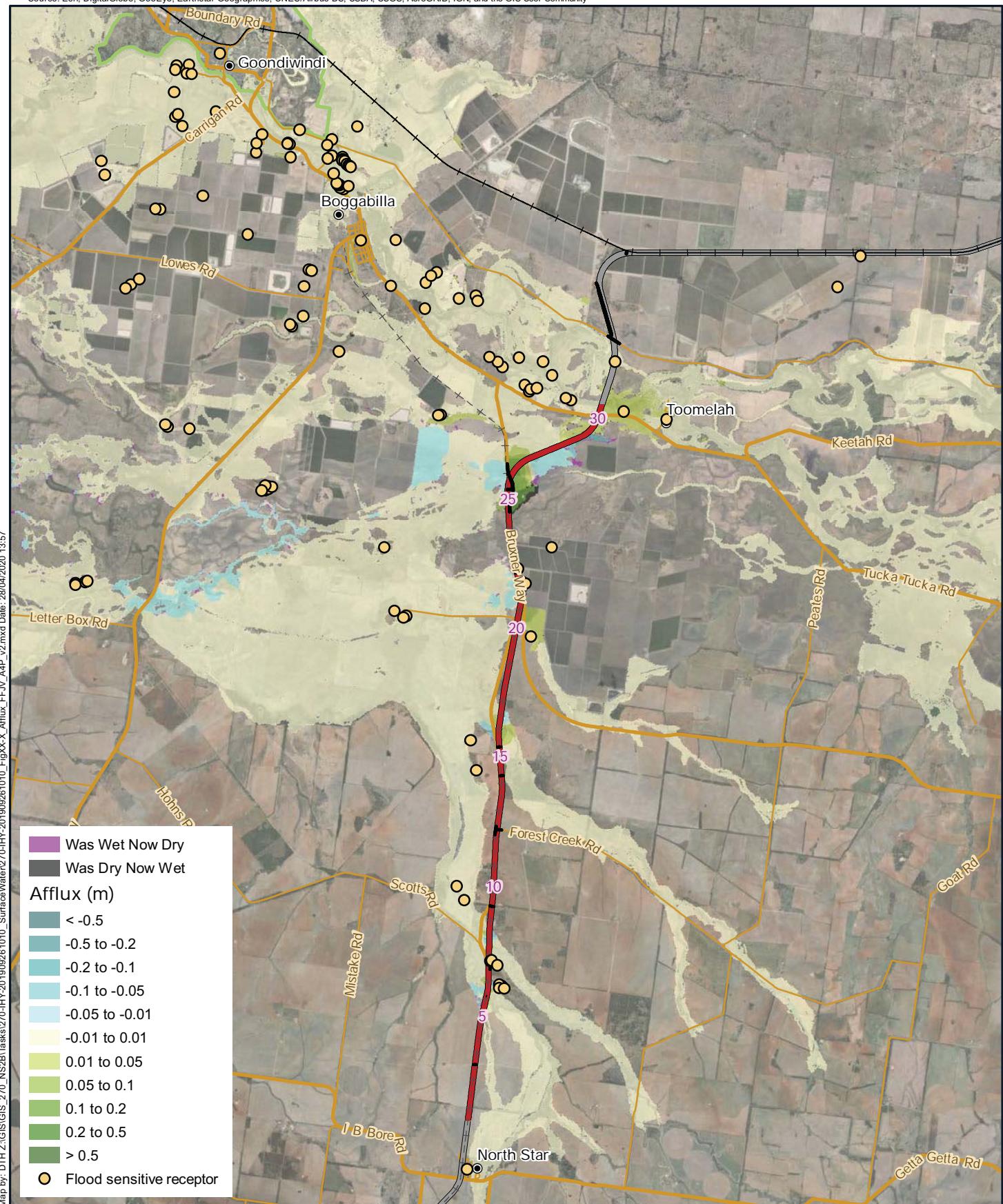


Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads
- Goondiwindi levee



A4 scale: 1:200,000
 0 1 2 3 4 5km



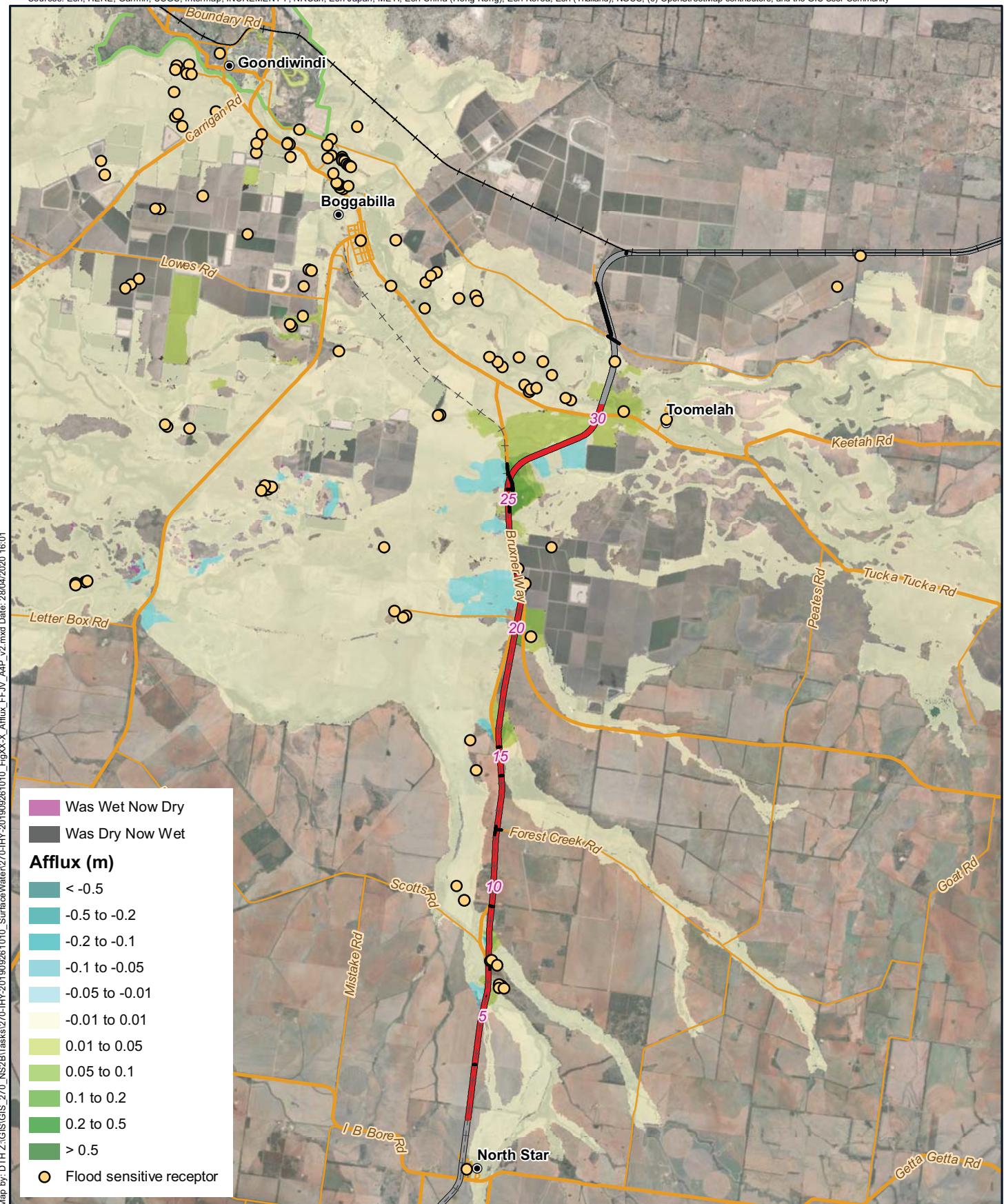
Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

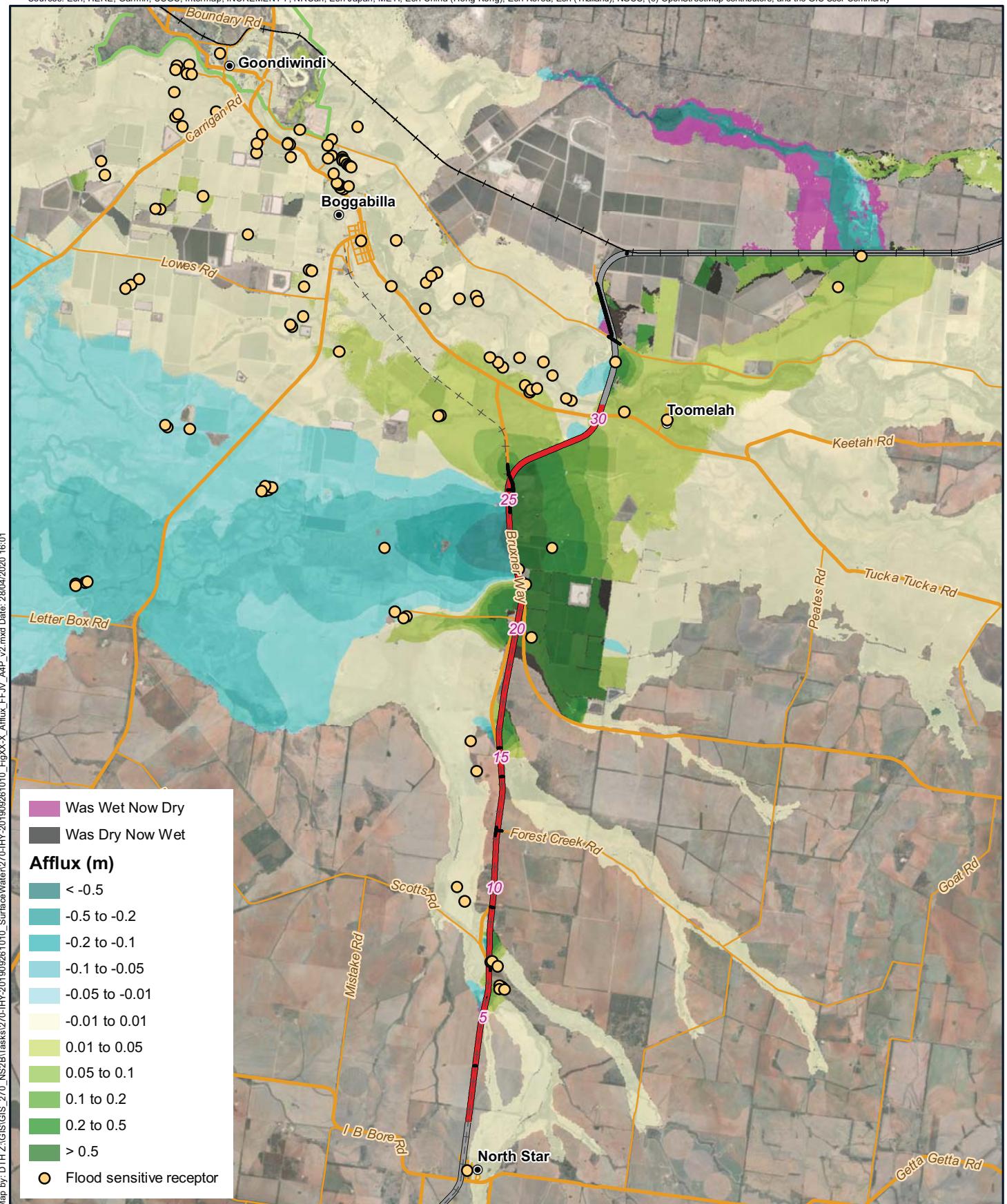
- Proposed roadworks
- Major roads
- Minor roads
- Goondiwindi levee



A4 scale: 1:200,000
 0 1 2 3 4 5km



A4 scale: 1:200,000
 0 1 2 3 4 5km



Legend

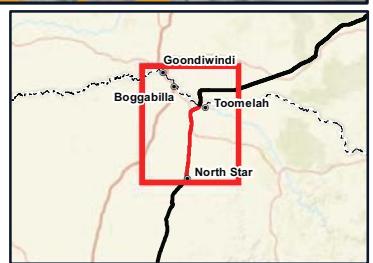
- 5 Chainage (km)
- Locality
- Existing rail (operational)
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

Proposed roadworks

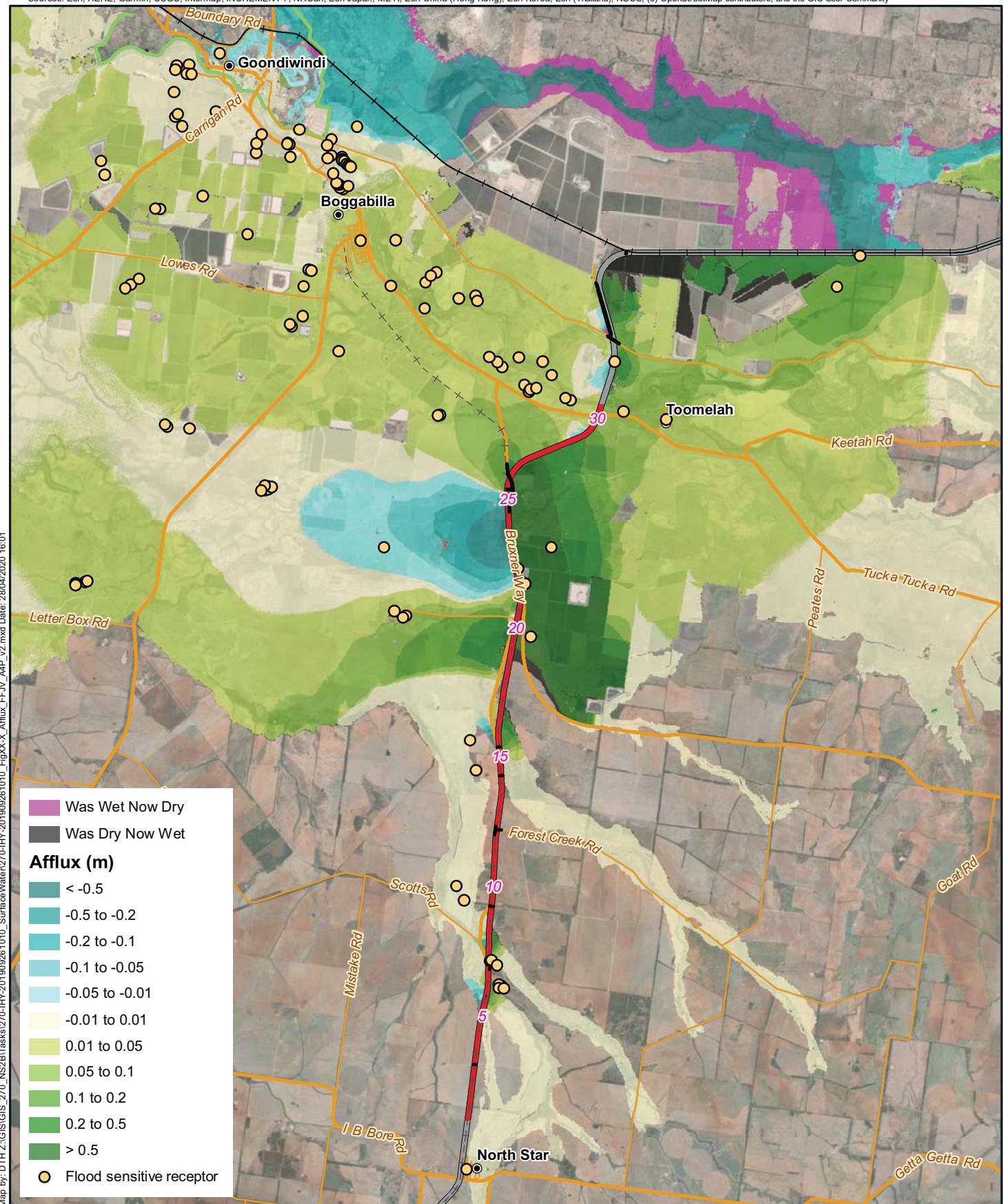
Major roads

Minor roads

Goondiwindi levee

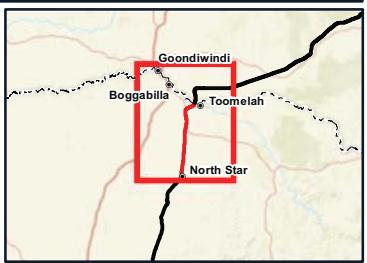


A4 scale: 1:200,000
 0 1 2 3 4 5km

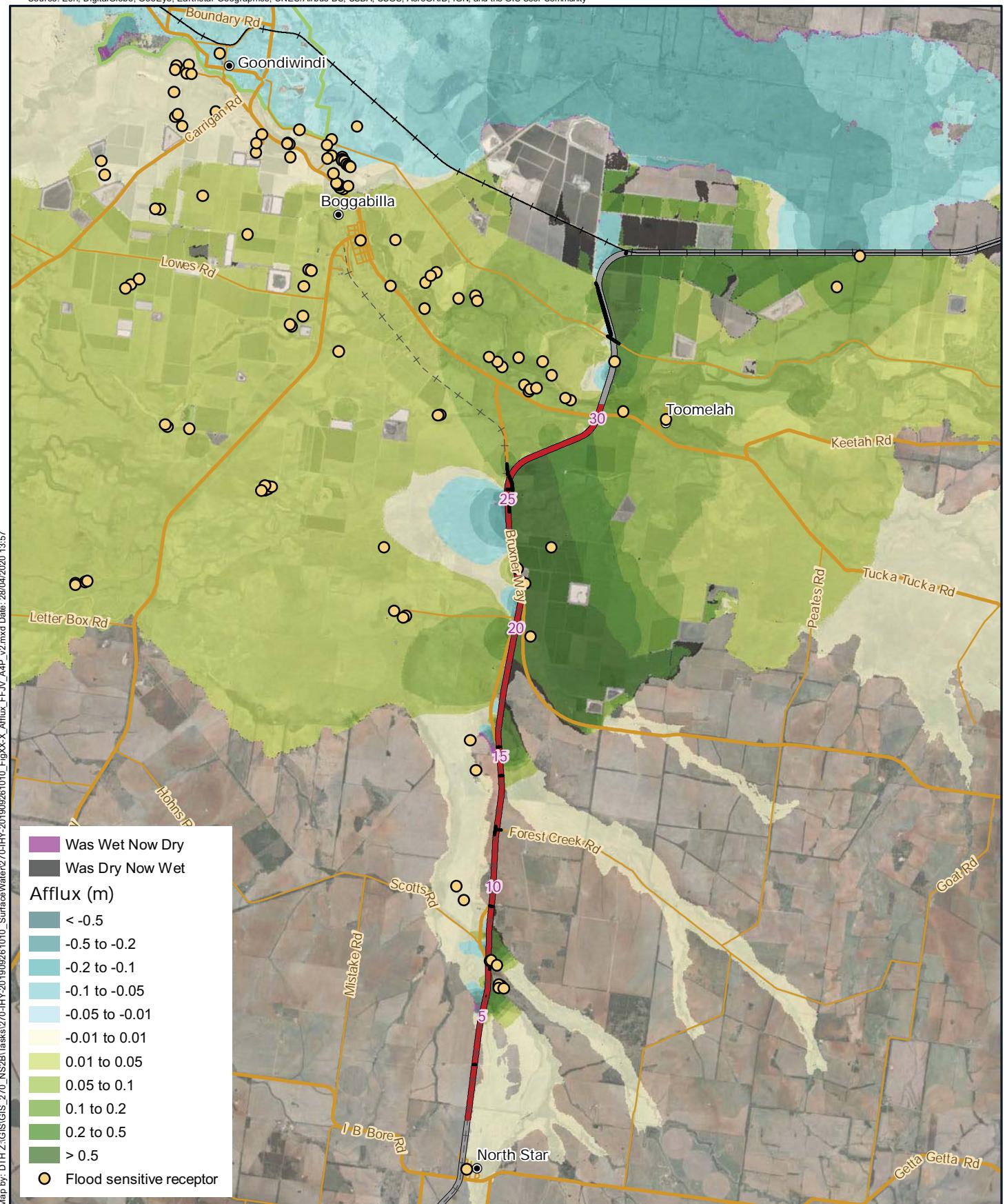


Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads
- Goondiwindi levee



A4 scale: 1:200,000
 0 1 2 3 4 5km



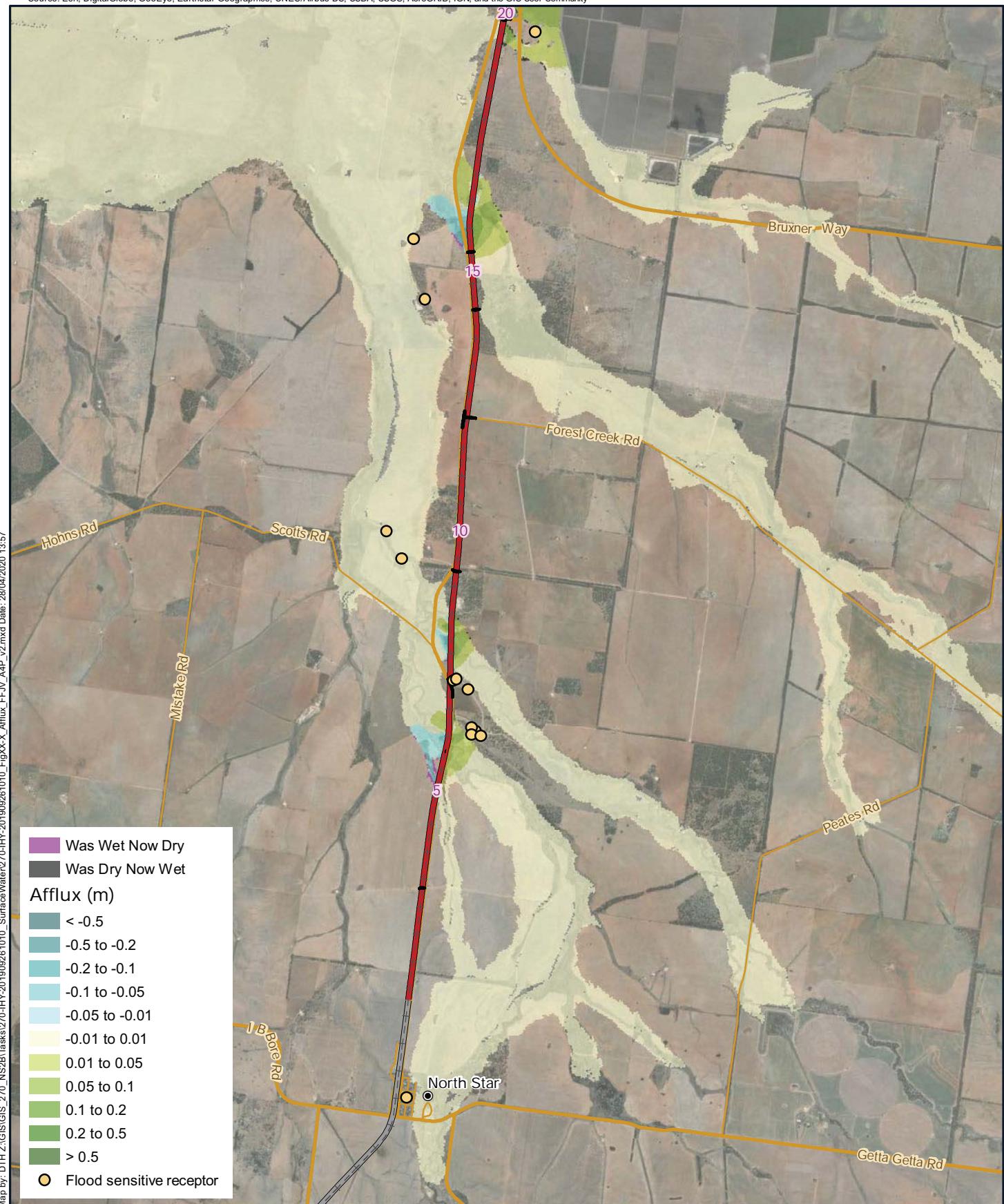
A4 scale: 1:200,000
 0 1 2 3 4 5km



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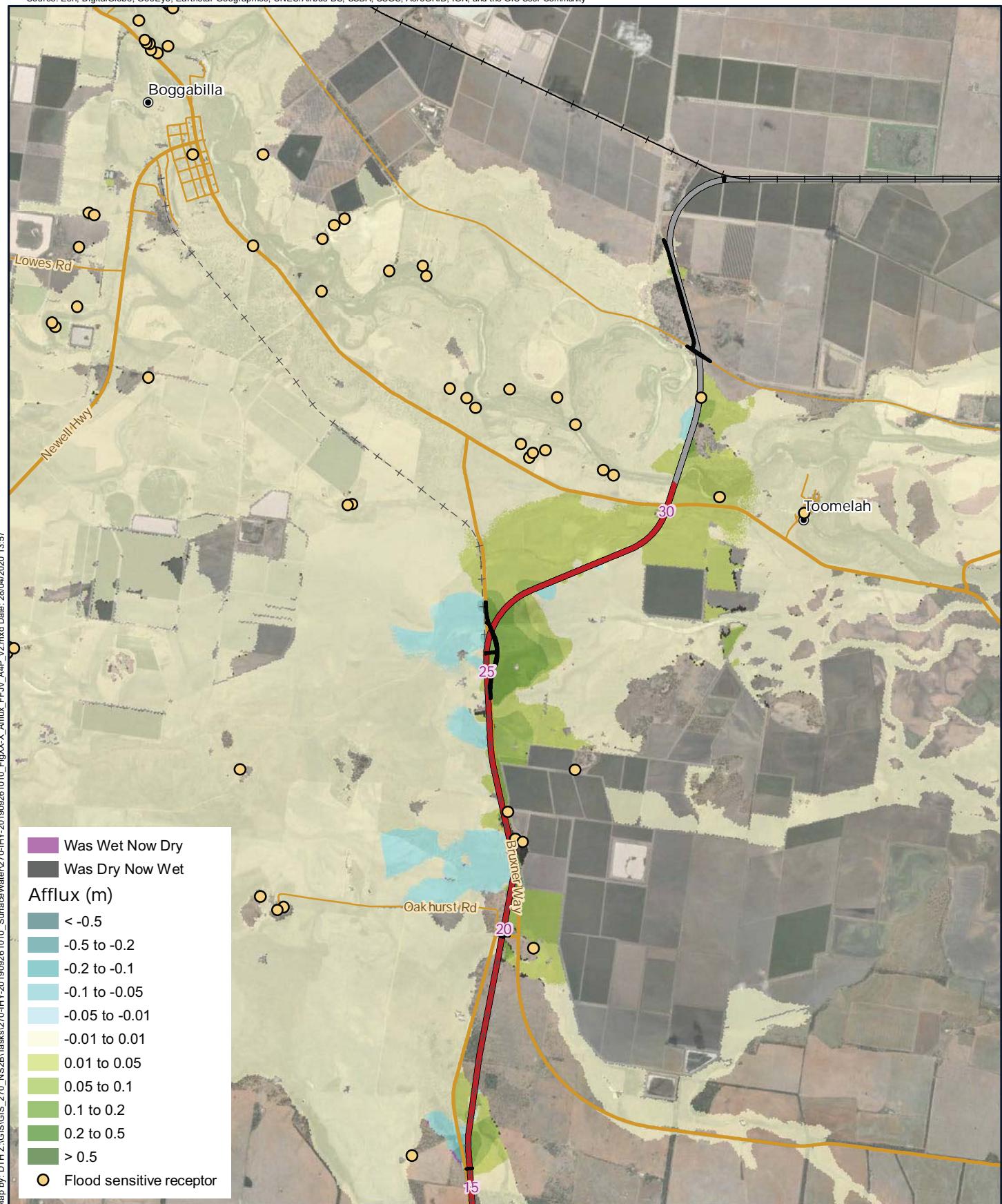
North Star to NSW/QLD border

Figure A16-G: Developed Case:
 Afflux - Probable Maximum Flood Event



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



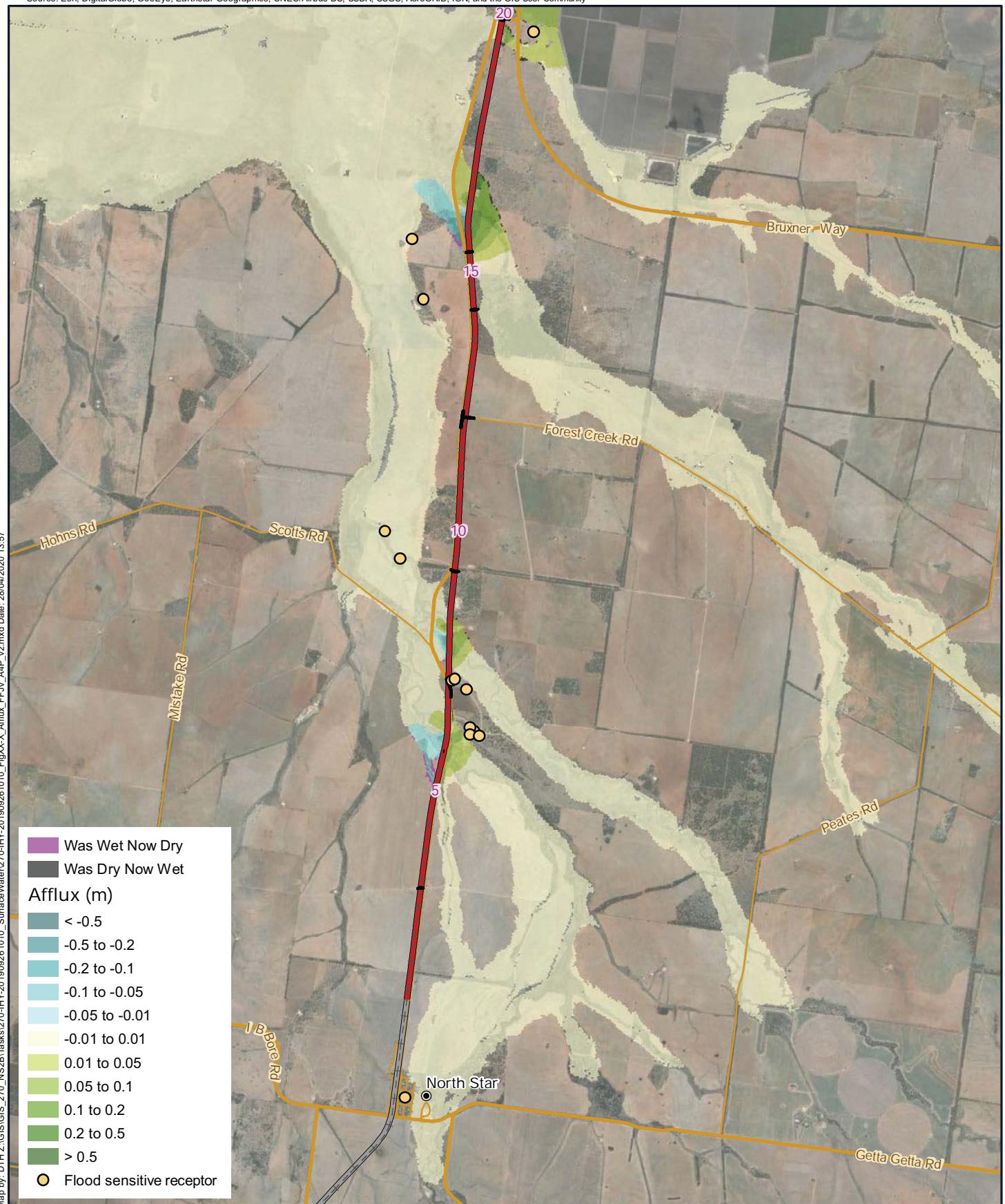


Legend

- 5 Chainage (km)
- Locality
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

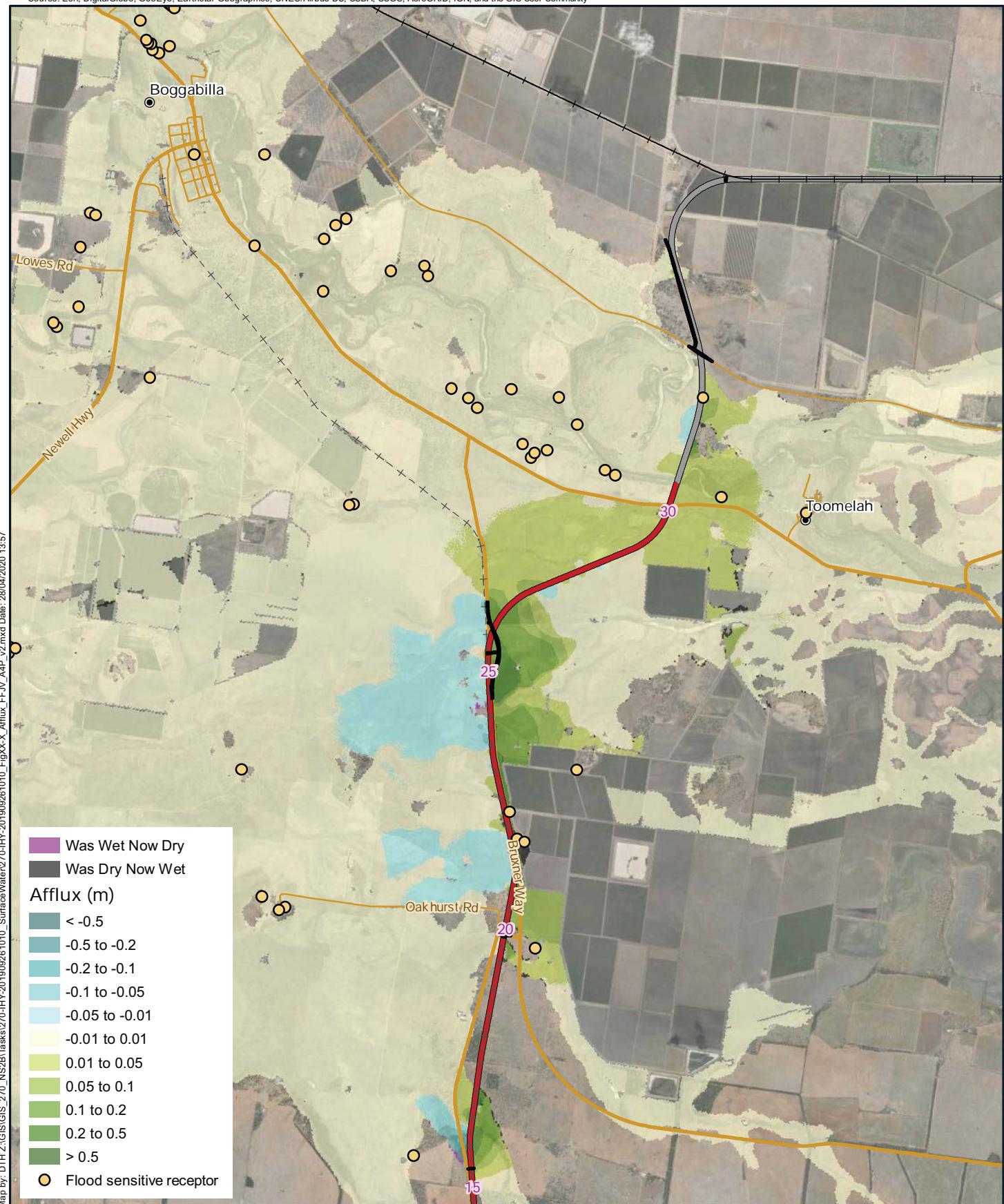
— Proposed roadworks

— Major roads

— Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

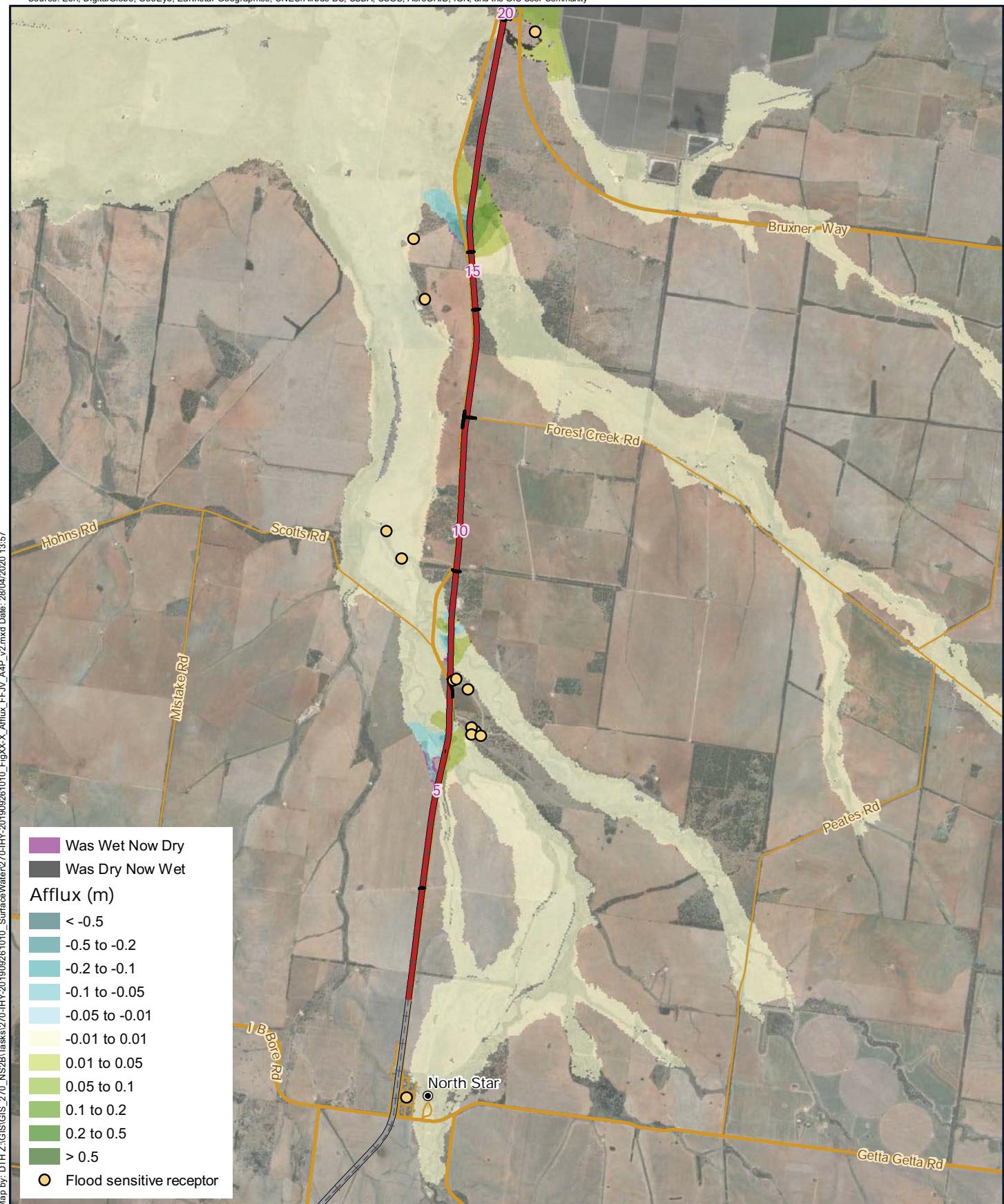


Legend

- 5 Chainage (km)
- Locality
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

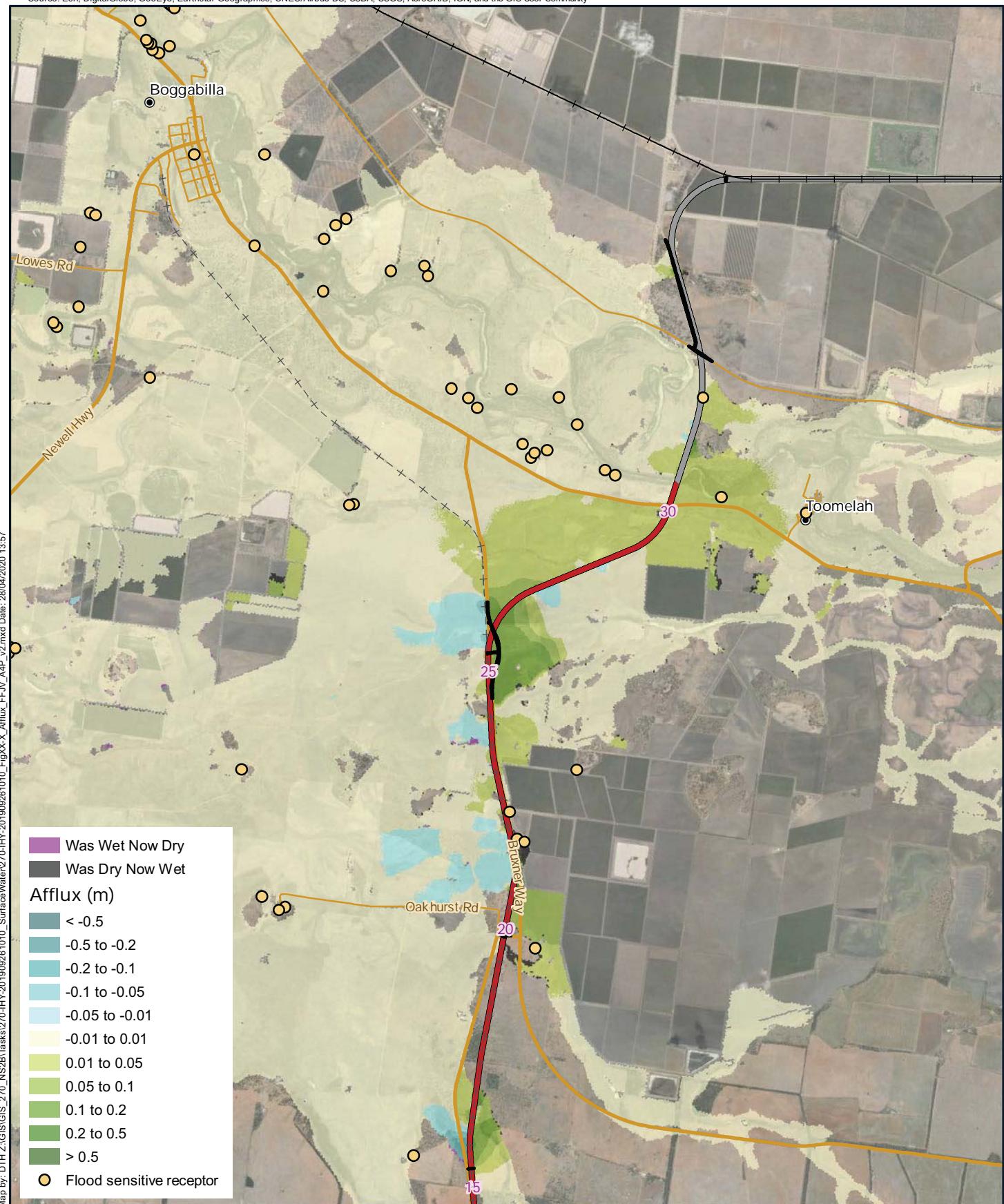
— Proposed roadworks

— Major roads

— Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

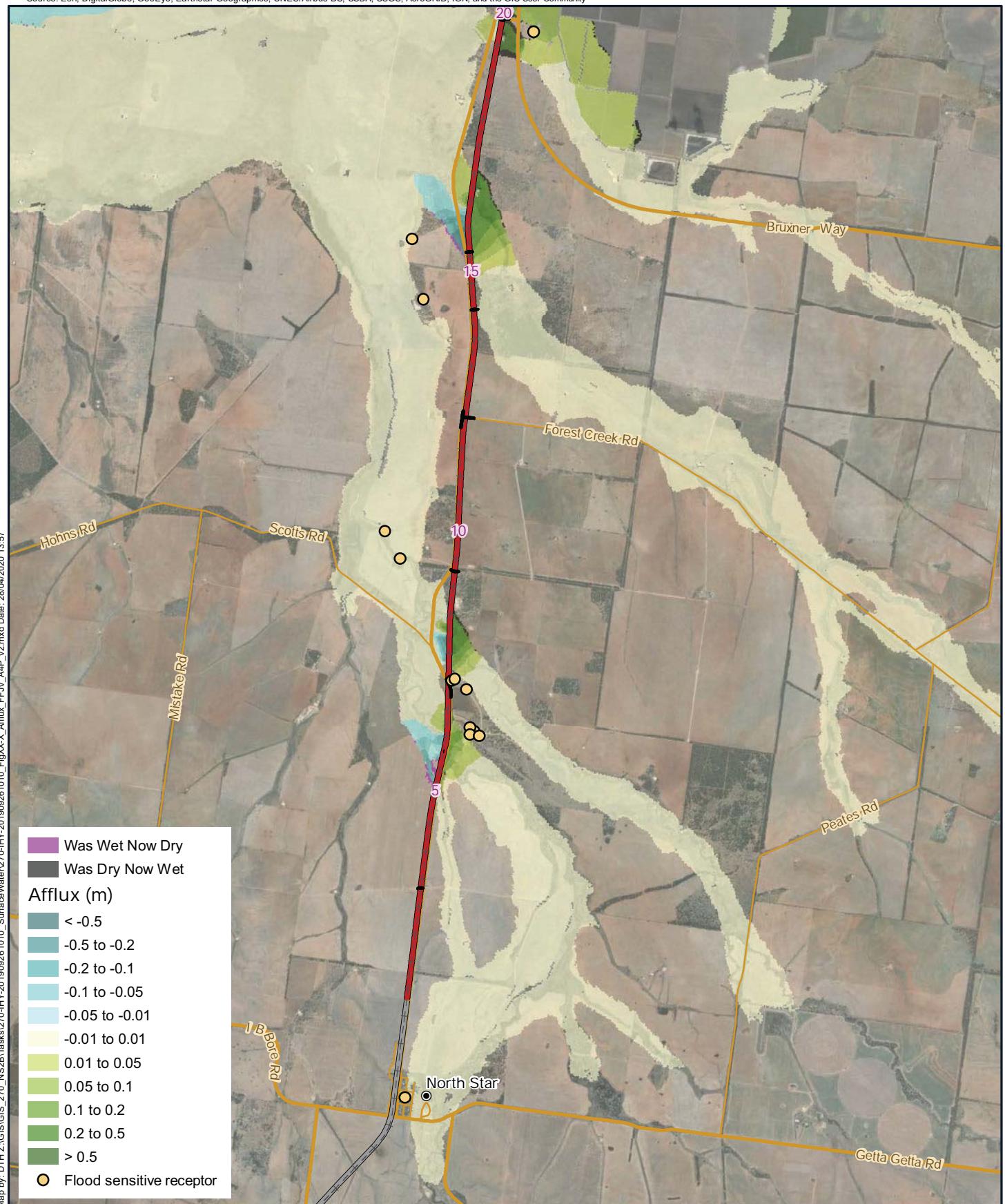


Legend

- 5 Chainage (km)
- Locality
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



Legend

- 5 Chainage (km)
- Locality
- Existing rail (operational)
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

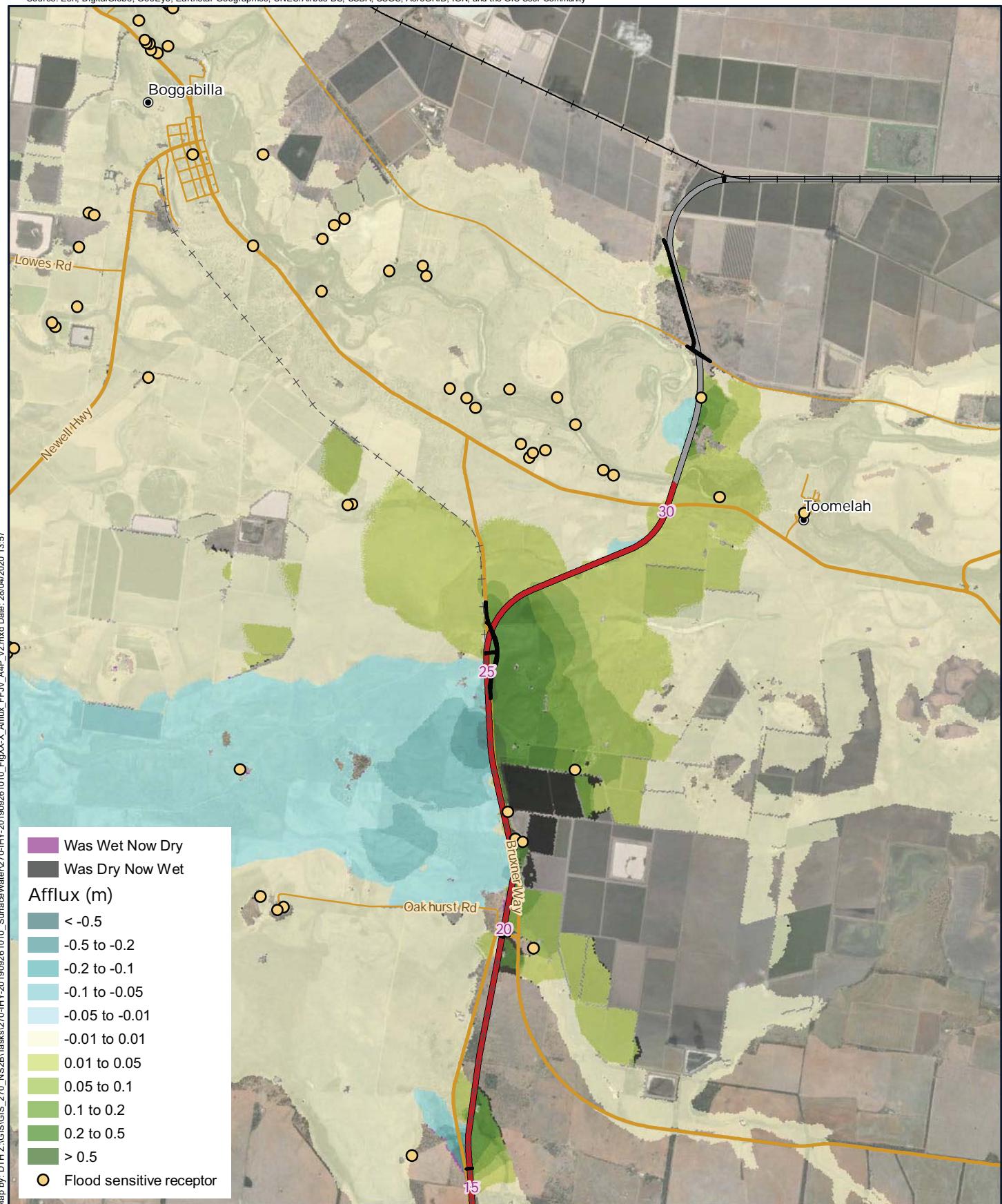
Proposed roadworks

Major roads

Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km

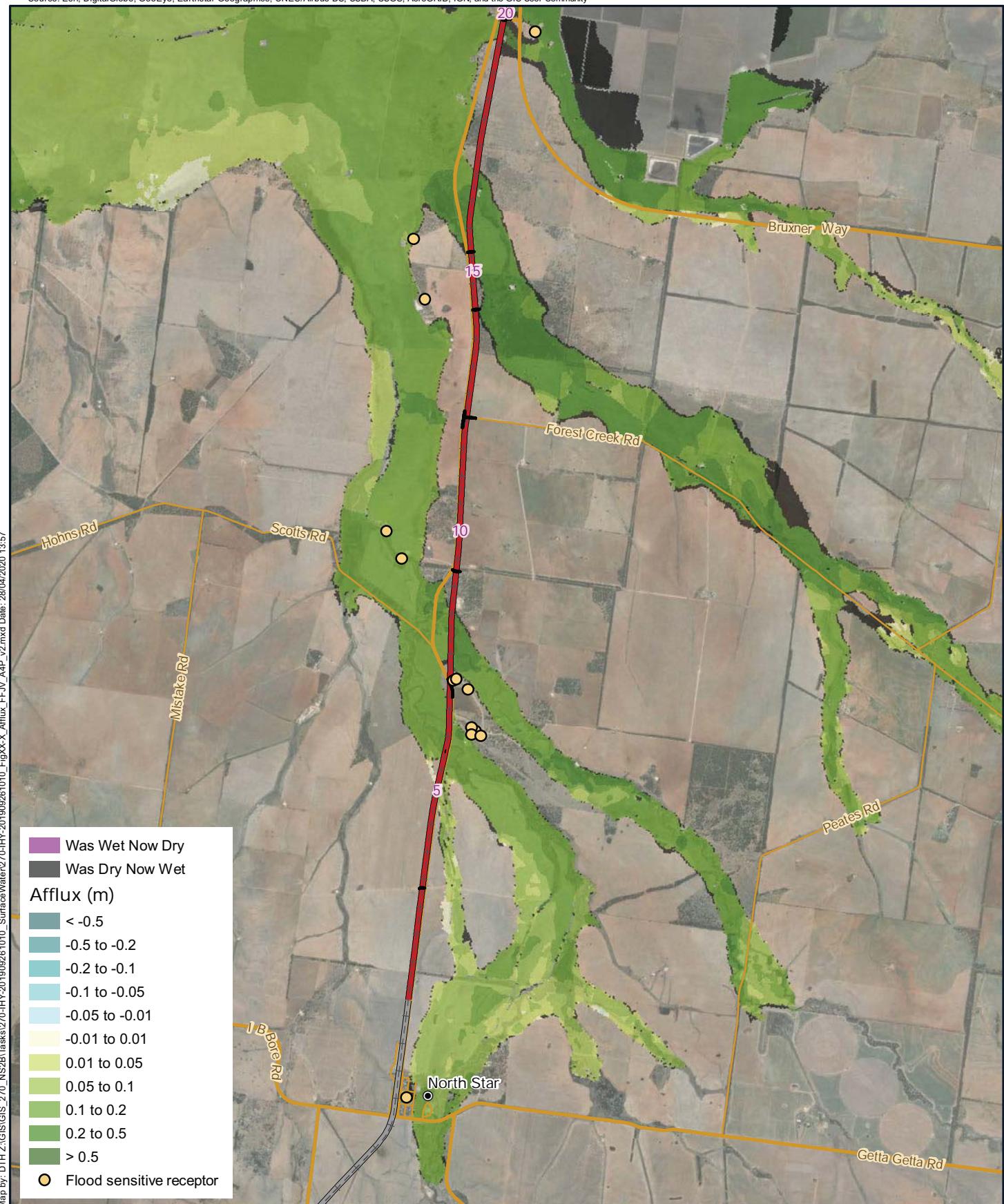


Legend

- 5 Chainage (km)
- Locality
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

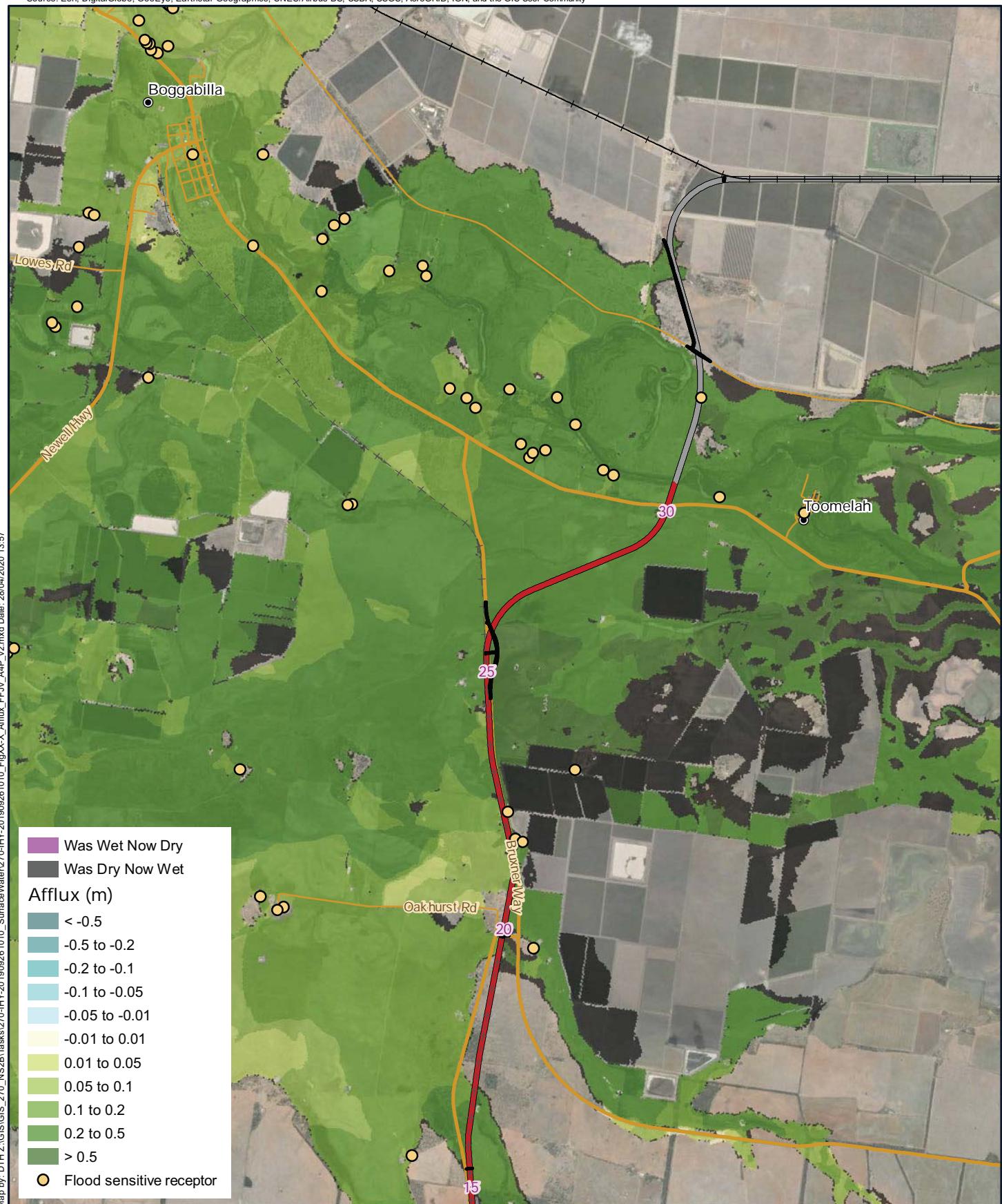
— Proposed roadworks

— Major roads

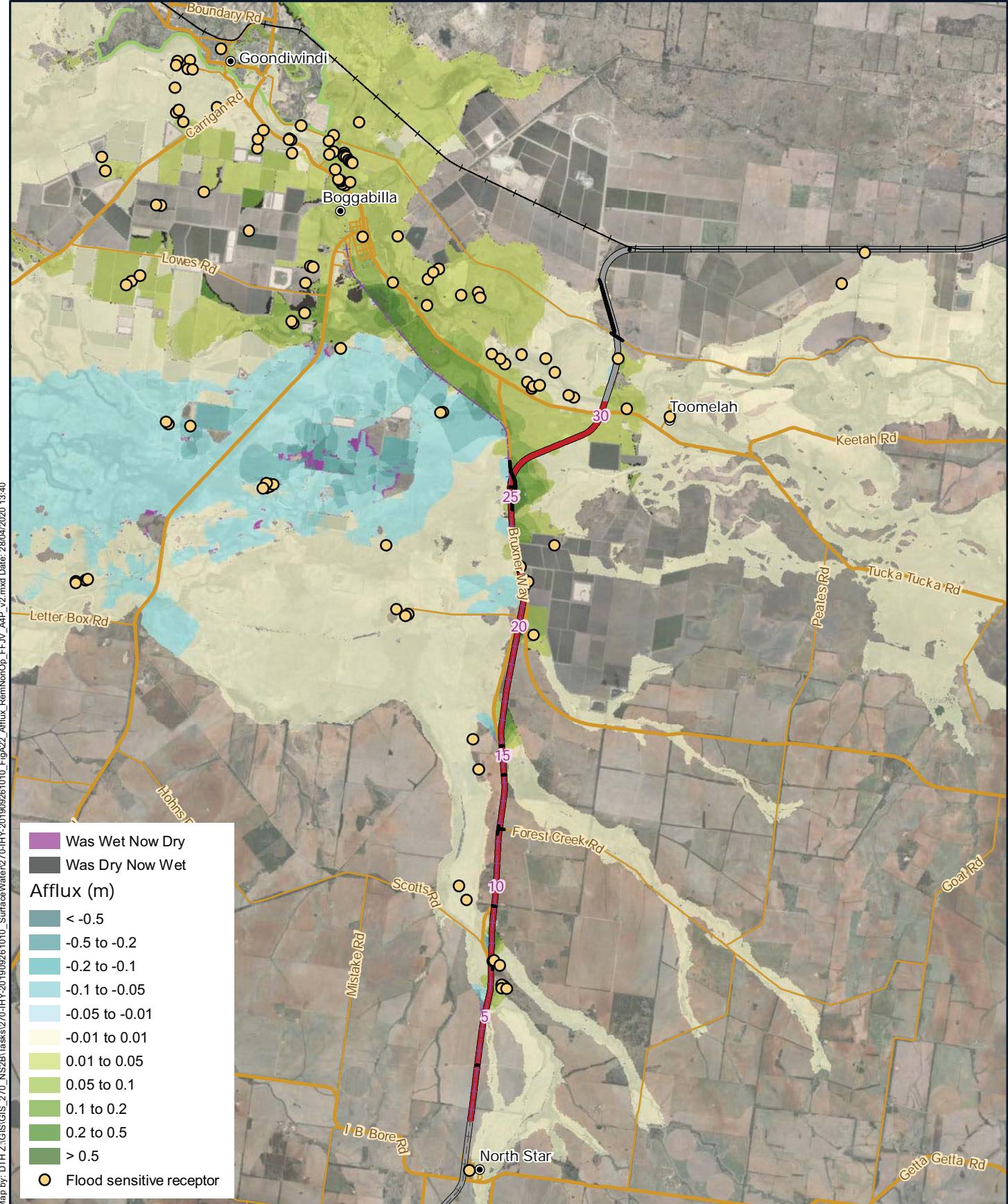
— Minor roads

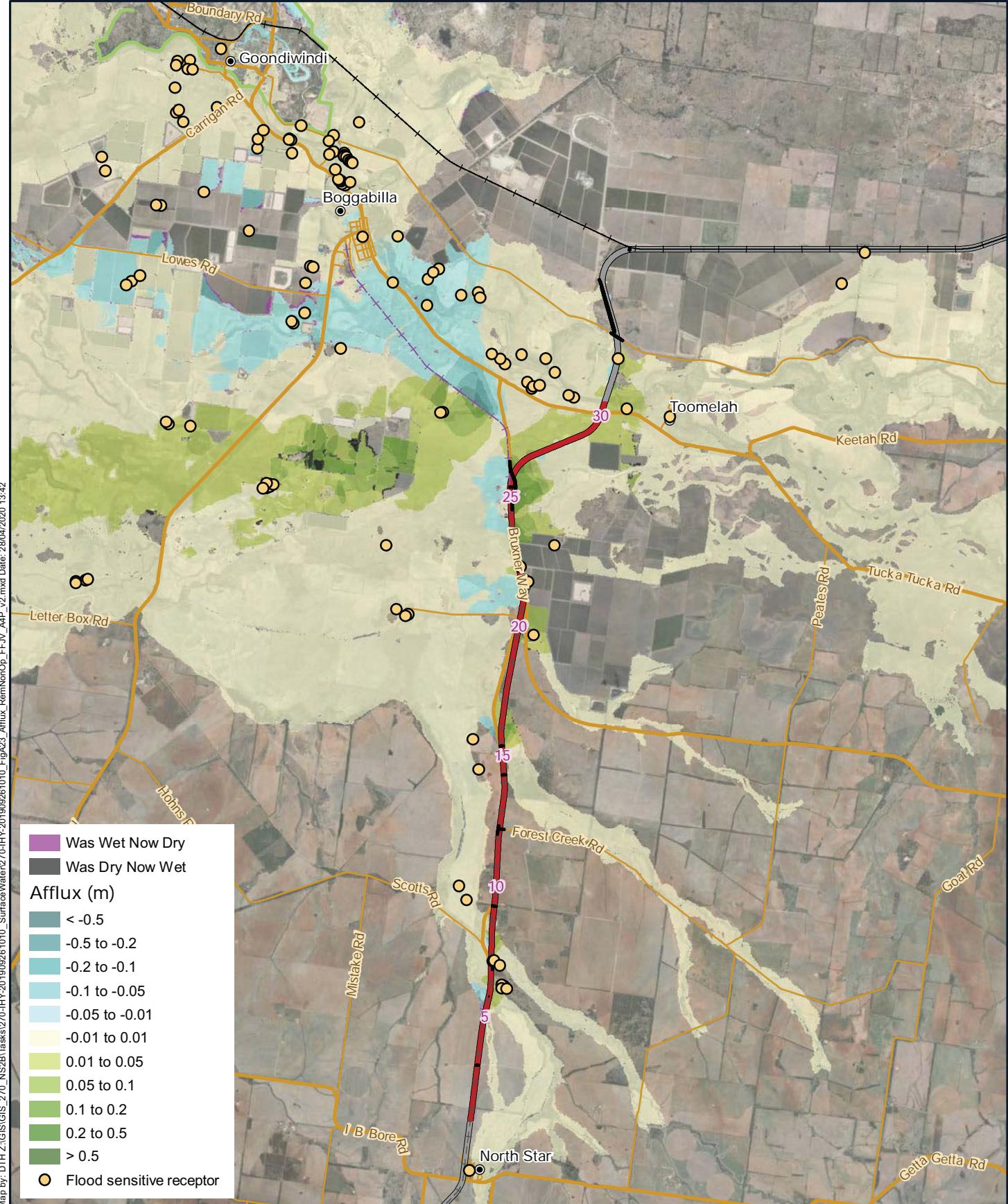


A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km



A4 scale: 1:100,000
 0 0.6 1.2 1.8 2.4 3 km





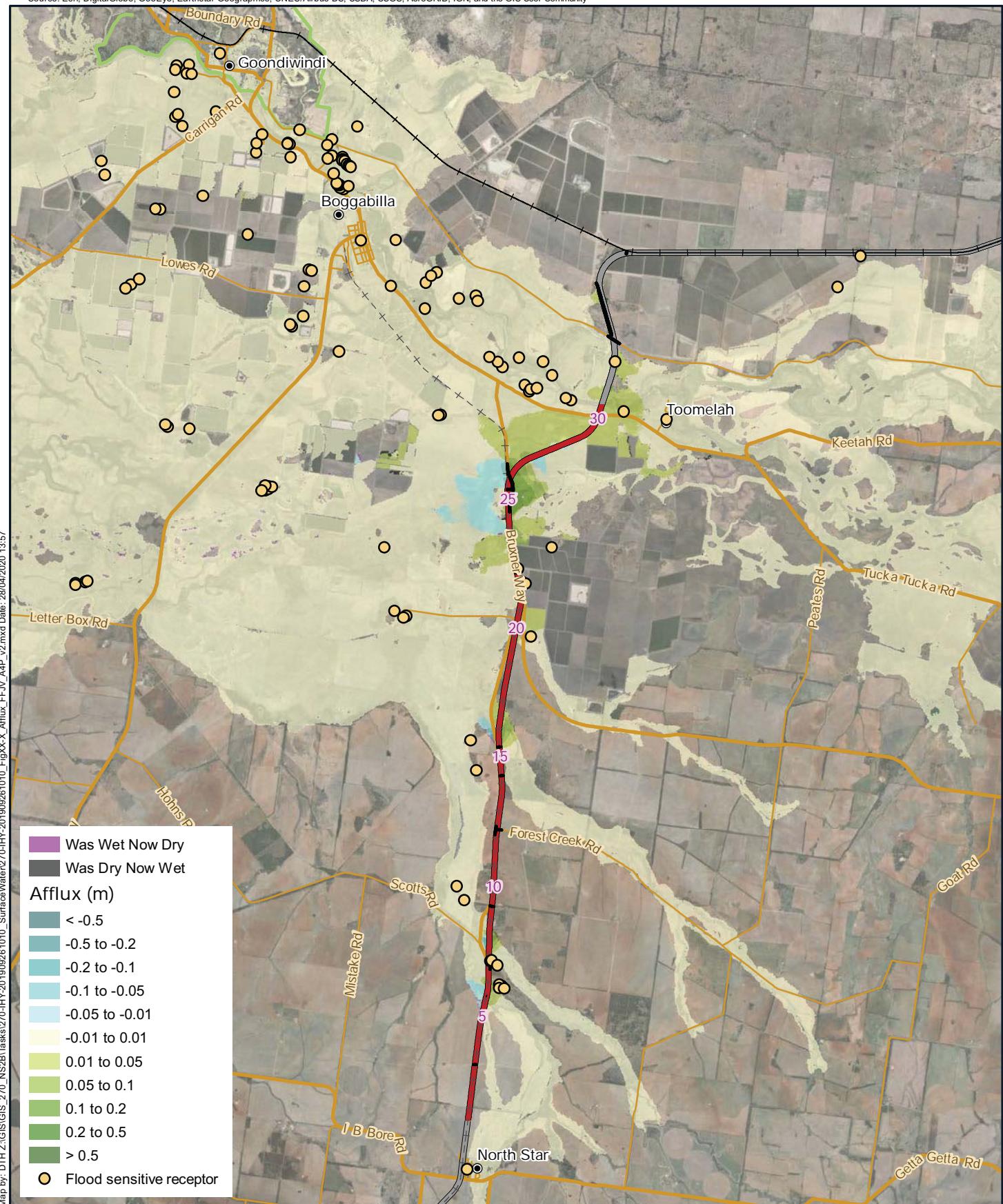
A4 scale: 1:200,000
 0 1 2 3 4 5km



Date: 28/04/2020 Version: 2
 Coordinate System: GDA 1994 MGA Zone 56

North Star to NSW/QLD border

Figure A23: Removal of existing non-operational rail embankment (north of alignment) Afflux - 1% AEP Event



Legend

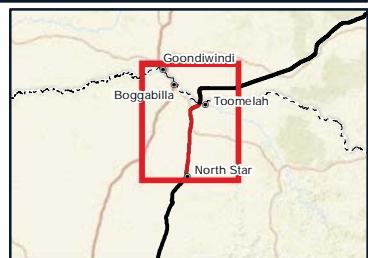
- 5 Chainage (km)
- Localities
- Existing rail (operational)
- +-- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

— Proposed roadworks

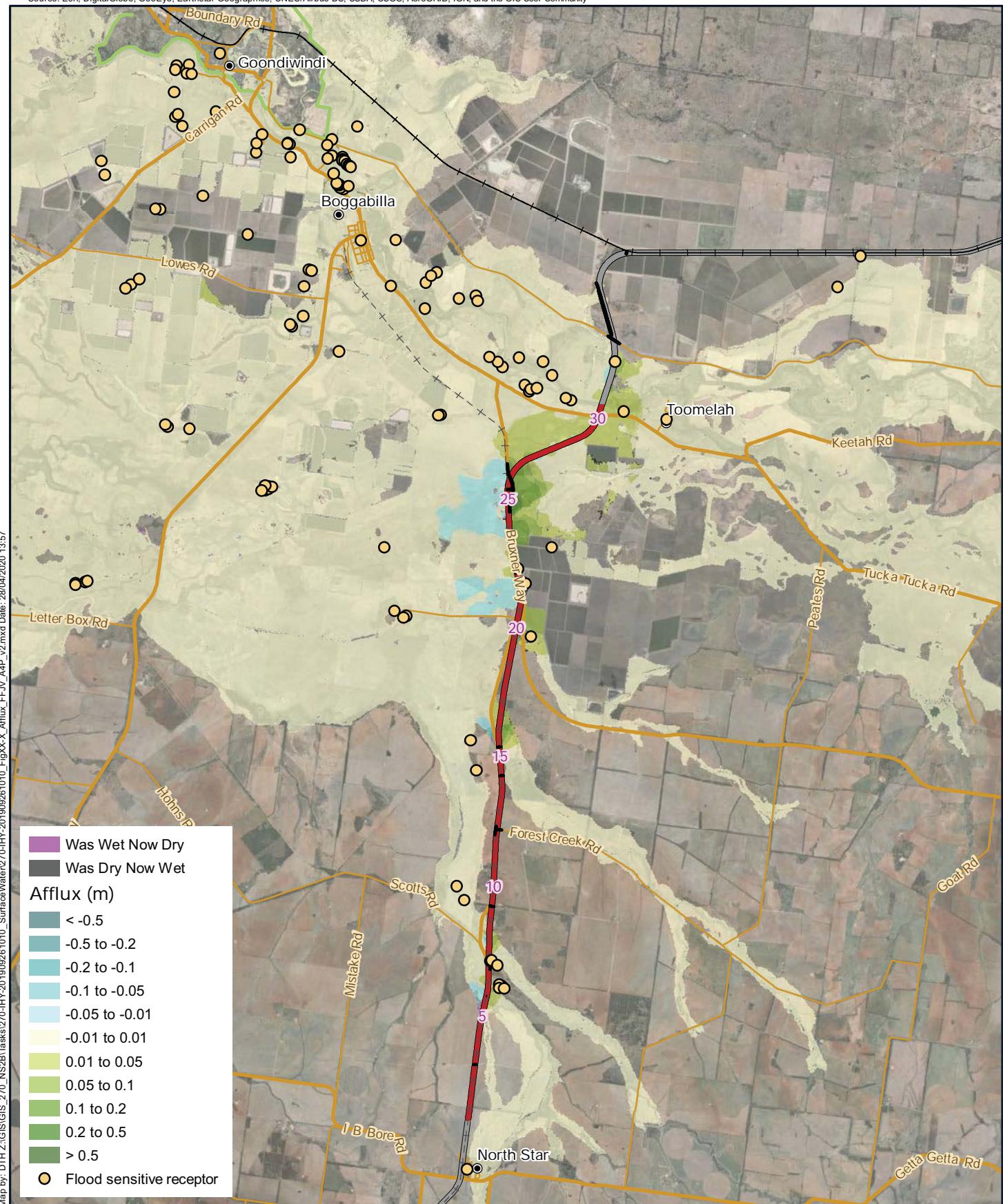
— Major roads

— Minor roads

— Goondiwindi levee



A4 scale: 1:200,000
 0 1 2 3 4 5km



Legend

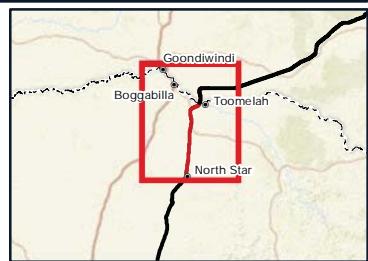
- 5 Chainage (km)
- Locality
- Existing rail (operational)
- Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments

Proposed roadworks

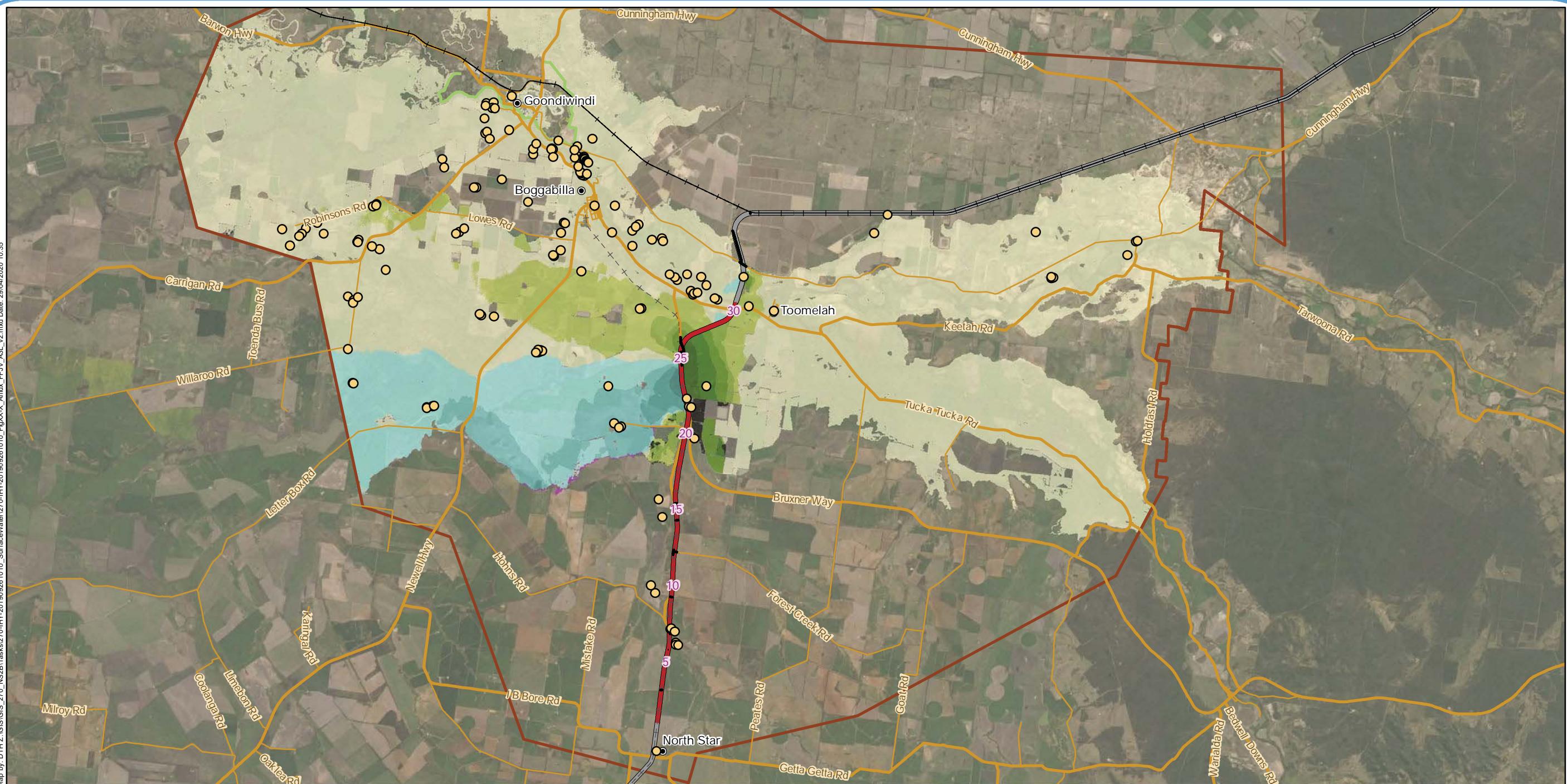
Major roads

Minor roads

Goondiwindi levee

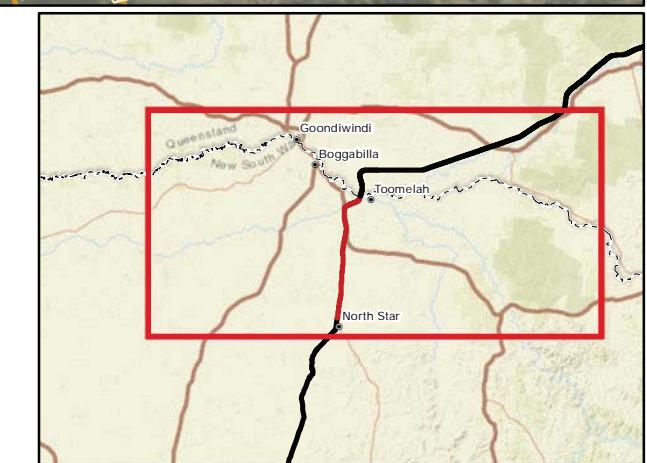


A4 scale: 1:200,000
 0 1 2 3 4 5km

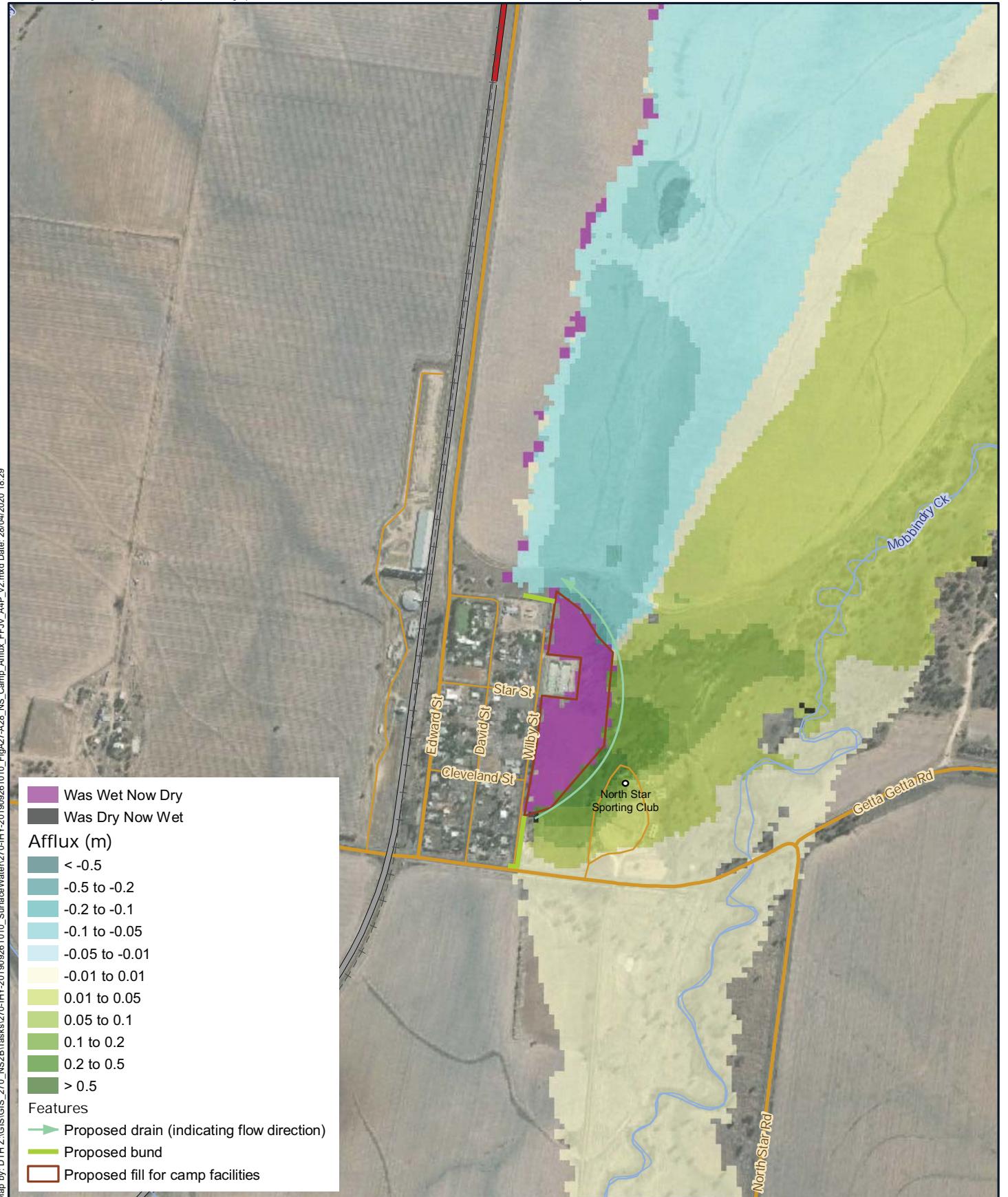


Legend

- 5 Chainage (km)
- Localities
- Existing rail (operational)
- - - Existing rail (non-operational)
- North Star to NSW/QLD border alignment
- Adjoining alignments
- Proposed roadworks
- Major roads
- Minor roads



A3 scale: 1:275,000
 0 4 8 12 16 20km



Legend

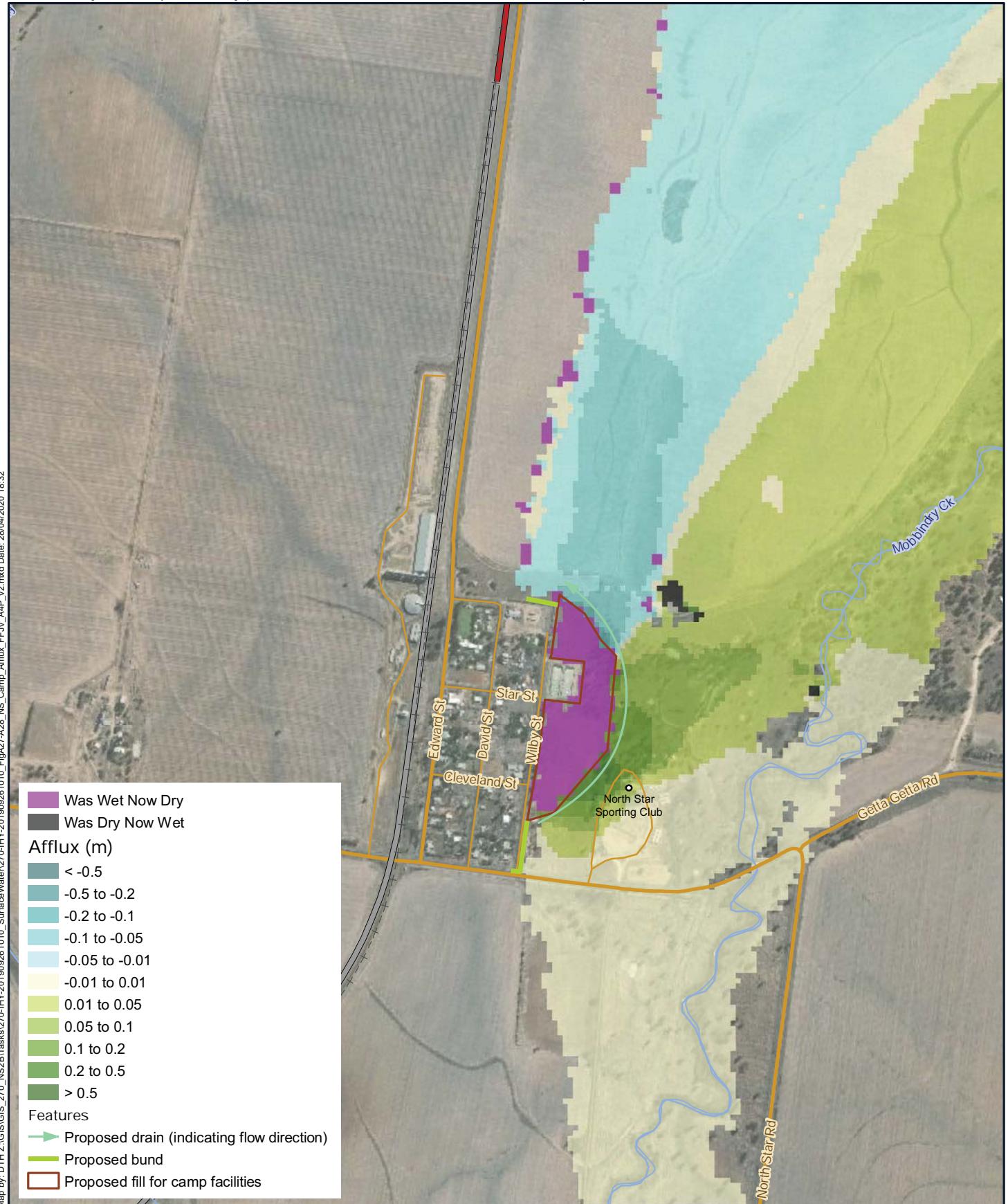
- + - Existing rail (non-operational)
 - North Star to NSW/QLD border alignment
 - Adjoining alignments

- Major roads
 - Minor roads
 - Watercourses



A4 scale: 1:15,000

Figure A27: Camp and Laydown area assessment - Afflux - 1% AEP Event



Legend

- + - Existing rail (non-operational)
 - North Star to NSW/QLD border alignment
 - Adjoining alignments

- Major roads
 - Minor roads
 - Watercourses



A4 scale: 1:15,000

Figure A28: Camp and Laydown area assessment - Afflux - 20% AEP Event