

# TECHNICAL REPORT

INLAND  
RAIL 

# 8

## Noise and vibration assessment – construction and other operations

PART 7 OF 7

Appendix M to N

NARROMINE TO NARRABRI ENVIRONMENTAL IMPACT STATEMENT

ARTC

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Inland Rail through the Australian  
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partnership with the private sector.

# TECHNICAL REPORT

# 8

## Noise and vibration assessment – construction and other operations







### **Appendix M** Construction vibration buffers: human comfort – rail earthworks / bridges (impact piling)

NARROMINE TO NARRABRI ENVIRONMENTAL IMPACT STATEMENT





## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Commercial/Industrial |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 1 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

#### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 2 OF 94

0 0.1 0.2  
Km

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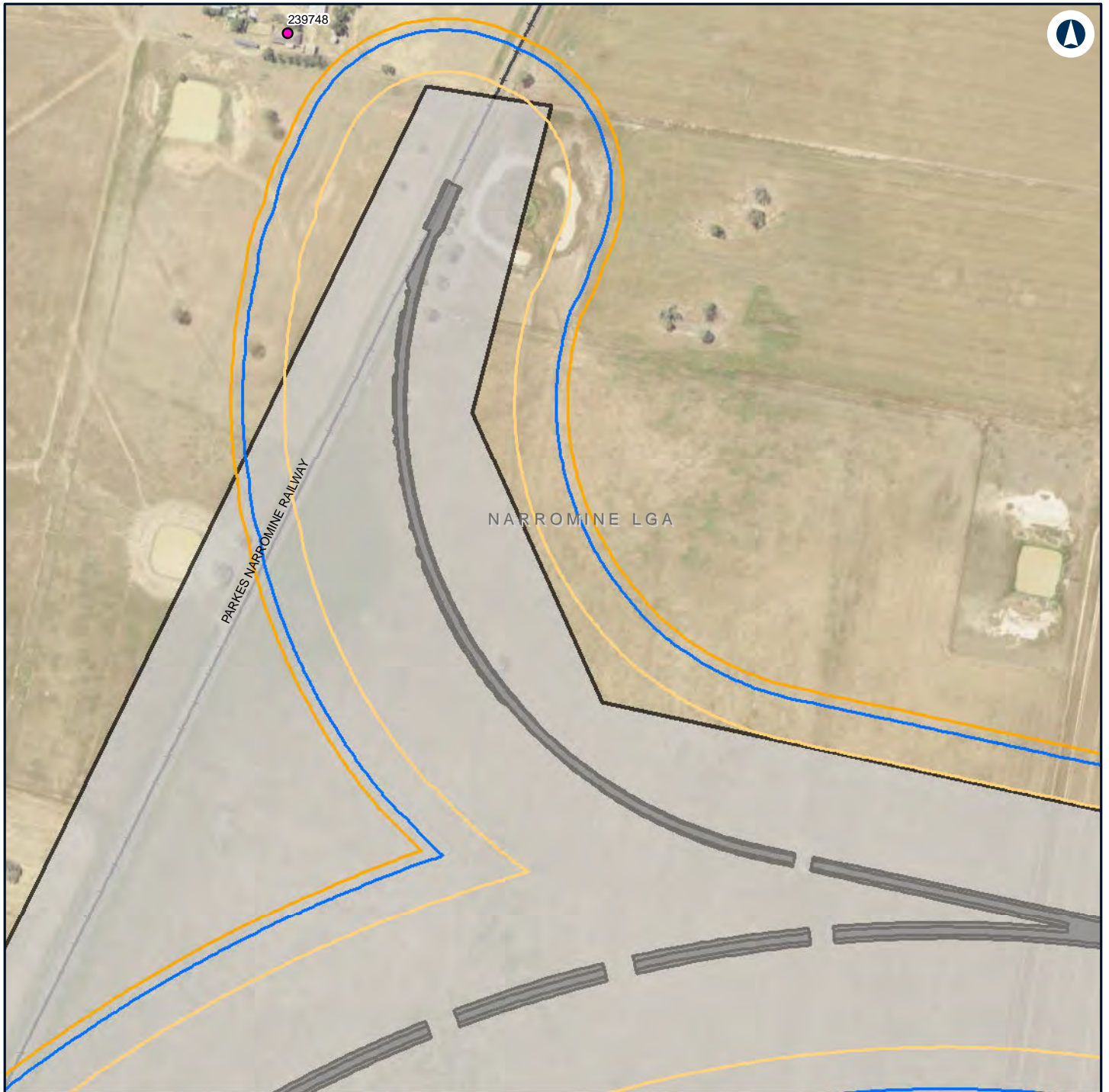
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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 3 OF 94

0 0.1 0.2  
Km

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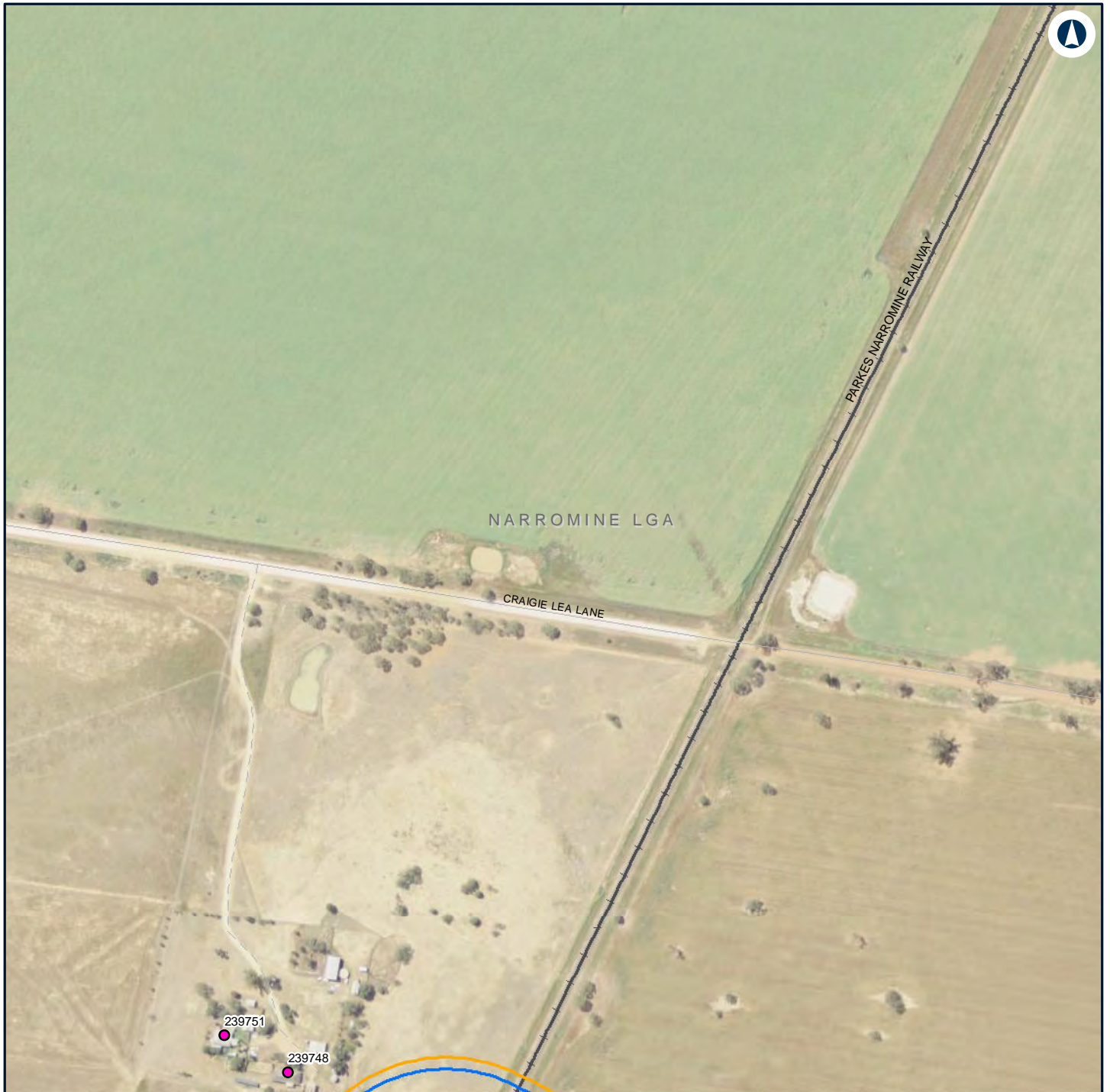
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Scale: 1:5,000

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## LEGEND

### Vibration from rail earthworks

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 4 OF 94

0 0.1 0.2  
Km

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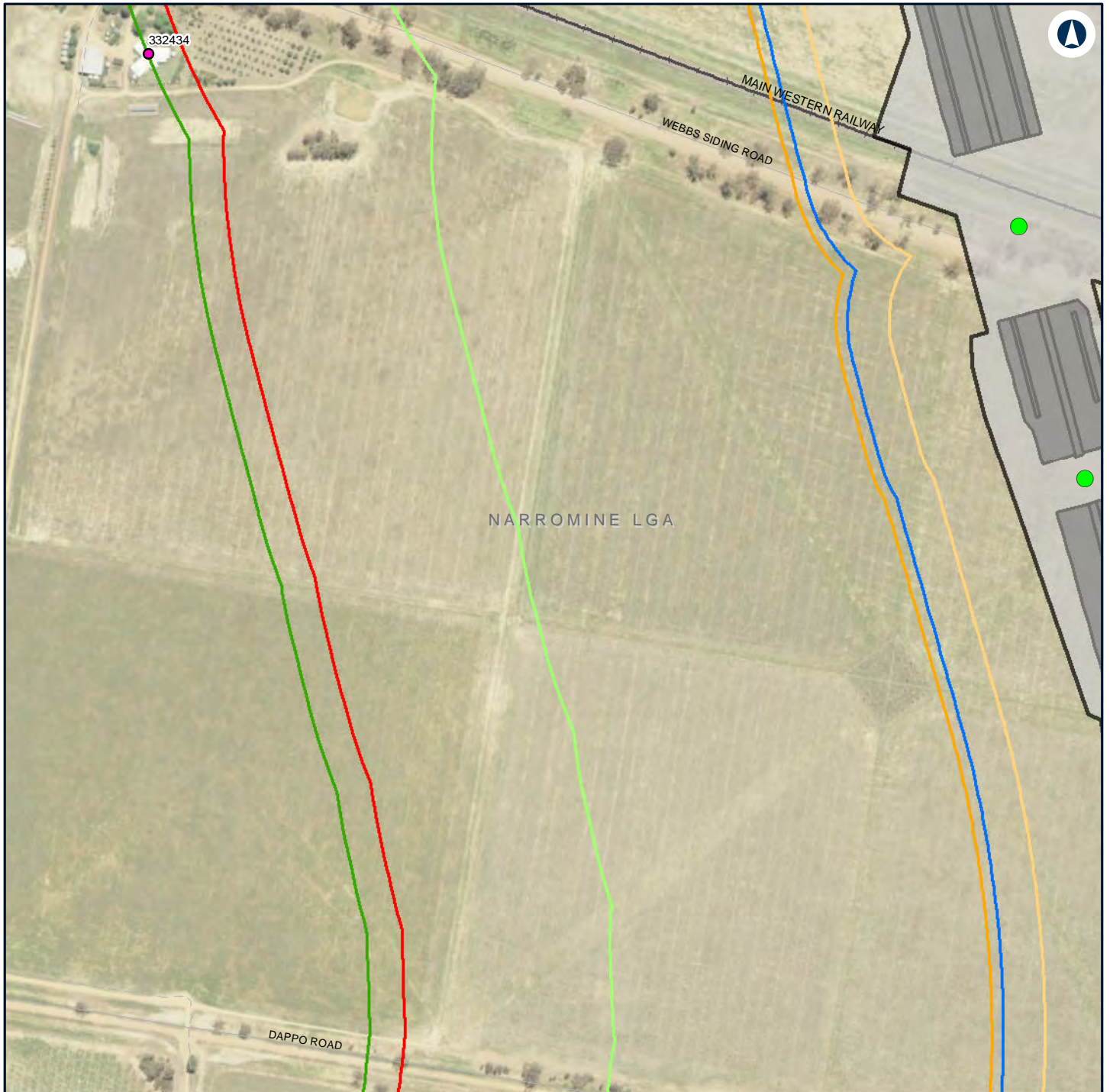
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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 5 OF 94

0 0.1 0.2  
Km

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

## Vibration from rail earthworks

- |   |
|---|
|  AVTG night max (0.26 m/s 1.75, 94 m) |
|  AVTG day max (0.4 m/s 1.75, 128 m)   |
|  BS 5228-2:2009 (1 mm/s, 140 m)       |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 6 OF 94

0 0.1 0.2  
Km

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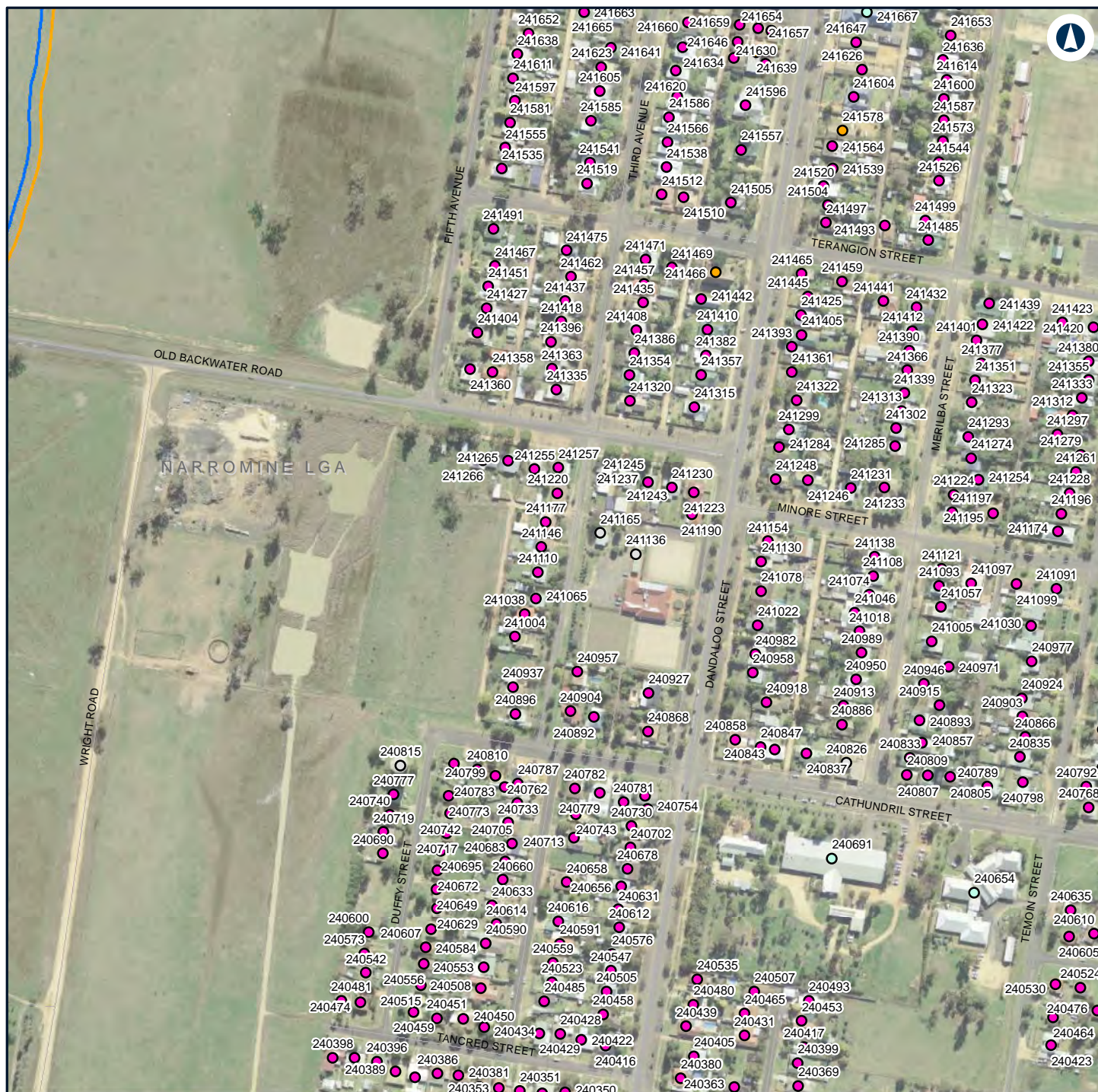
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## LEGEND

### Vibration from rail earthworks

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

- Commercial/Industrial
- Health
- Residential

● Worship



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 7 OF 94

0 0.1 0.2  
Km

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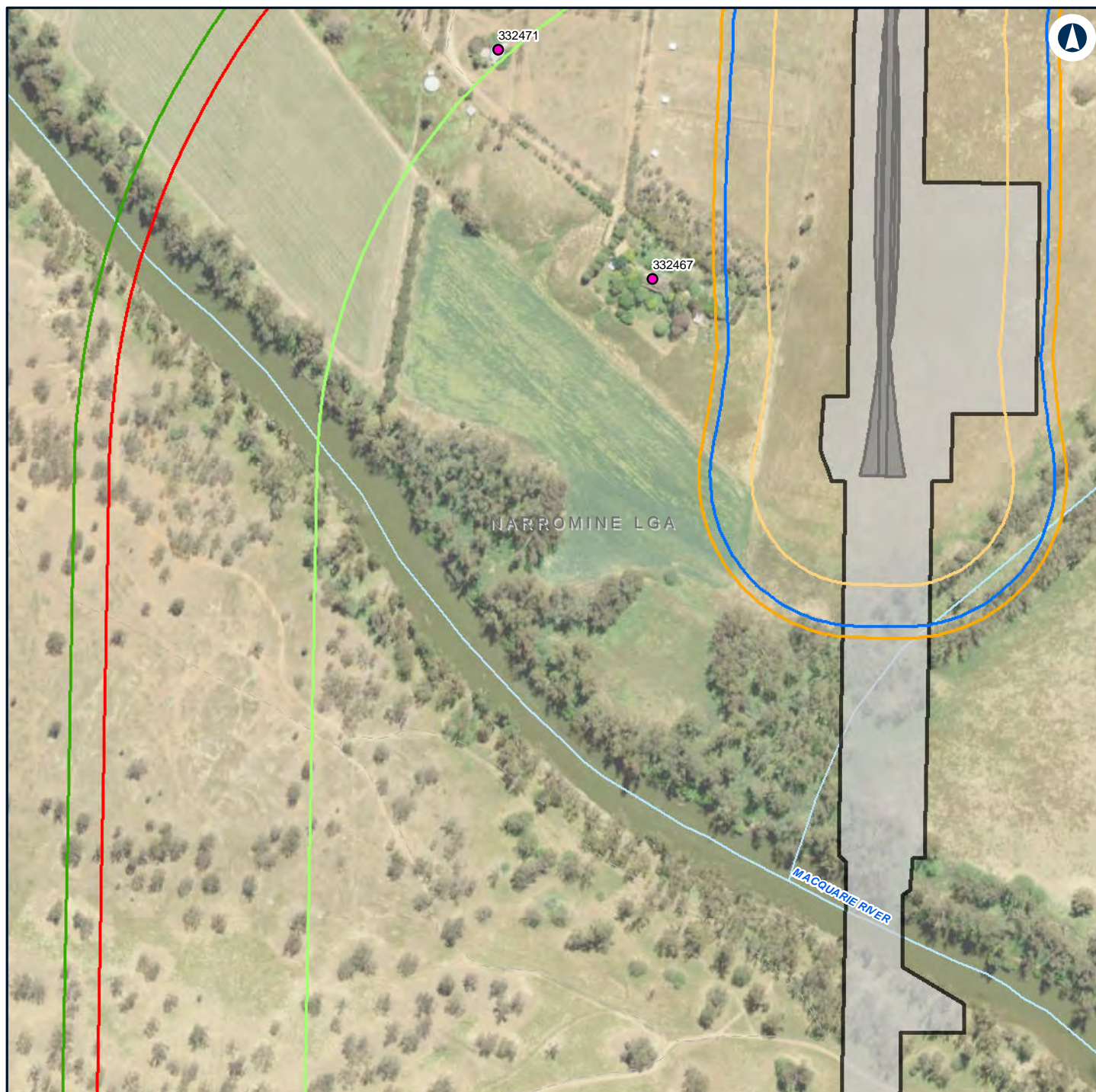
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## LEGEND

- |  |   |  |                                      |
|--|---|--|--------------------------------------|
|  | Construction footprint                      |  | Vibration from rail earthworks       |
|  | Rail earthworks extent (propagation source) |  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | Vibration from bridge construction (piling) |  | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | AVTG night max (0.26 m/s 1.75, 490 m)       |  | BS 5228-2:2009 (1 mm/s, 140 m)       |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          |  | Structure type                       |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |  | Residential                          |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 8 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Commercial/Industrial |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 9 OF 94

0 0.1 0.2  
Km

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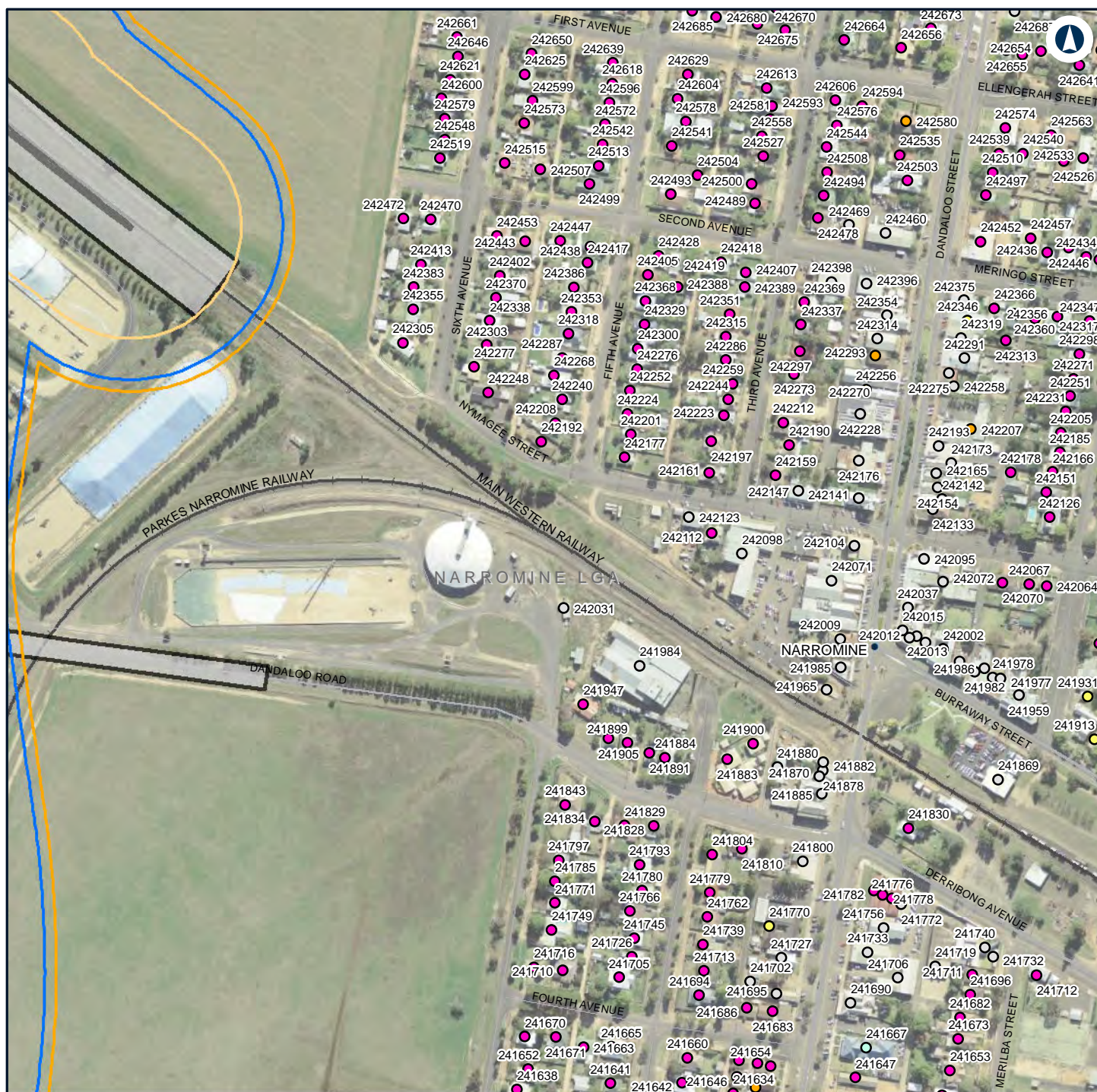
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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      |  Structure type        |
|  Rail earthworks extent (propagation source) |  Commercial/Industrial |
| <b>Vibration from rail earthworks</b>  |  Community             |
|  AVTG night max (0.26 m/s 1.75, 94 m)        |  Health                |
|  AVTG day max (0.4 m/s 1.75, 128 m)          |  Residential           |
|  BS 5228-2:2009 (1 mm/s, 140 m)              |  Worship               |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 10 OF 94

0 0.1 0.2  
Km

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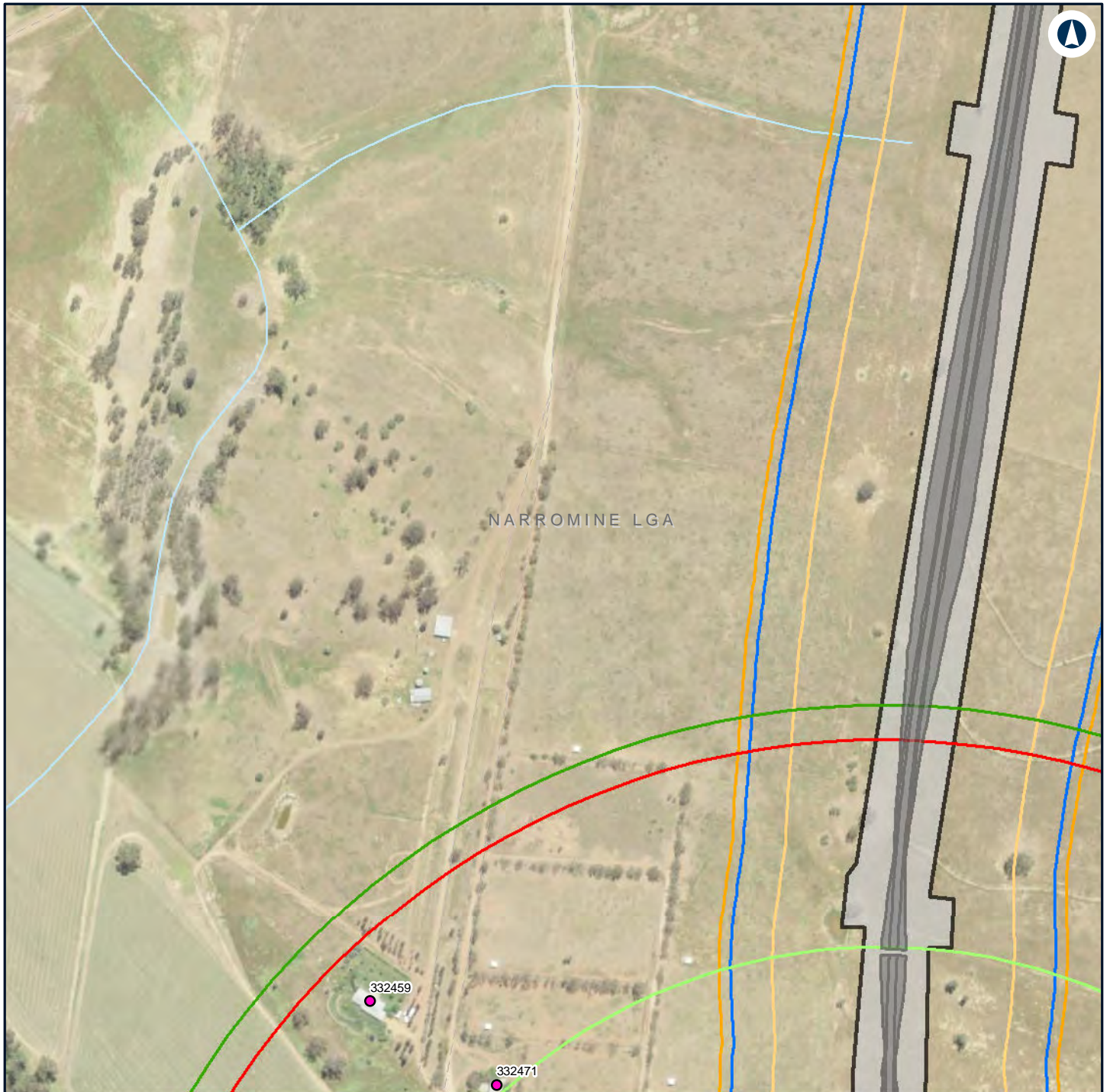
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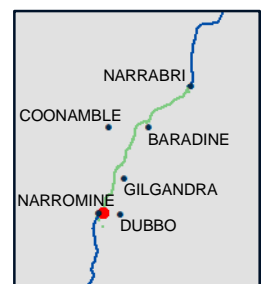
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## LEGEND

- |  |  |
|--|--|
|  Construction footprint                      | <b>Vibration from rail earthworks</b>  |
|  Rail earthworks extent (propagation source) |  AVTG night max (0.26 m/s 1.75, 94 m) |
| <b>Vibration from bridge construction (piling)</b>   |  AVTG day max (0.4 m/s 1.75, 128 m)   |
|  AVTG night max (0.26 m/s 1.75, 490 m)       |  BS 5228-2:2009 (1 mm/s, 140 m)       |
|  AVTG day max (0.4 m/s 1.75, 670 m)          | <b>Structure type</b>  |
|  BS 5228-2:2009 (1 mm/s, 700 m)              |  Residential                          |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 11 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |  |                       |
|--|---|--|-----------------------|
|  | Construction footprint                      |  | Structure type        |
|  | Rail earthworks extent (propagation source) |  | Commercial/Industrial |
|  | Vibration from rail earthworks              |  | Residential           |
|  | AVTG night max (0.26 m/s 1.75, 94 m)        |  |                       |
|  | AVTG day max (0.4 m/s 1.75, 128 m)          |  |                       |
|  | BS 5228-2:2009 (1 mm/s, 140 m)              |  |                       |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 12 OF 94

0 0.1 0.2  
Km

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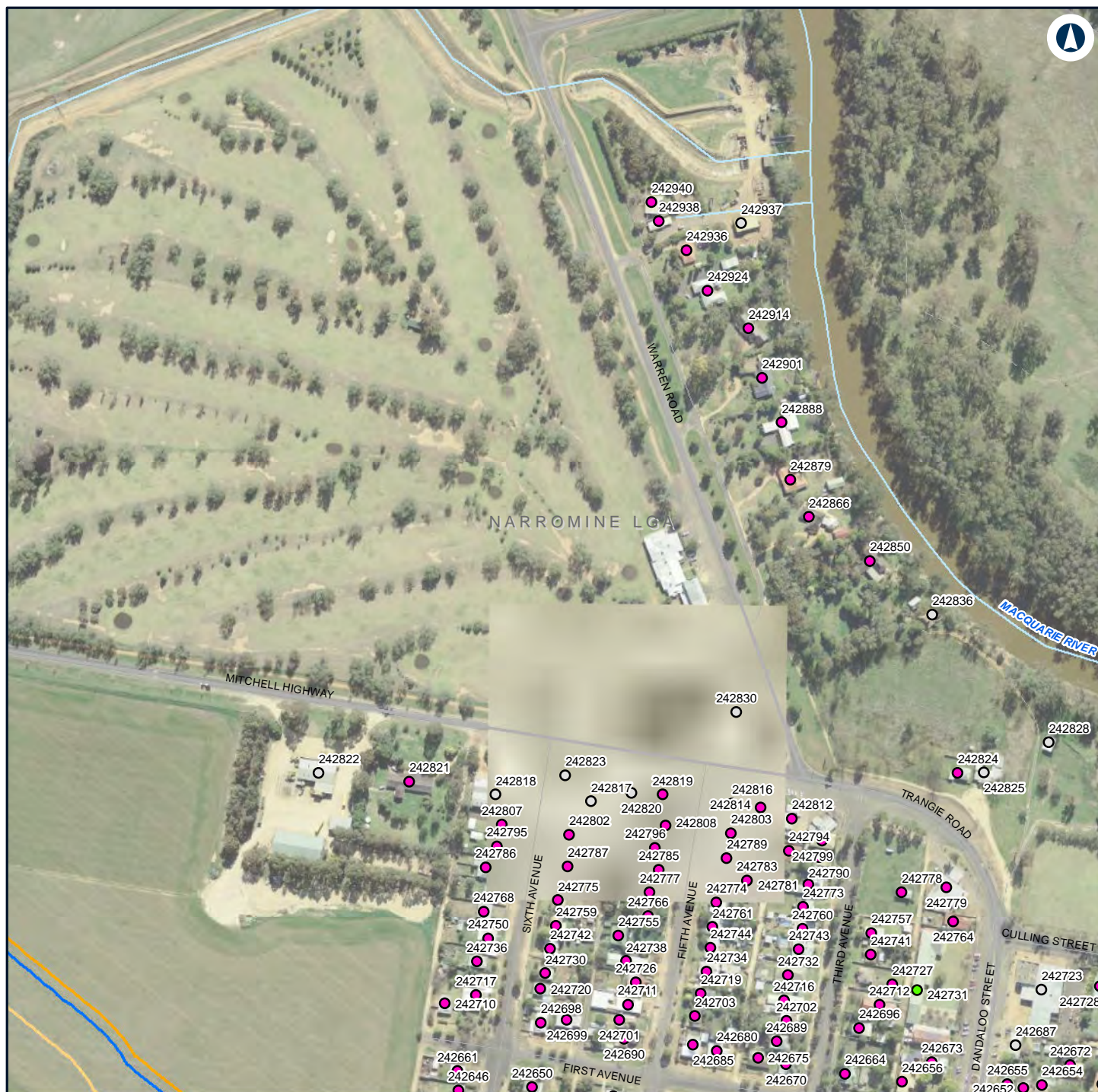
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## LEGEND

### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

- Commercial/Industrial
- Educational

Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 13 OF 94

0 0.1 0.2  
Km

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## LEGEND

- |  |  |
|--|--|
|  Construction footprint                      | <b>Vibration from rail earthworks</b>  |
|  Rail earthworks extent (propagation source) |  AVTG night max (0.26 m/s 1.75, 94 m) |
| <b>Vibration from bridge construction (piling)</b>   |  AVTG day max (0.4 m/s 1.75, 128 m)   |
|  AVTG night max (0.26 m/s 1.75, 490 m)       |  BS 5228-2:2009 (1 mm/s, 140 m)       |
|  AVTG day max (0.4 m/s 1.75, 670 m)          | <b>Structure type</b>  |
|  BS 5228-2:2009 (1 mm/s, 700 m)              |  Residential                          |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 14 OF 94

0 0.1 0.2  
Km

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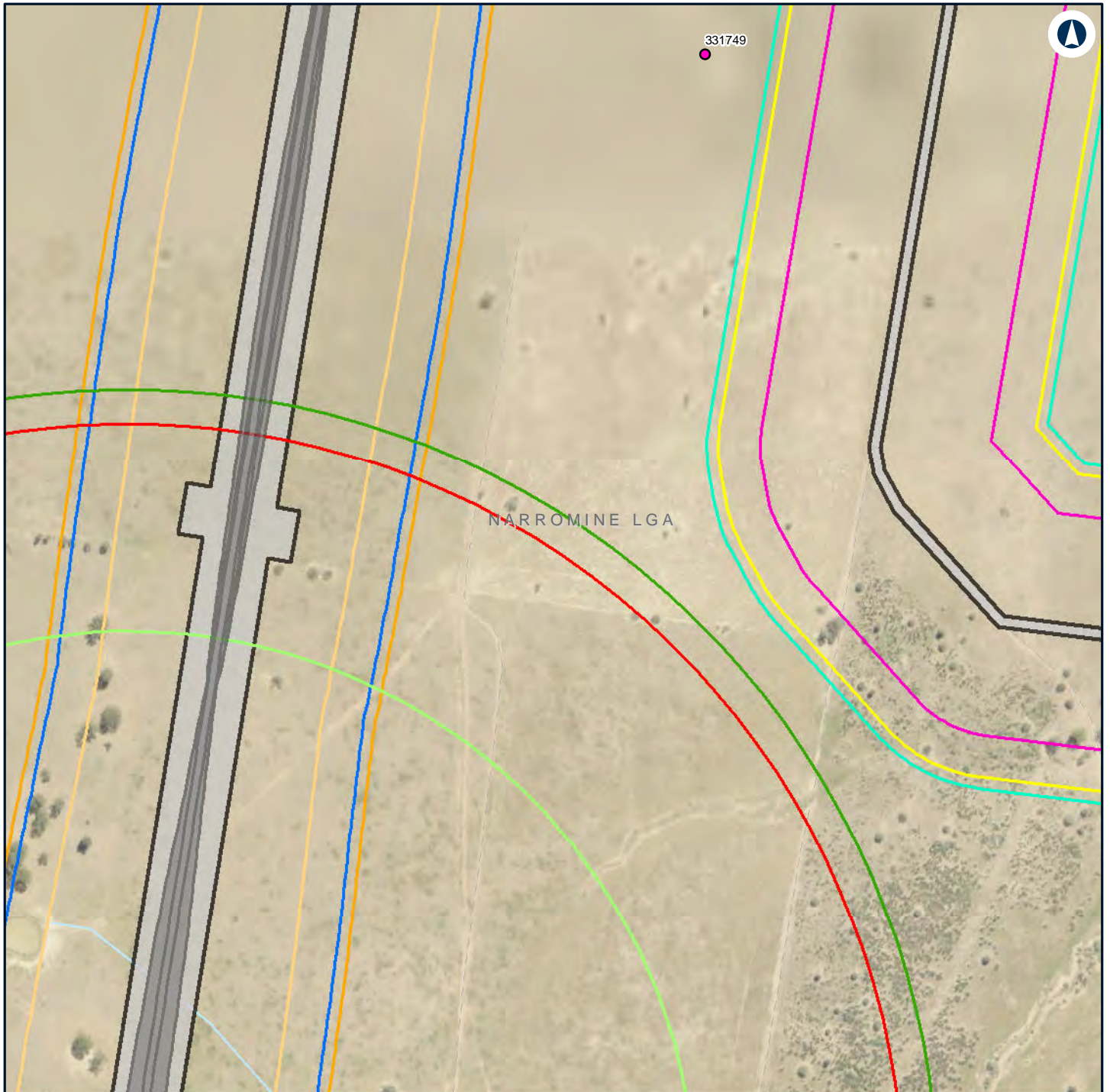
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## LEGEND

Construction footprint

Rail earthworks extent (propagation source)

### Vibration from borrow pit finishing works

AVTG night max (0.26 m/s 1.75, 94 m)

AVTG day max (0.4 m/s 1.75, 130 m)

BS 5228-2:2009 (1 mm/s, 140 m)

### Vibration from bridge construction (piling)

AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Vibration from rail earthworks

AVTG night max (0.26 m/s 1.75, 94 m)

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 15 OF 94

0 0.1 0.2  
Km

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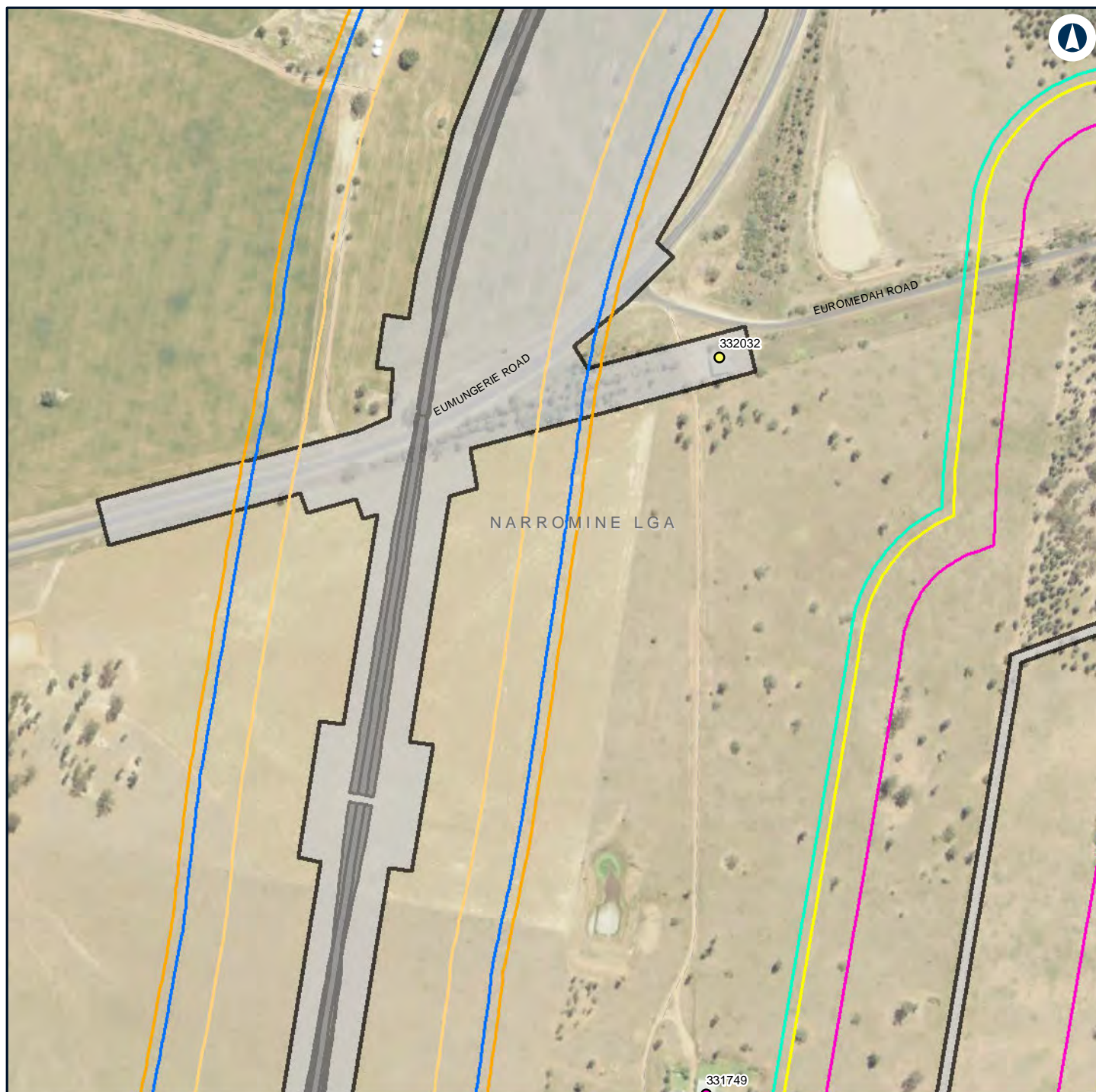
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## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)

### Vibration from borrow pit finishing works

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 130 m)
- BS 5228-2:2009 (1 mm/s, 140 m)

### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

- Community
- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 16 OF 94

0 0.1 0.2  
Km

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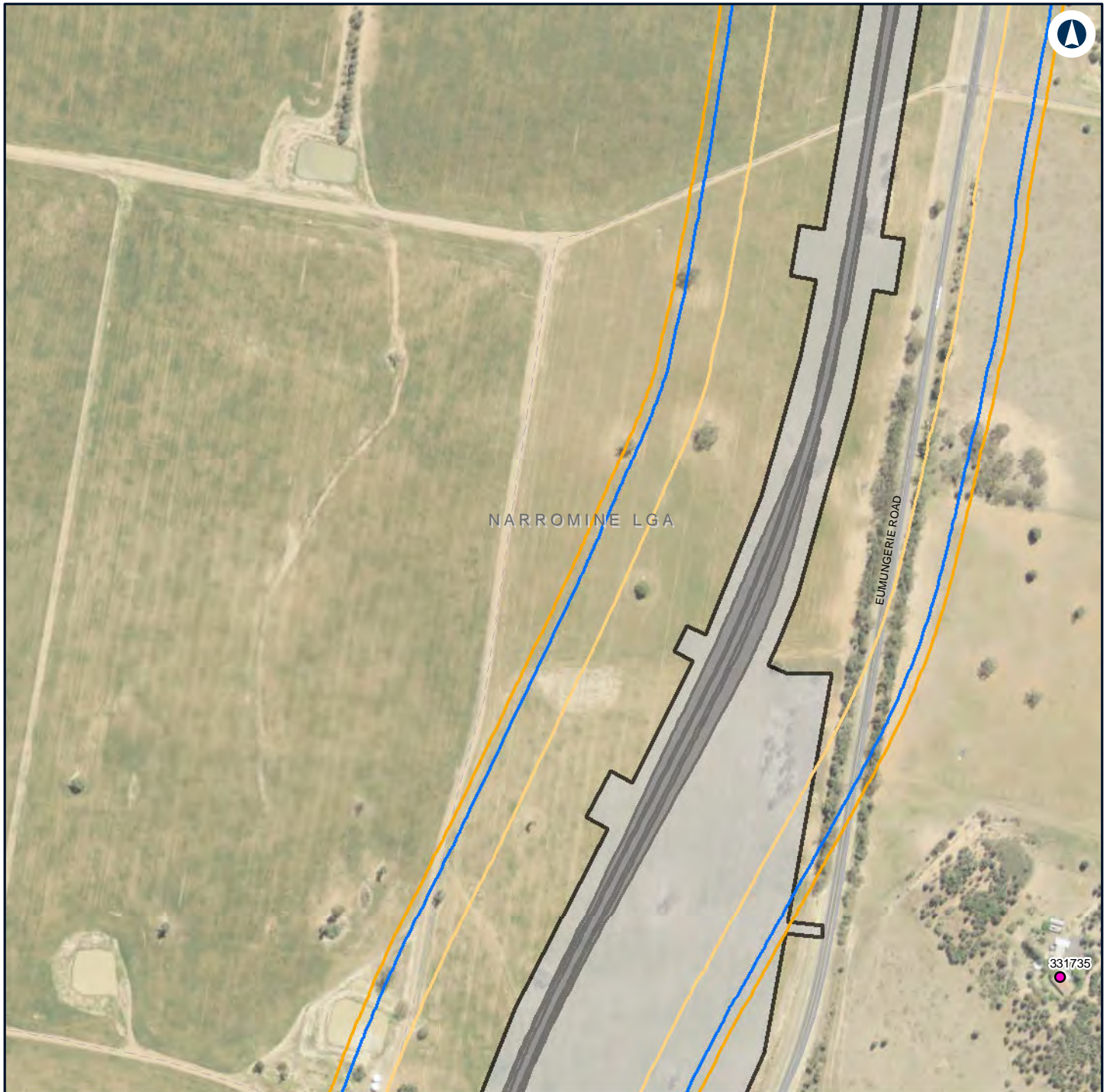
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
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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 17 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD







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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 18 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

## Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 19 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

- |   |
|---|
|  AVTG night max (0.26 m/s 1.75, 94 m) |
|  AVTG day max (0.4 m/s 1.75, 128 m)   |
|  BS 5228-2:2009 (1 mm/s, 140 m)       |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 20 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

- Construction footprint
  Rail earthworks extent (propagation source)
  Residential

#### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
  AVTG day max (0.4 m/s 1.75, 128 m)
  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 21 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

## Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 22 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

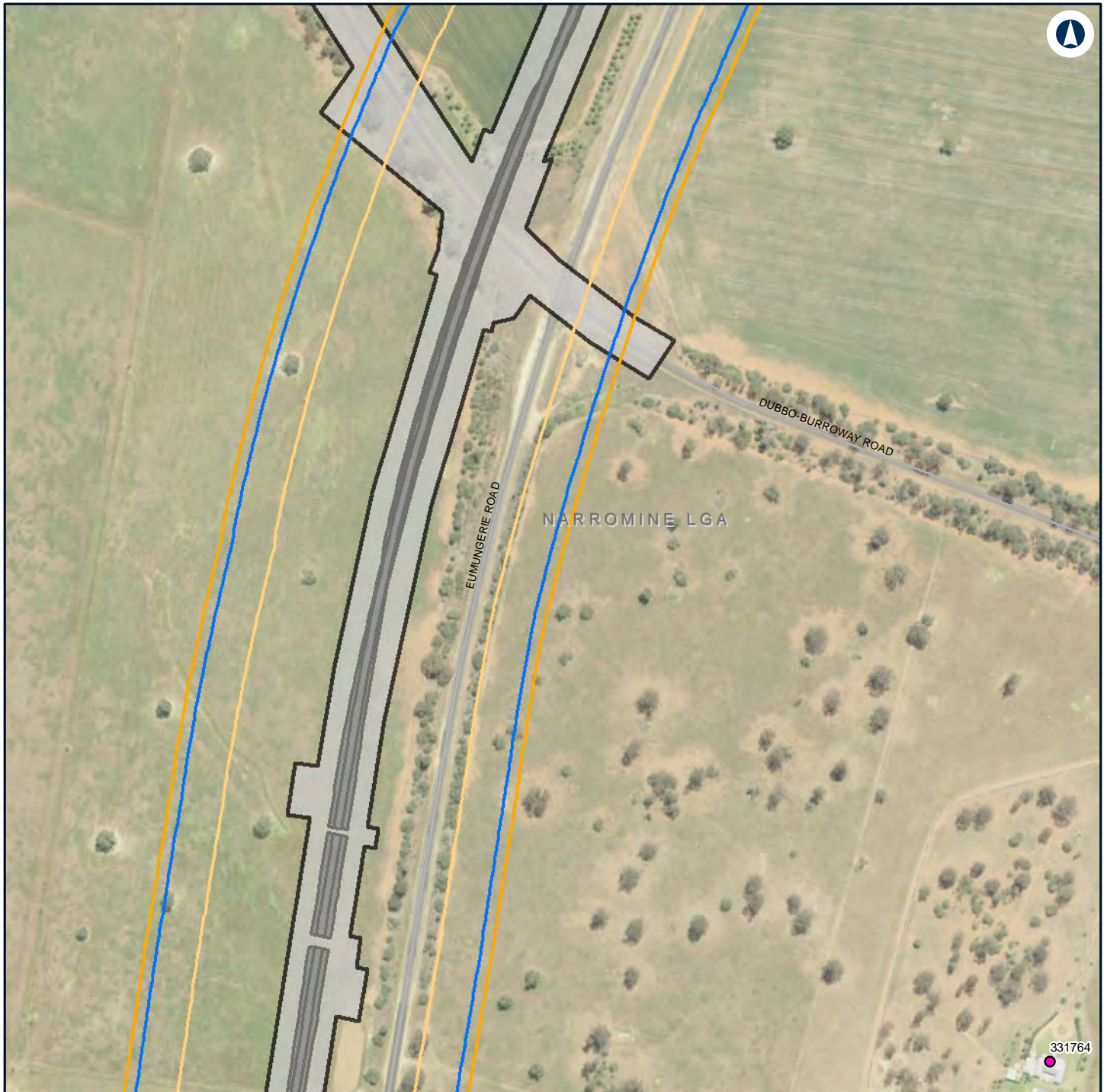
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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 23 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

- |  |                        |  |   |   |             |
|--|------------------------|--|---|---|-------------|
|  | Construction footprint |  | Rail earthworks extent (propagation source) |  | Residential |
|--|------------------------|--|---|---|-------------|
- Vibration from rail earthworks**
- |  |                                      |
|--|--------------------------------------|
|  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | BS 5228-2:2009 (1 mm/s, 140 m)       |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 24 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

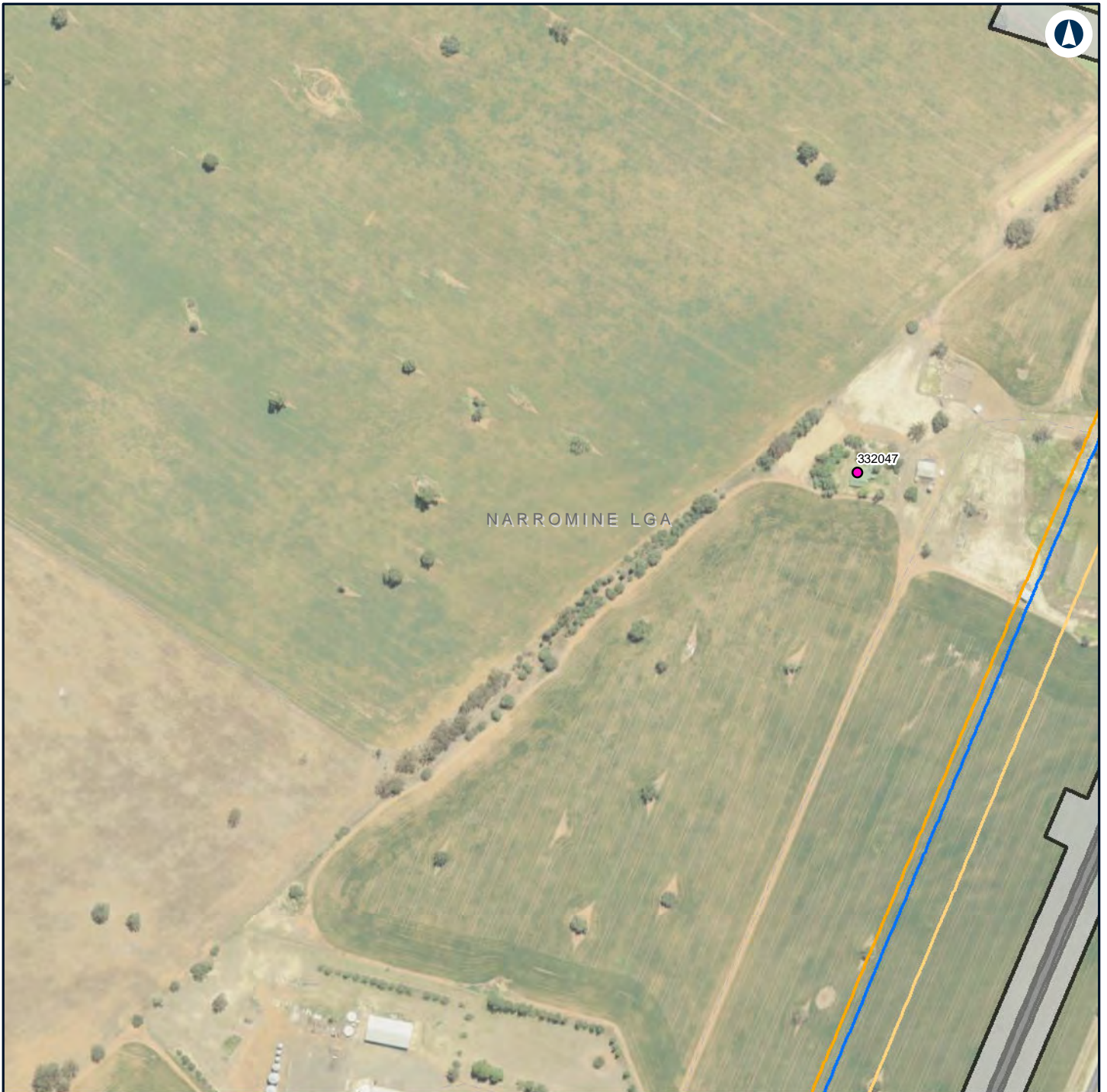
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#### LEGEND

-  Construction footprint
-  Rail earthworks extent (propagation source)
- Structure type**
-  Residential

#### Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 25 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

## Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 26 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

## Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 27 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD Scale: 1:5,000  
Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD







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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 28 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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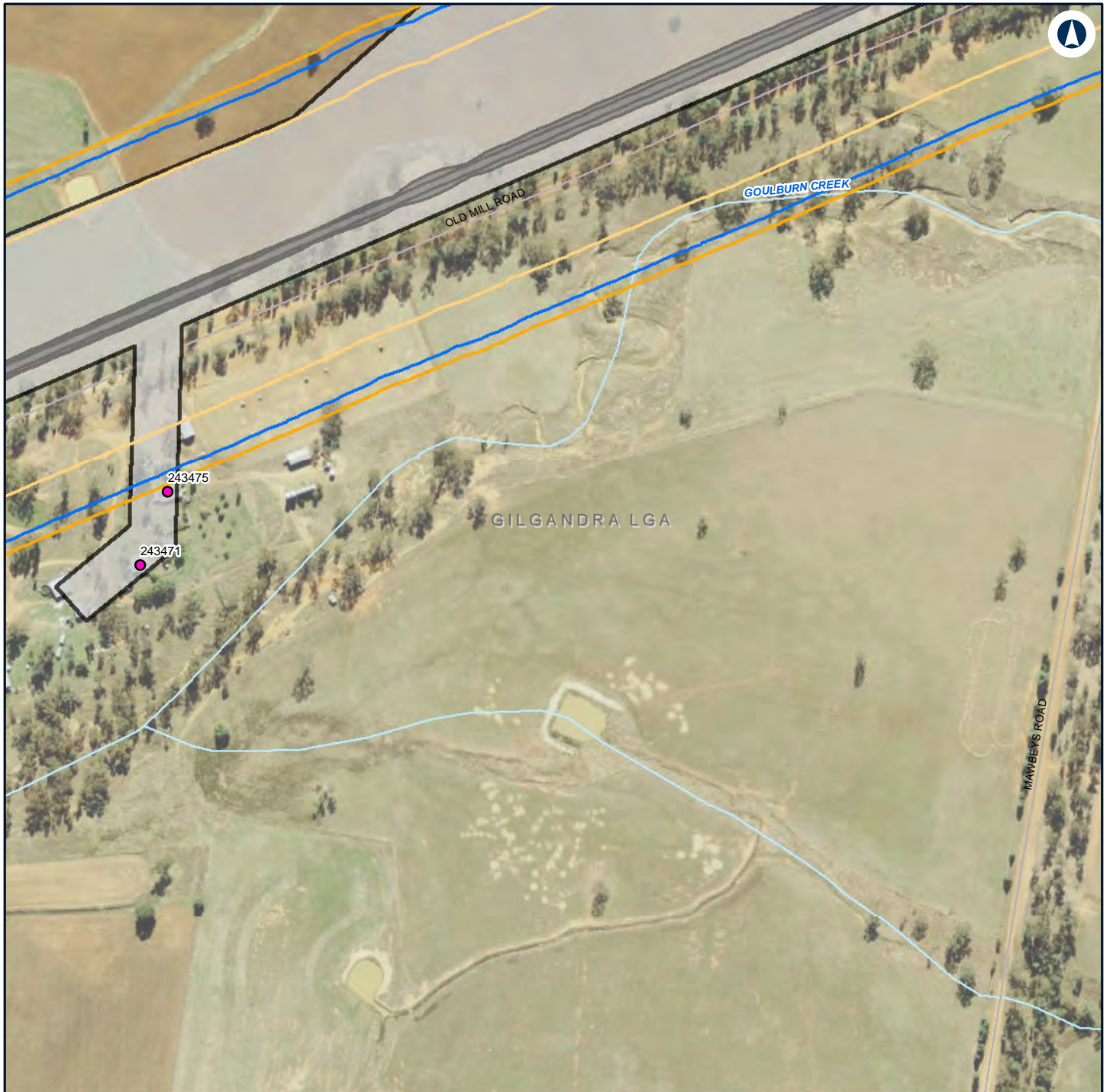
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
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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 29 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

##### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s 1.75, 490 m)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

##### Structure type

- Residential



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 30 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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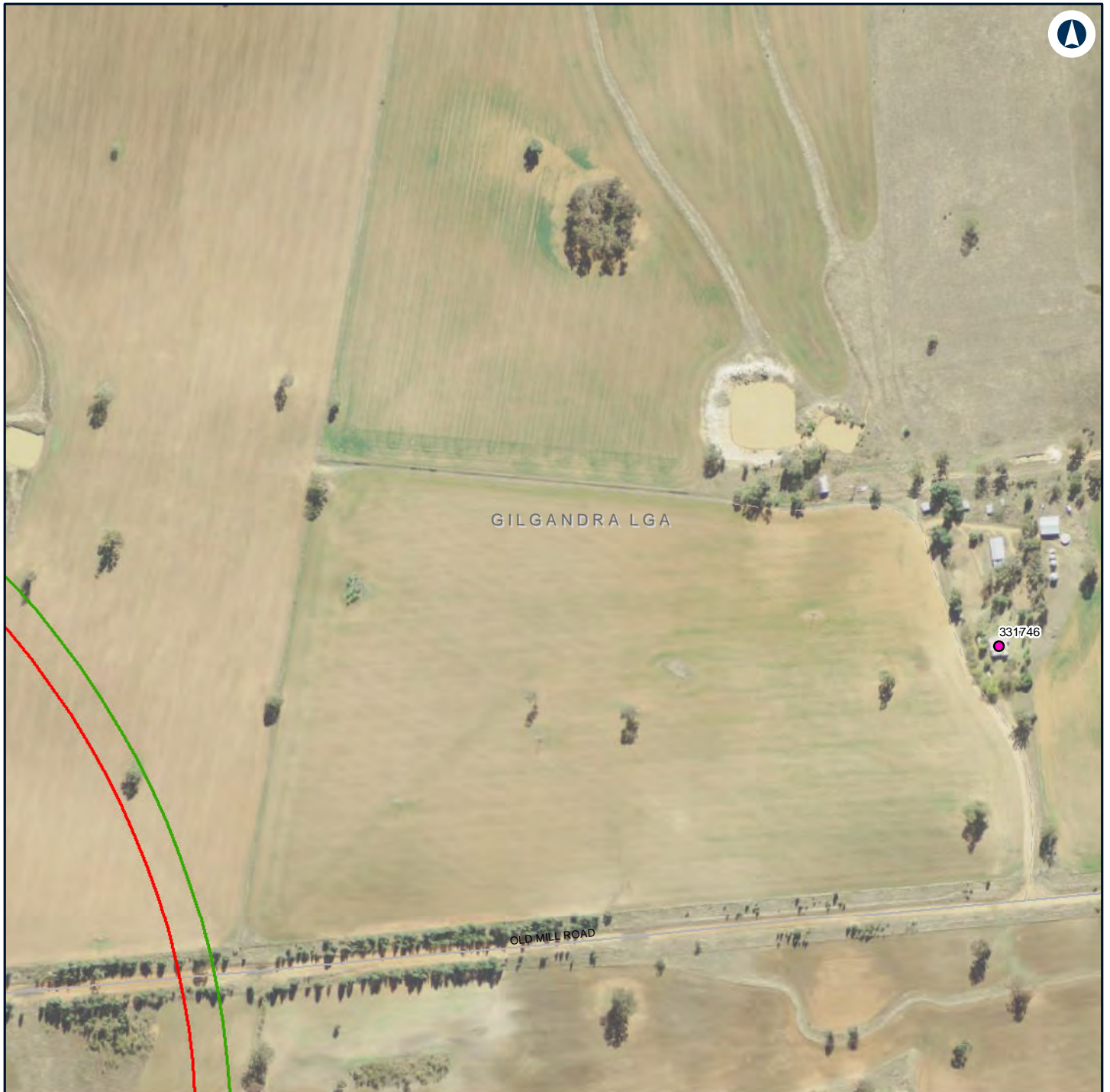
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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s, 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 31 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

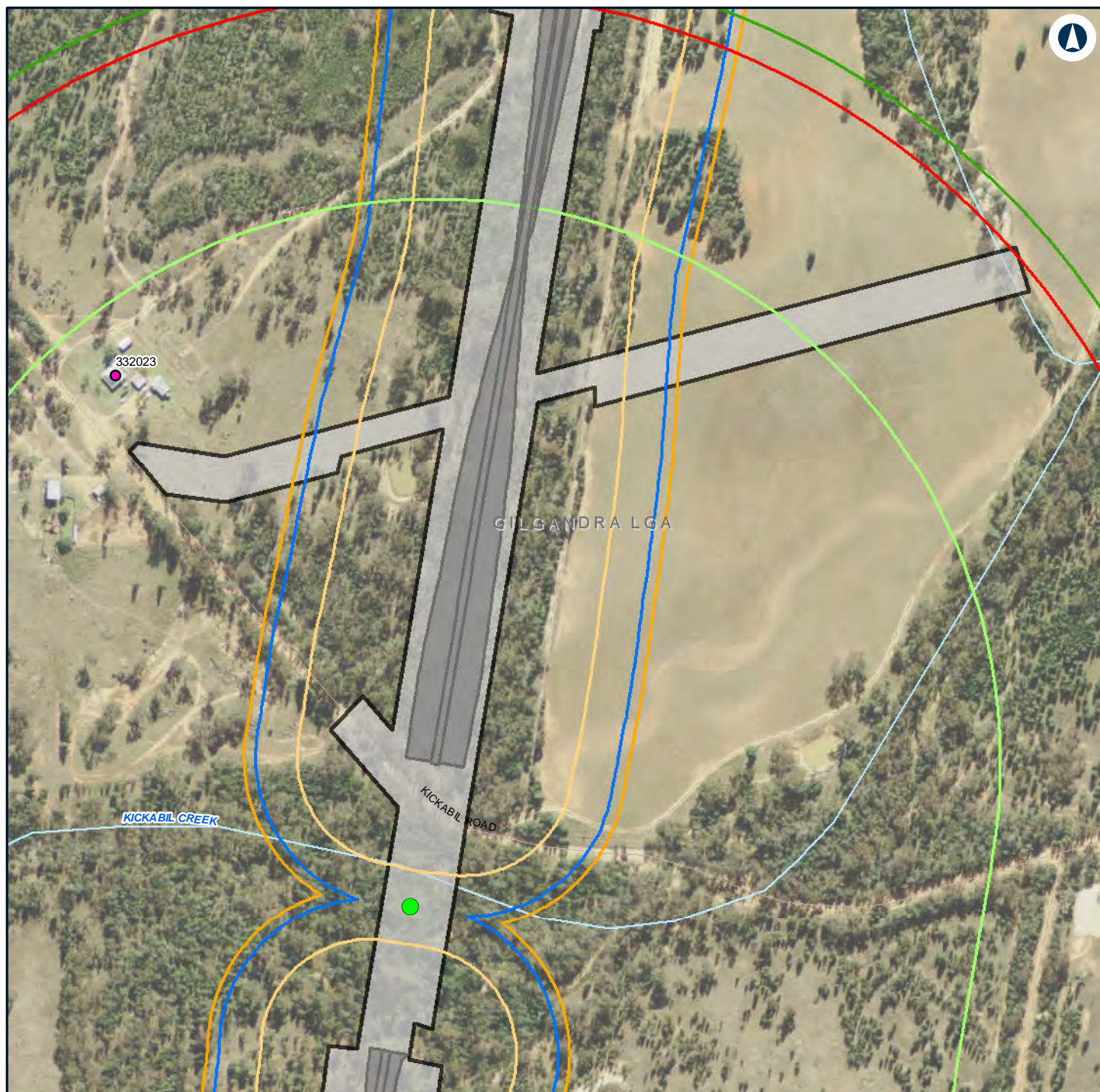
Scale: 1:5,000

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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 32 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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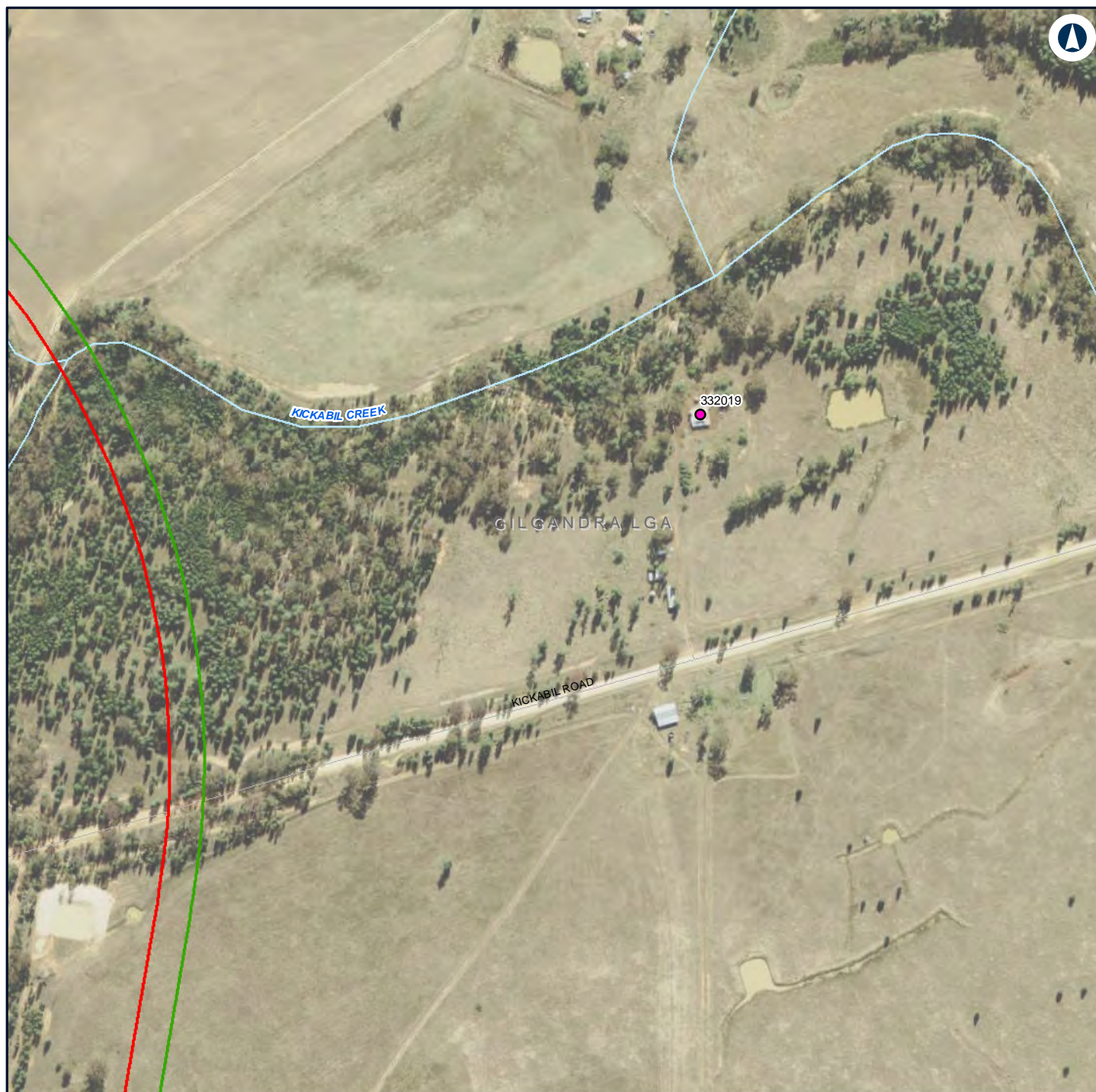
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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s, 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 33 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 34 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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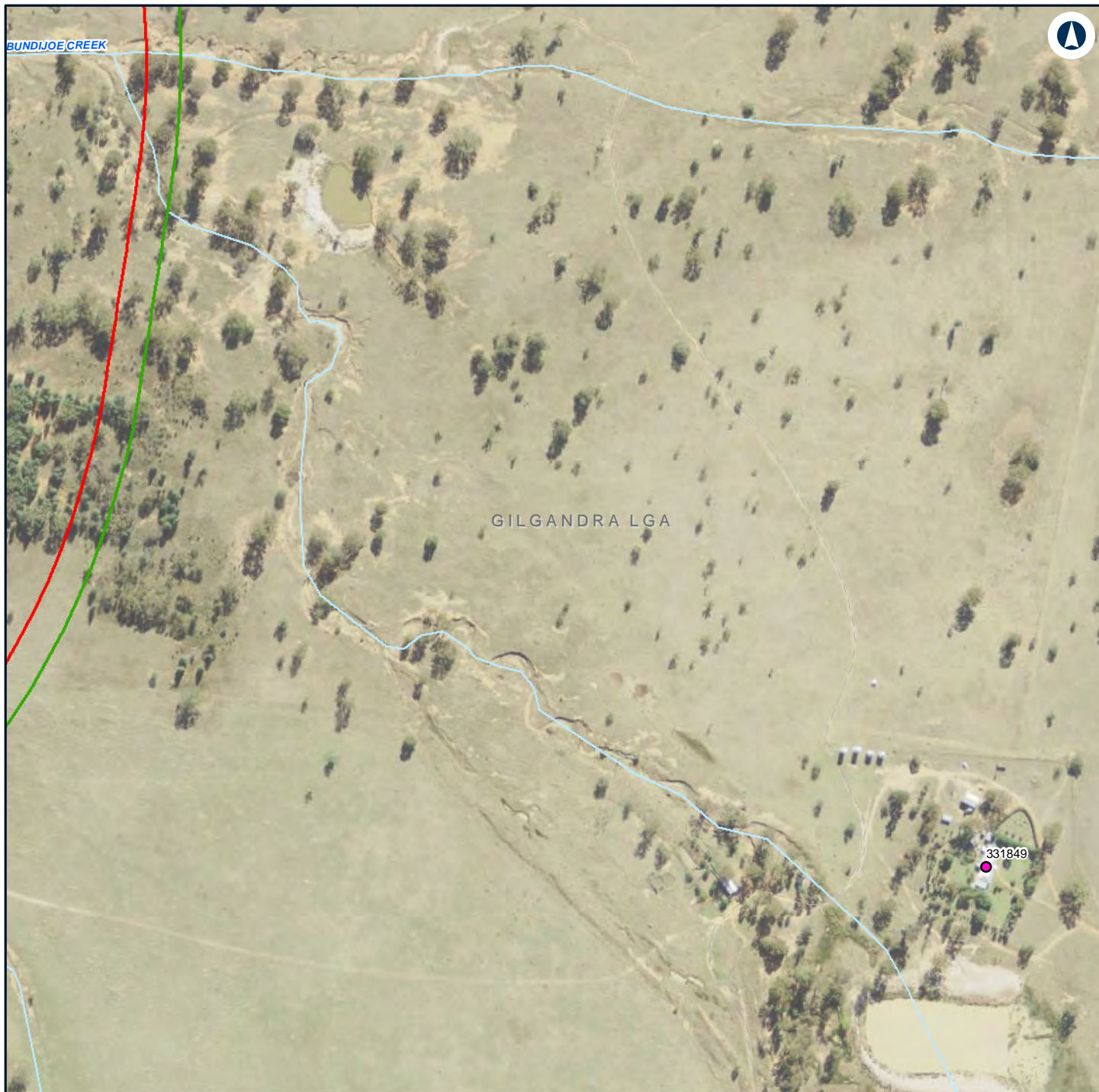
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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 35 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

- |  |  |
|--|--|
|  Construction footprint                      |  AVTG night max (0.26 m/s 1.75, 94 m) |
|  Rail earthworks extent (propagation source) |  AVTG day max (0.4 m/s 1.75, 128 m)   |
| <b>Vibration from bridge construction (piling)</b>   |  BS 5228-2:2009 (1 mm/s, 140 m)       |
|  AVTG night max (0.26 m/s 1.75, 490 m)       | <b>Structure type</b>  |
|  AVTG day max (0.4 m/s 1.75, 670 m)          |  Residential                          |
|  BS 5228-2:2009 (1 mm/s, 700 m)              |  |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 36 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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




#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 37 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

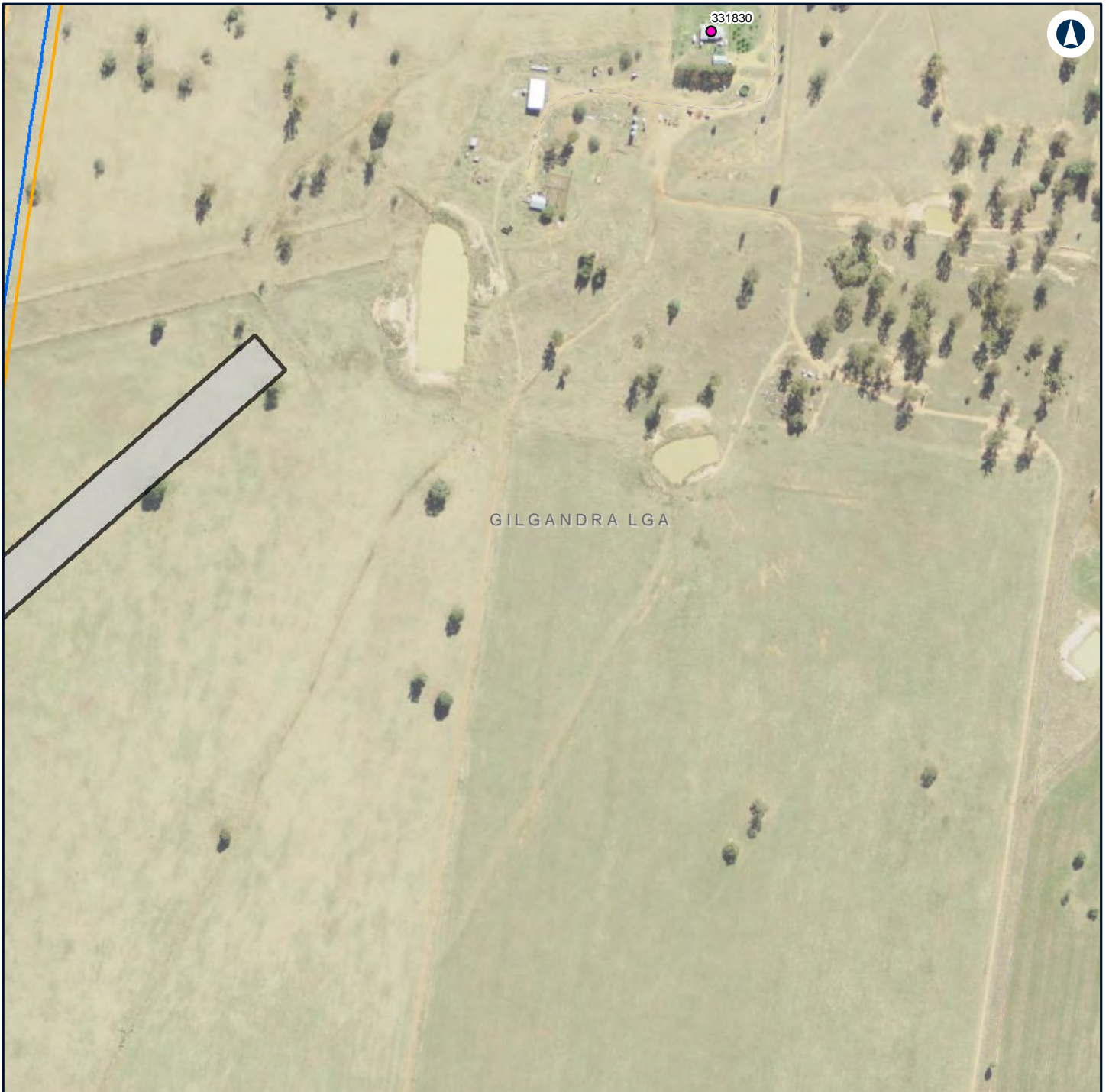
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## LEGEND

Construction footprint

### Vibration from rail earthworks

AVTG night max (0.26 m/s 1.75, 94 m)

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 38 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

Construction footprint

#### Vibration from bridge construction (piling)

AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

#### Structure type

Residential



### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 39 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

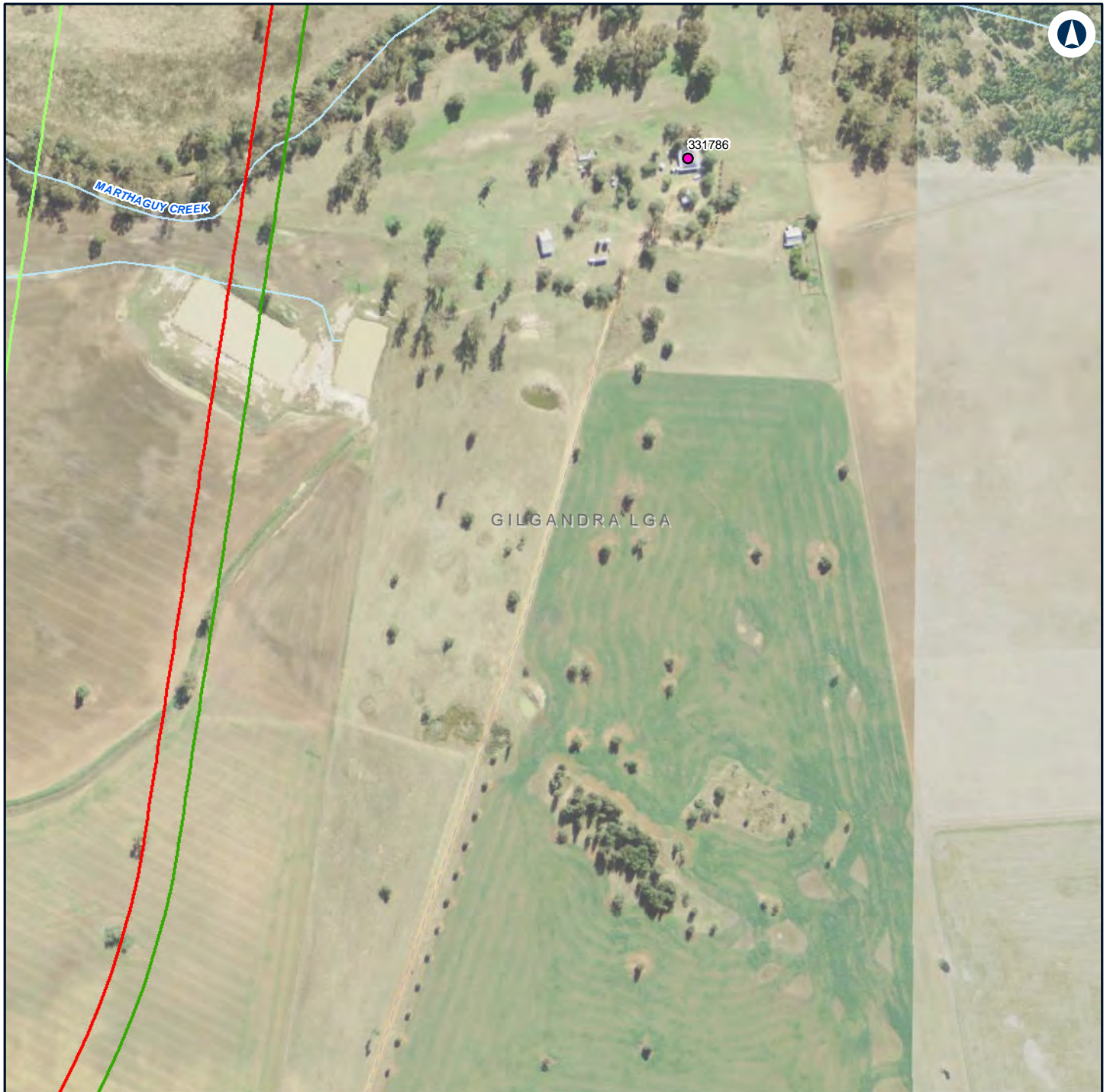
Scale: 1:5,000

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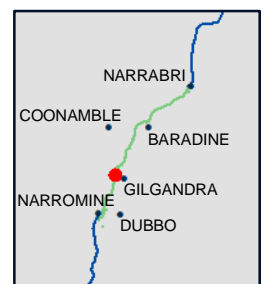
## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s, 1.75, 490 m)
- AVTG day max (0.4 m/s, 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 40 OF 94

0 0.1 0.2  
Km

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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 41 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

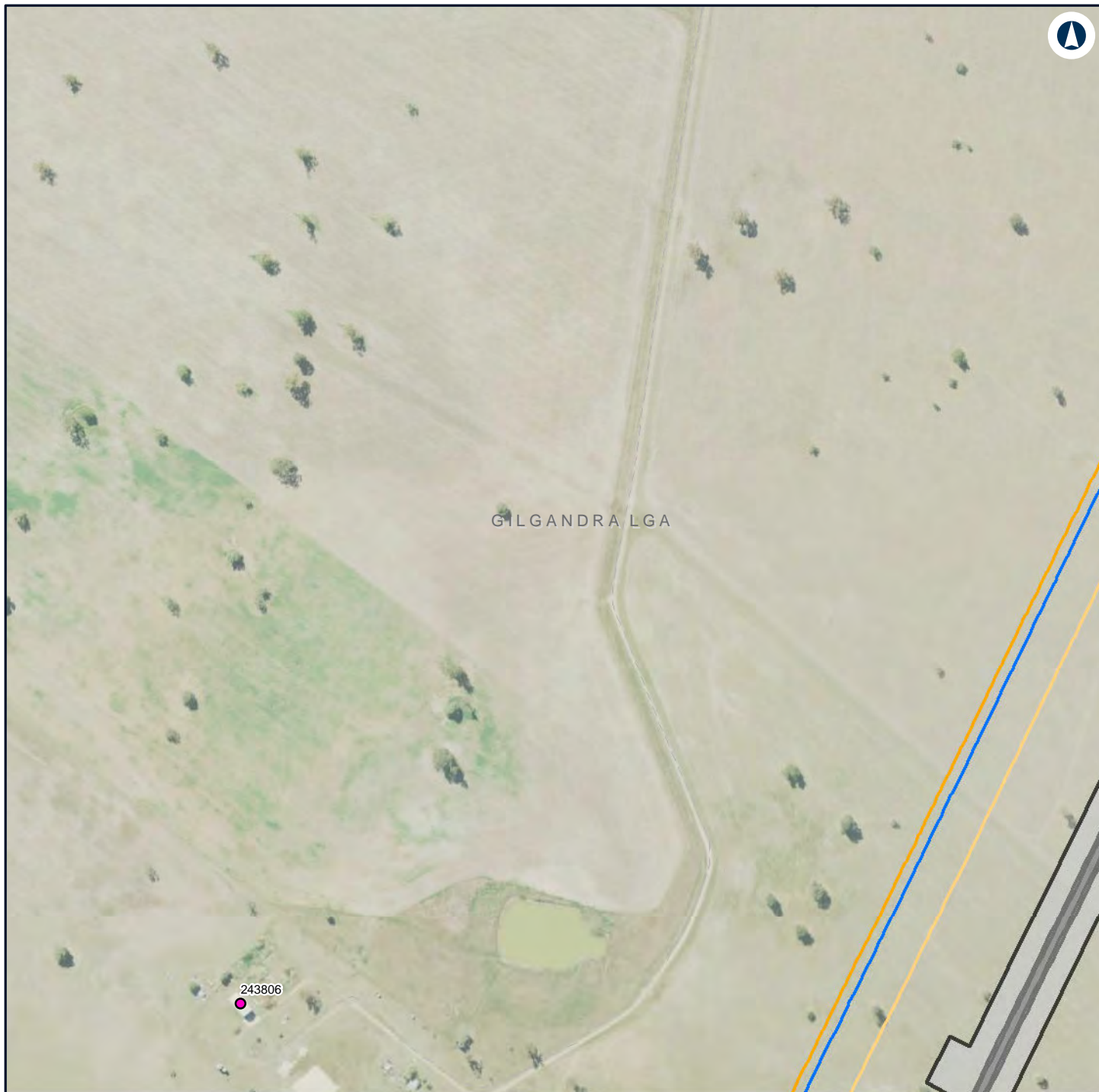
Scale: 1:5,000

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## LEGEND

-  Construction footprint
-  Rail earthworks extent (propagation source)
-  Residential

## Vibration from rail earthworks

-  AVTG night max (0.26 m/s 1.75, 94 m)
-  AVTG day max (0.4 m/s 1.75, 128 m)
-  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 42 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s, 1.75, 490 m)
- AVTG day max (0.4 m/s, 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Community
- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 43 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Commercial/Industrial
- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 44 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

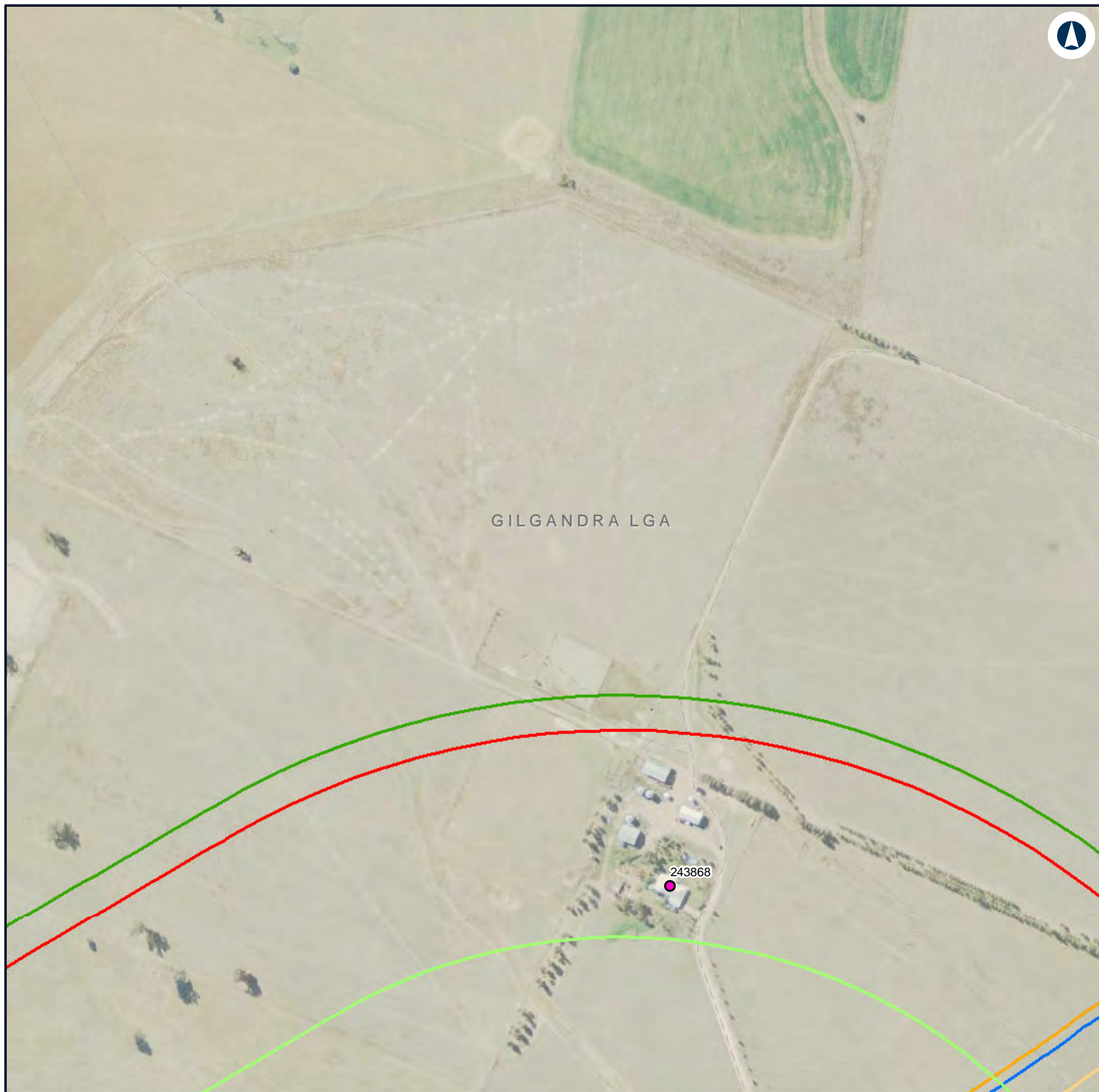
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## LEGEND

**Vibration from bridge construction (piling)**   BS 5228-2:2009 (1 mm/s, 140 m)

  AVTG night max (0.26 m/s 1.75, 490 m) **Structure type**  
  AVTG day max (0.4 m/s 1.75, 670 m) ● Residential  
  BS 5228-2:2009 (1 mm/s, 700 m)

## Vibration from rail earthworks

  AVTG night max (0.26 m/s 1.75, 94 m)  
  AVTG day max (0.4 m/s 1.75, 128 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 45 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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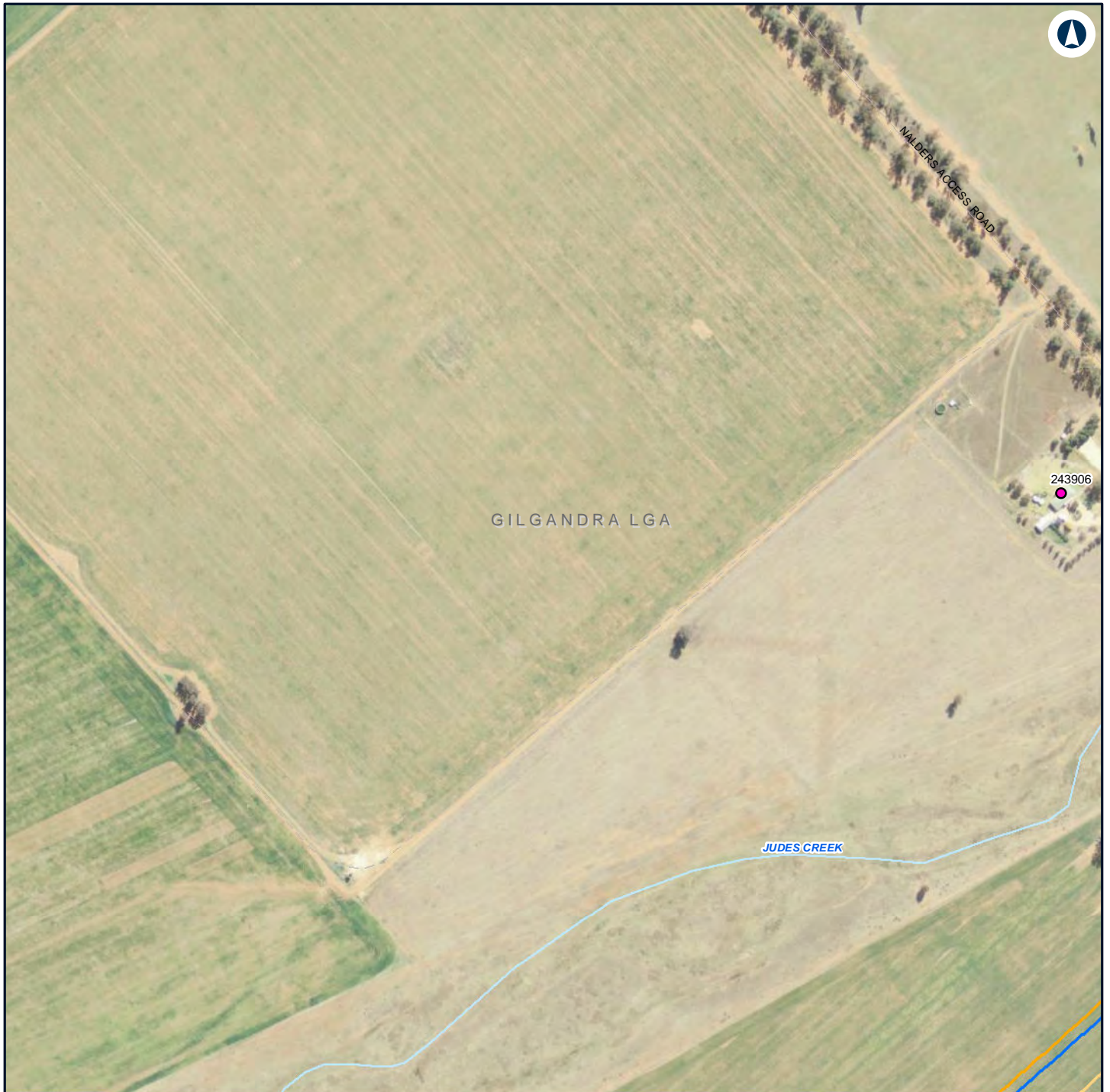
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## LEGEND

### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 46 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

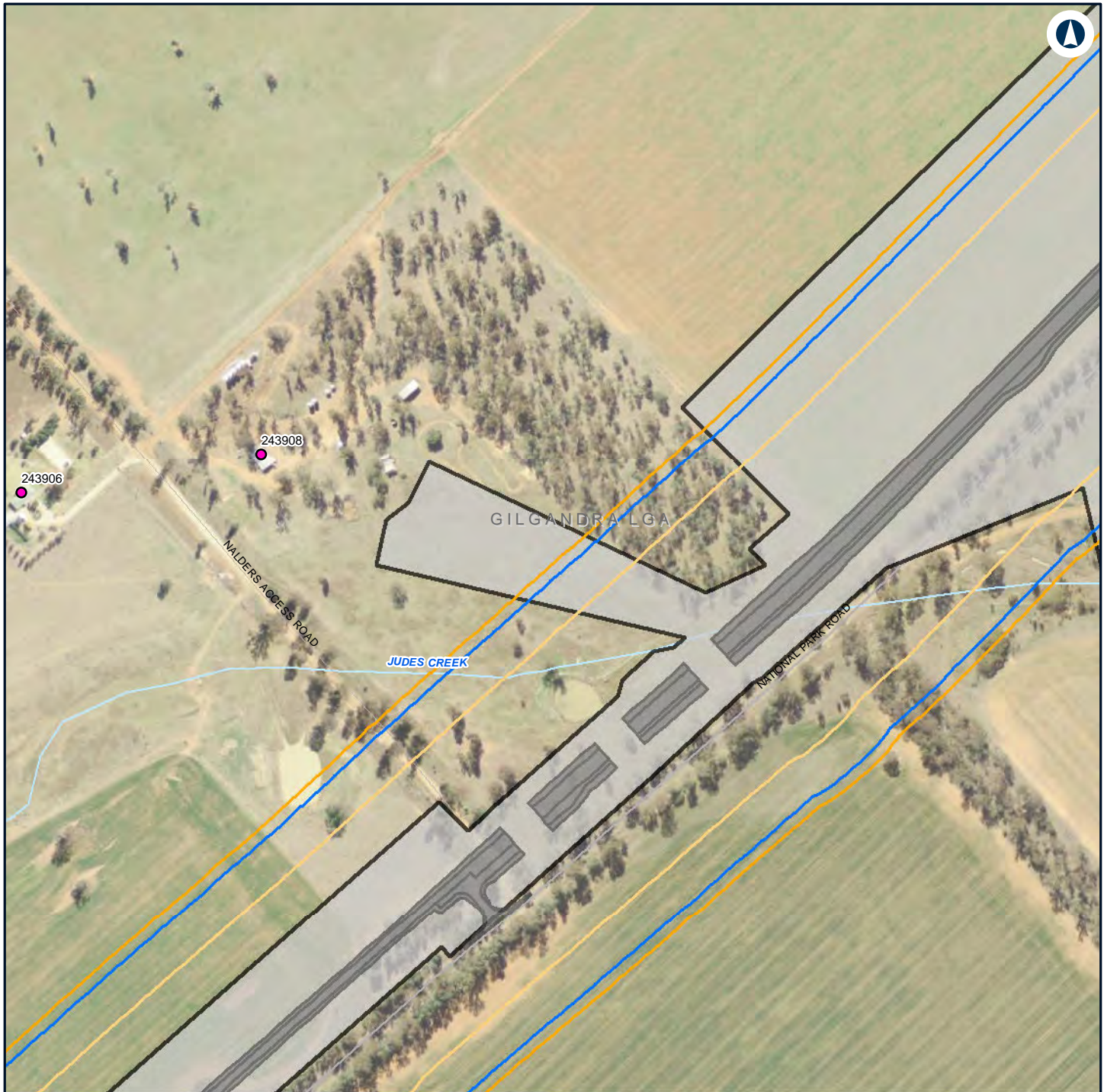
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#### LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

#### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 47 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 48 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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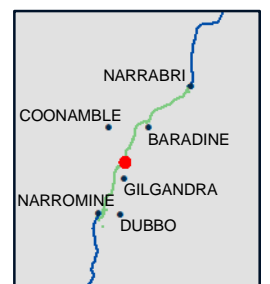
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## LEGEND

- |  |   |  |                                      |
|--|---|--|--------------------------------------|
|  | Construction footprint                      |  | Vibration from rail earthworks       |
|  | Rail earthworks extent (propagation source) |  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | Vibration from bridge construction (piling) |  | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | AVTG night max (0.26 m/s 1.75, 490 m)       |  | BS 5228-2:2009 (1 mm/s, 140 m)       |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          |  | Structure type                       |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |  | Residential                          |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 49 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

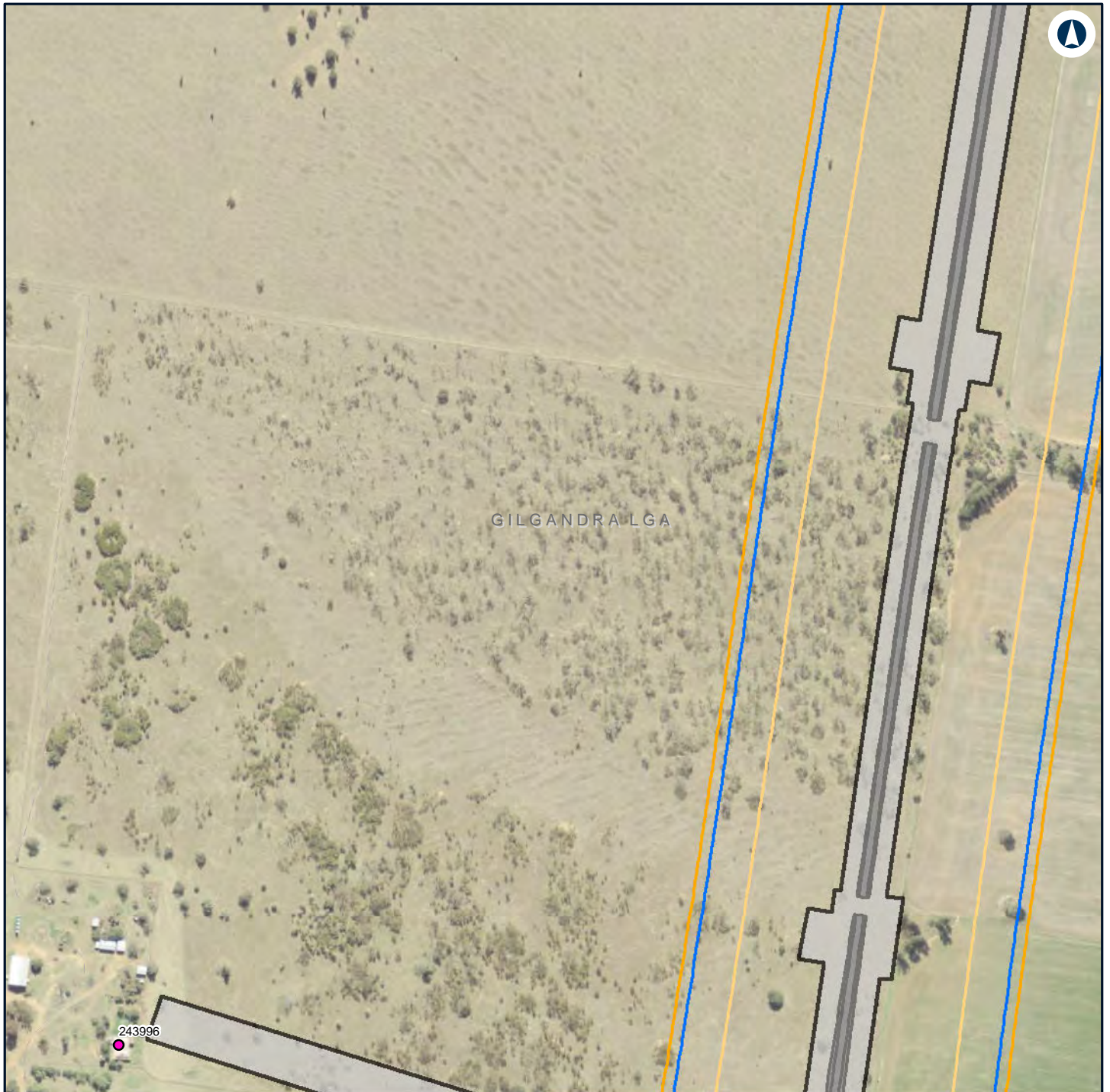
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD







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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 50 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD







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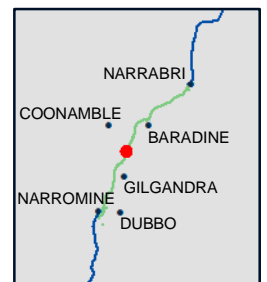
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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

Construction footprint

#### Vibration from rail earthworks

AVTG night max (0.26 m/s 1.75, 94 m)

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

#### Structure type

Residential



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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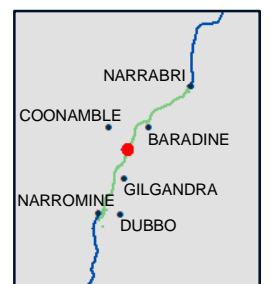
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## LEGEND

- |  |   |   |                                    |
|--|---|---|------------------------------------|
|  | Construction footprint                      |  | AVTG day max (0.4 m/s 1.75, 128 m) |
|  | Rail earthworks extent (propagation source) |  | BS 5228-2:2009 (1 mm/s, 140 m)     |
| <b>Vibration from bridge construction (piling)</b>                                 |   |   |                                    |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          | <b>Structure type</b>   |                                    |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |  | Residential                        |
| <b>Vibration from rail earthworks</b>  |   |   |                                    |
|  | AVTG night max (0.26 m/s 1.75, 94 m)        |   |                                    |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 53 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD







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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 54 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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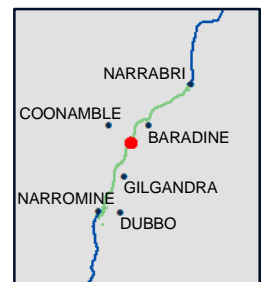


#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

- |  |                                      |
|--|--------------------------------------|
|  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | BS 5228-2:2009 (1 mm/s, 140 m)       |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 55 OF 94

0 0.1 0.2  
Km

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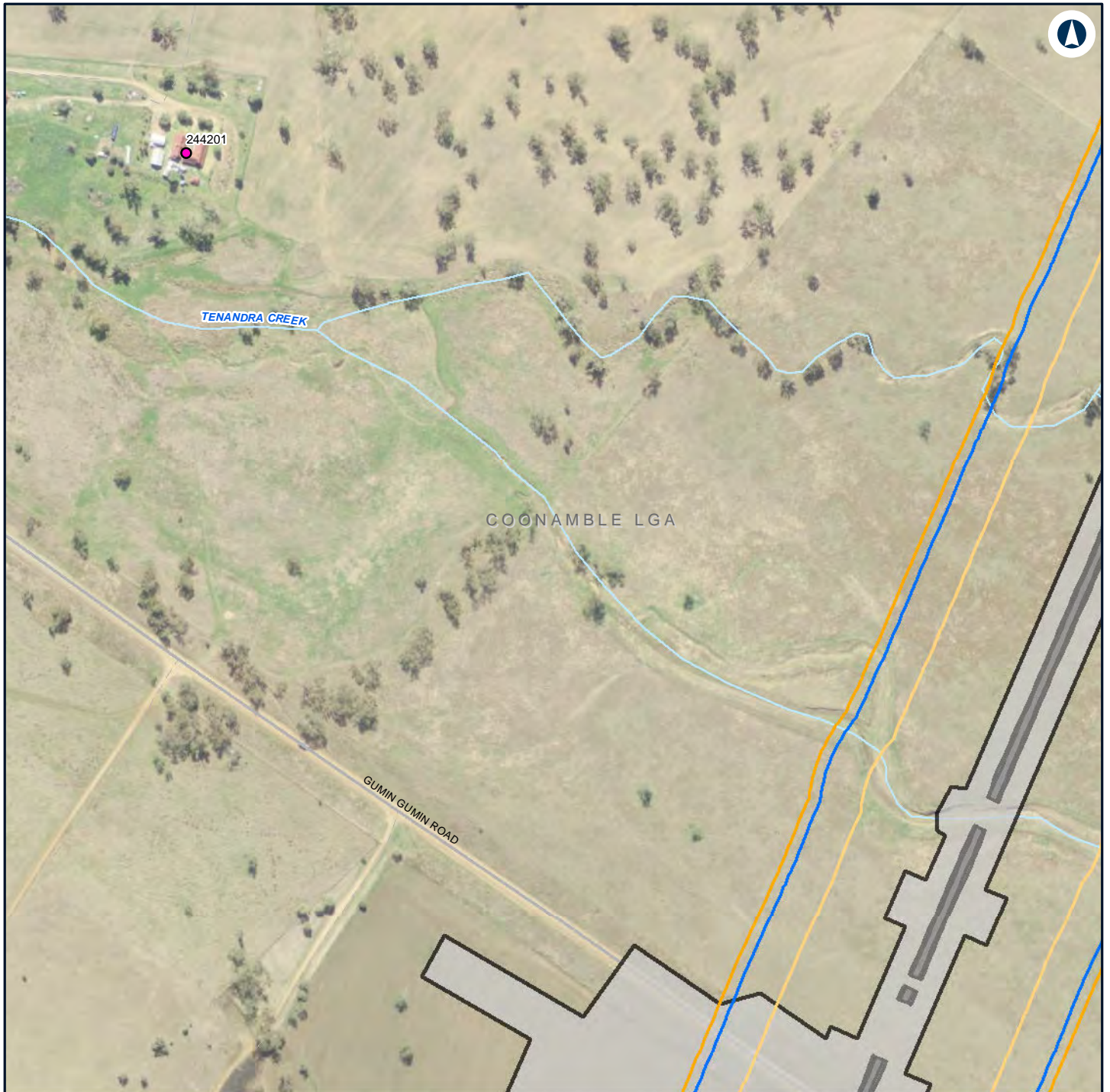
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## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

## Vibration from rail earthworks

- AVTG night max (0.26 m/s<sup>2</sup>, 1.75, 94 m)
- AVTG day max (0.4 m/s<sup>2</sup>, 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s<sup>2</sup>, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 56 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

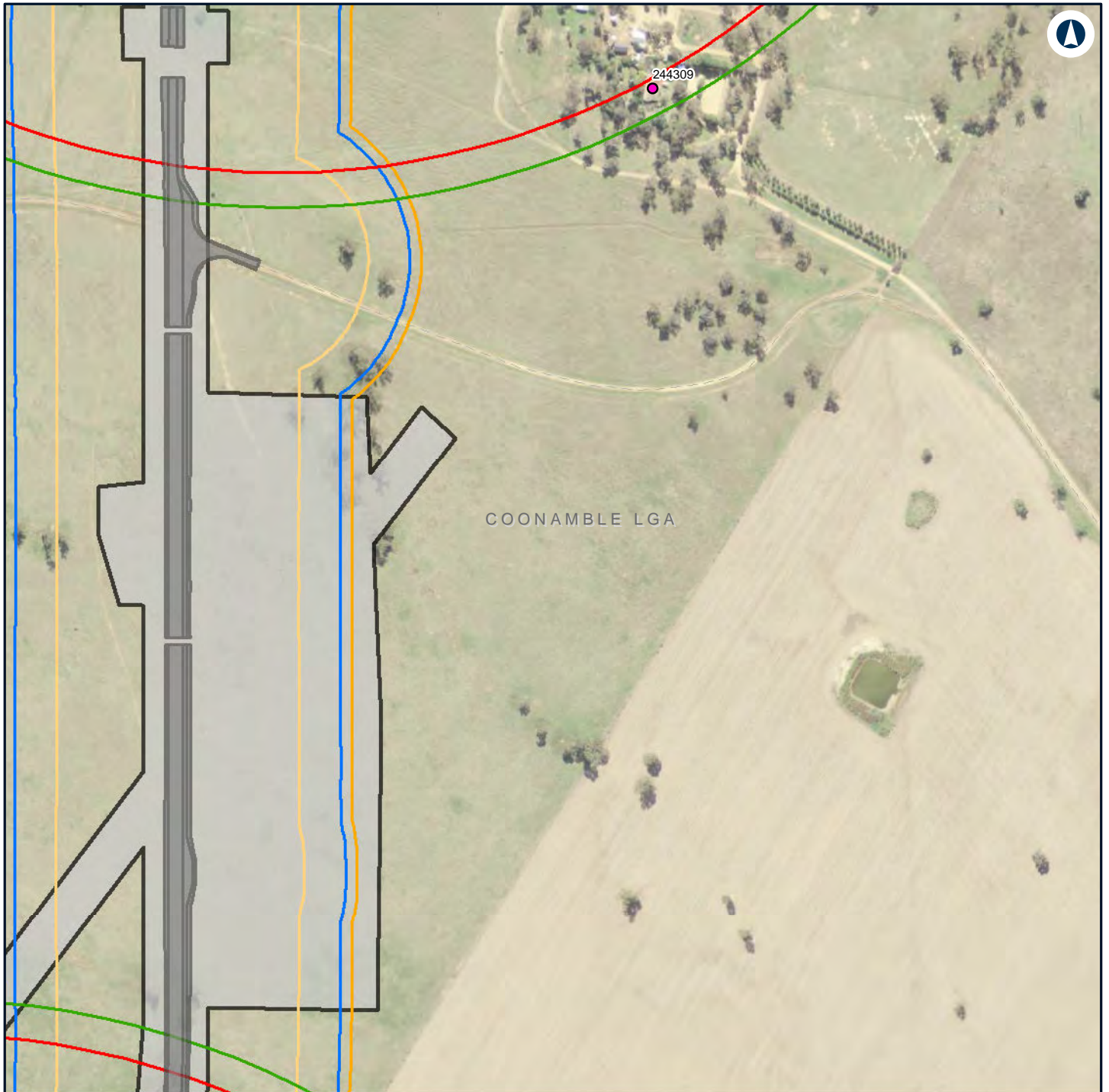
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## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)
- Residential

## Vibration from bridge construction (piling)

- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

## Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 57 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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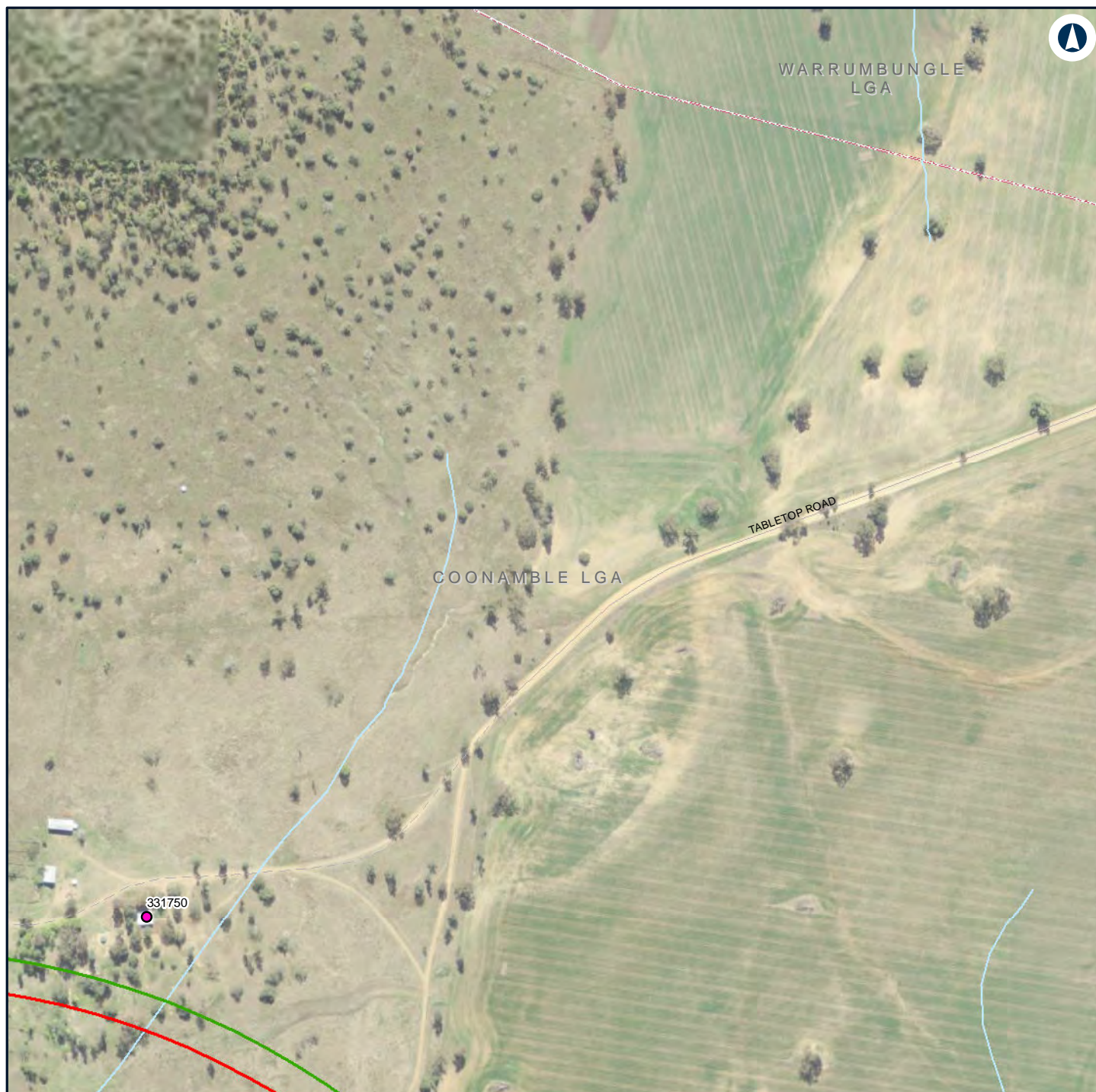
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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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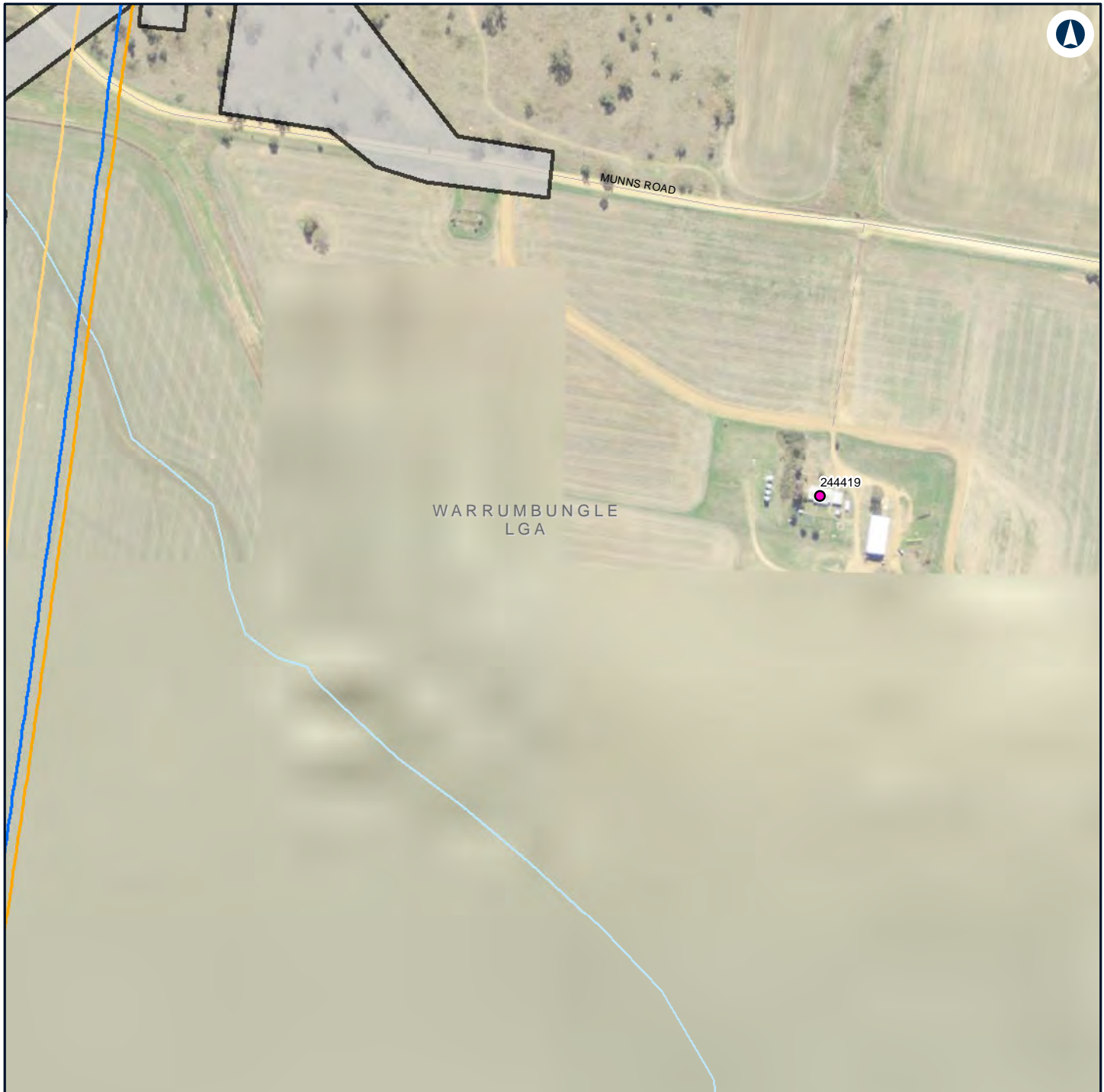
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#### LEGEND

Construction footprint

#### Vibration from rail earthworks

AVTG night max (0.26 m/s, 1.75, 94 m)

AVTG day max (0.4 m/s, 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

#### Structure type

Residential



### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 59 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s 1.75, 490 m)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 60 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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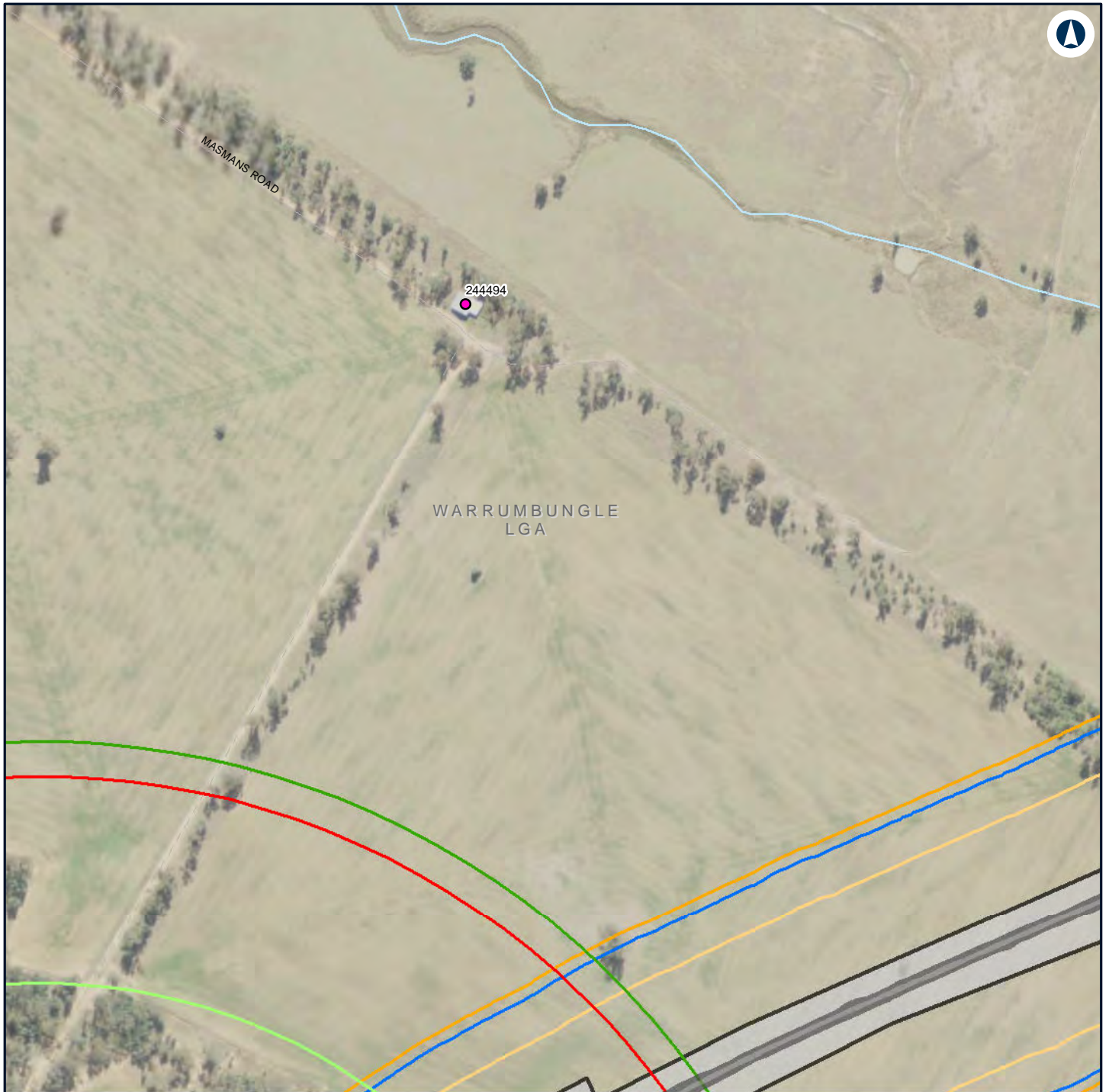
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#### LEGEND

- |  |   |  |                                      |
|--|---|--|--------------------------------------|
|  | Construction footprint                      |  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | Rail earthworks extent (propagation source) |  | AVTG day max (0.4 m/s 1.75, 128 m)   |
| <b>Vibration from bridge construction (piling)</b> |   |  | BS 5228-2:2009 (1 mm/s, 140 m)       |
|  | AVTG night max (0.26 m/s 1.75, 490 m)       |  |                                      |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          |  |                                      |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |  | Residential                          |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 61 OF 94

0 0.1 0.2  
Km

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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |

#### Vibration from rail earthworks

- |   |
|---|
|  AVTG night max (0.26 m/s 1.75, 94 m) |
|  AVTG day max (0.4 m/s 1.75, 128 m)   |
|  BS 5228-2:2009 (1 mm/s, 140 m)       |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

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## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

## Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 63 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARRABRI TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 64 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 65 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

### Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 66 OF 94

0 0.1 0.2  
Km

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
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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

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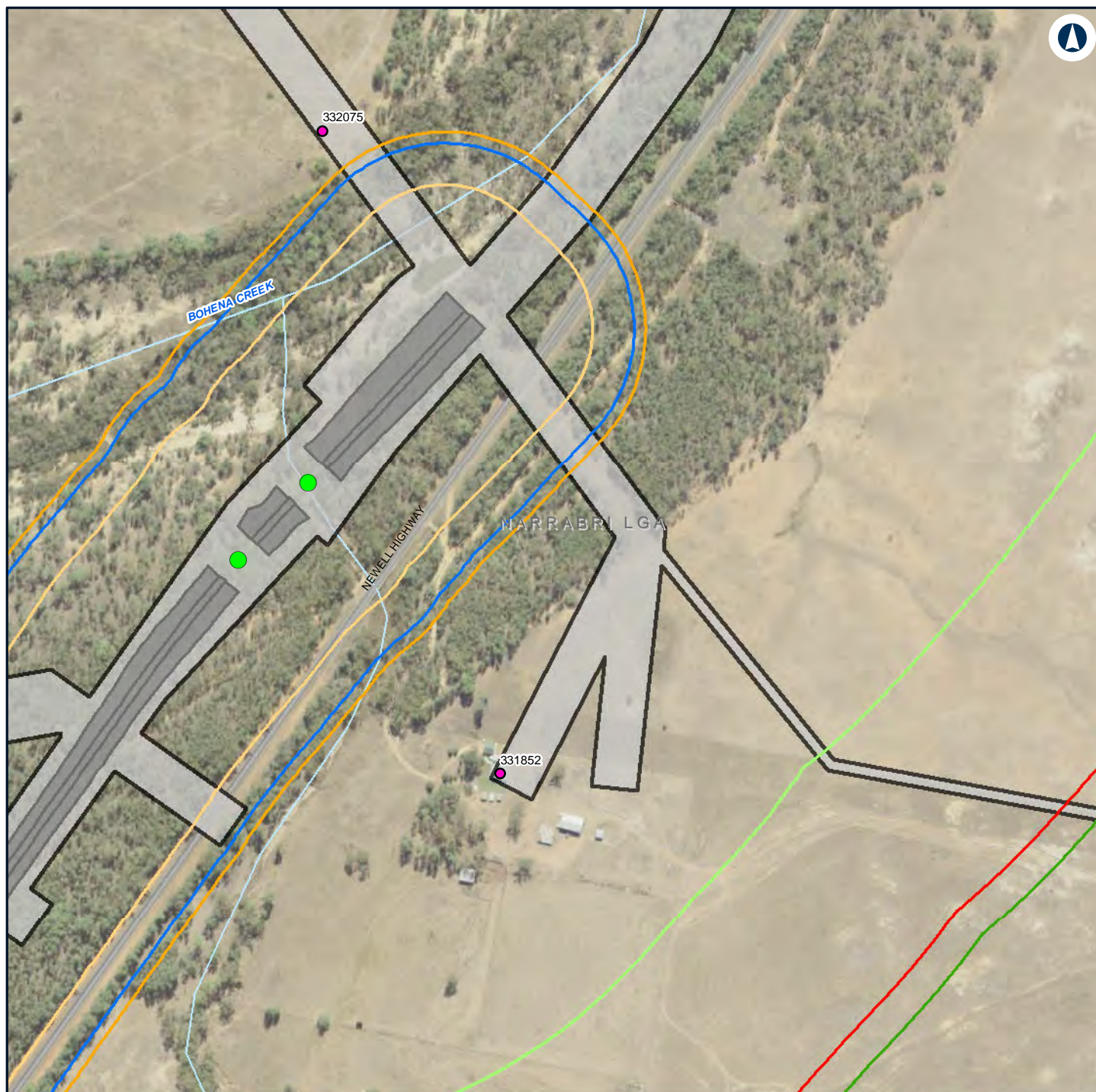
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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

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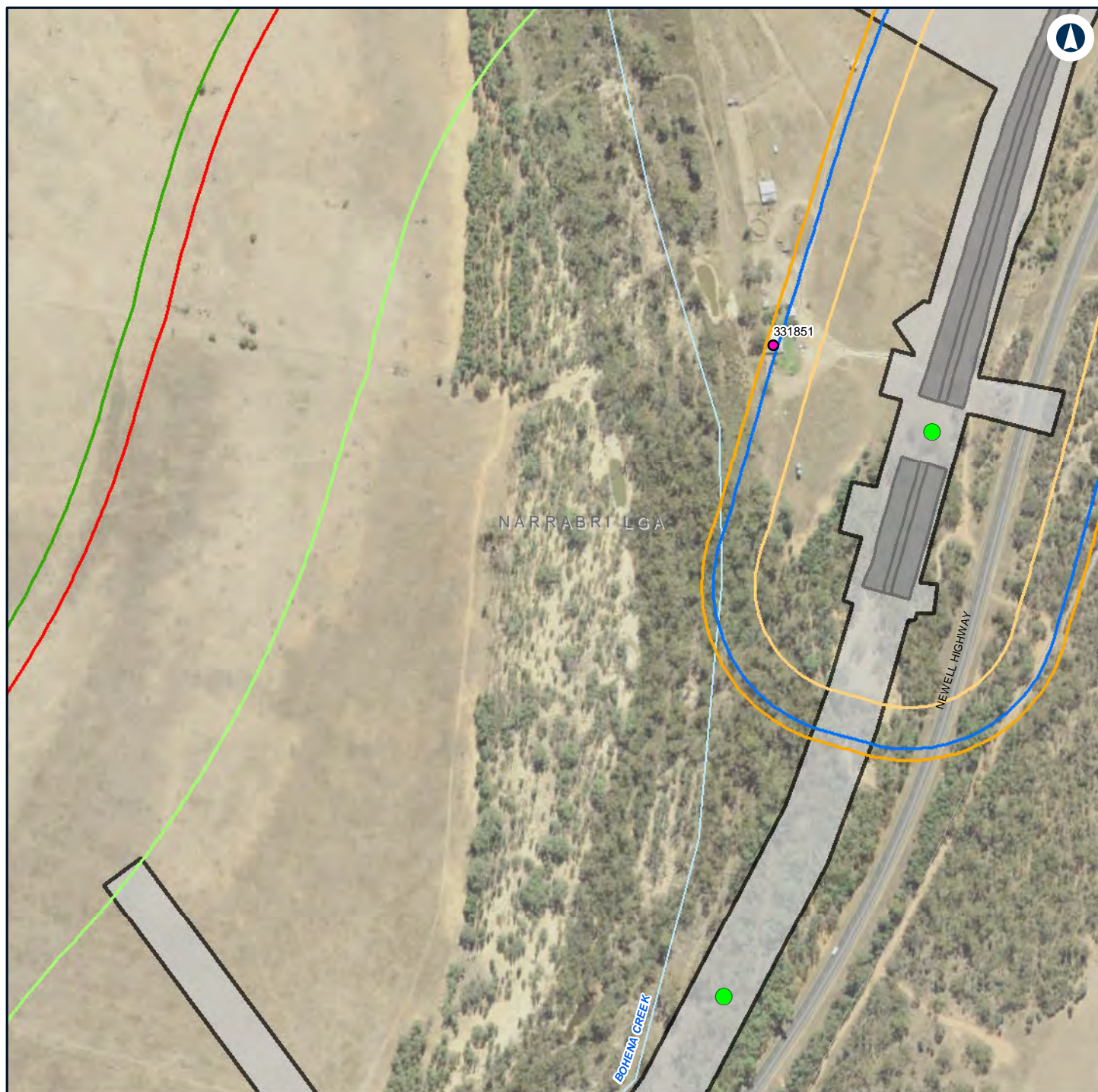
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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

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
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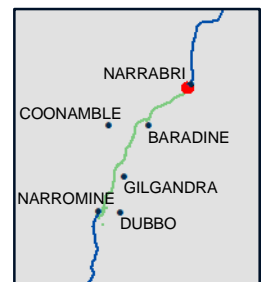
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## LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Residential |
- Vibration from rail earthworks**
-  AVTG night max (0.26 m/s 1.75, 94 m)
  -  AVTG day max (0.4 m/s 1.75, 128 m)
  -  BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

## Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

Construction footprint

#### Vibration from rail earthworks

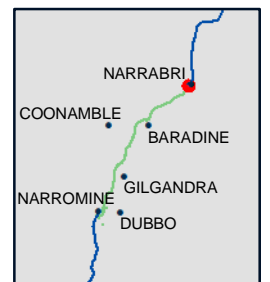
AVTG night max (0.26 m/s 1.75, 94 m)

AVTG day max (0.4 m/s 1.75, 128 m)

BS 5228-2:2009 (1 mm/s, 140 m)

#### Structure type

Residential



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 72 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

Scale: 1:5,000

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## LEGEND

- |  |   |                       |                                    |
|--|---|-----------------------|------------------------------------|
|  | Construction footprint                      |                       | AVTG day max (0.4 m/s 1.75, 128 m) |
|  | Rail earthworks extent (propagation source) |                       | BS 5228-2:2009 (1 mm/s, 140 m)     |
| <b>Vibration from bridge construction (piling)</b> |   | <b>Structure type</b> |                                    |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          |                       | Residential                        |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |                       |                                    |
| <b>Vibration from rail earthworks</b>              |   |                       |                                    |
|  | AVTG night max (0.26 m/s 1.75, 94 m)        |                       |                                    |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 73 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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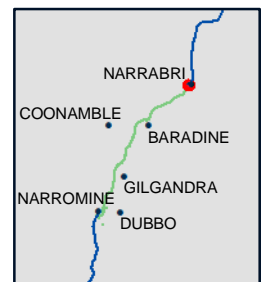
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## LEGEND

- |  |   |  |                                      |
|--|---|--|--------------------------------------|
|  | Construction footprint                      |  | Vibration from rail earthworks       |
|  | Rail earthworks extent (propagation source) |  | AVTG night max (0.26 m/s 1.75, 94 m) |
|  | Vibration from bridge construction (piling) |  | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | AVTG night max (0.26 m/s 1.75, 490 m)       |  | BS 5228-2:2009 (1 mm/s, 140 m)       |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          |  | Structure type                       |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |  | Commercial/Industrial                |
|  |   |  | Residential                          |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 74 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

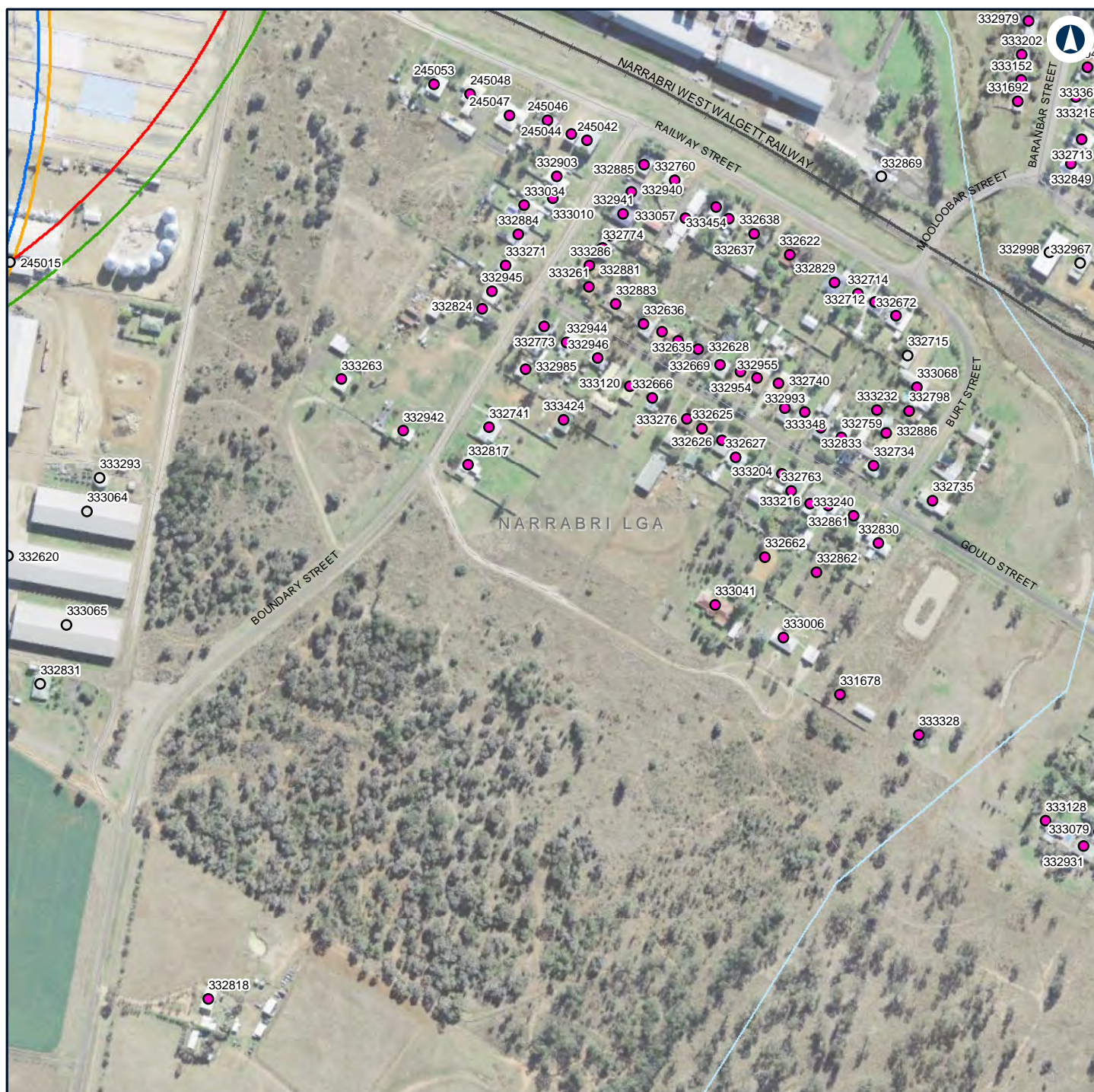
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

### Vibration from bridge construction (piling) Structure type

- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)
- Commercial/Industrial
- Residential

### Vibration from rail earthworks

- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 75 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

Construction footprint

#### Vibration from bridge construction (piling)

AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

#### Structure type

Commercial/Industrial



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 76 OF 94

0 0.1 0.2  
Km

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Date: 20/07/2020

Paper: A4

Author: GHD

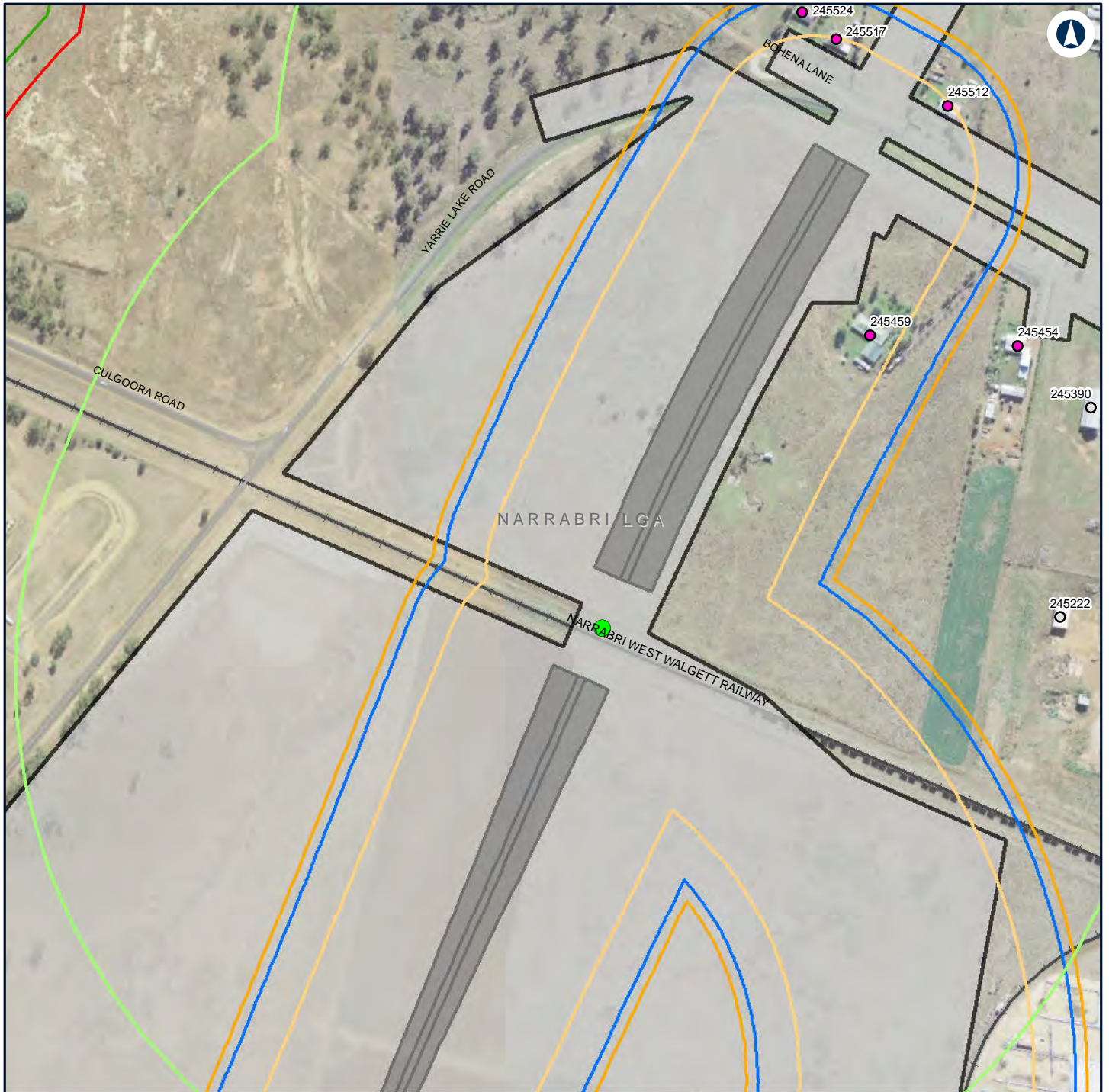
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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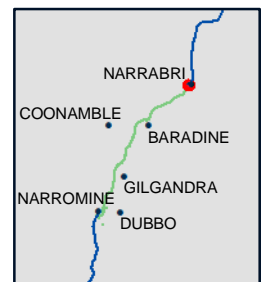
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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Commercial/Industrial
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

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Paper: A4

Author: GHD

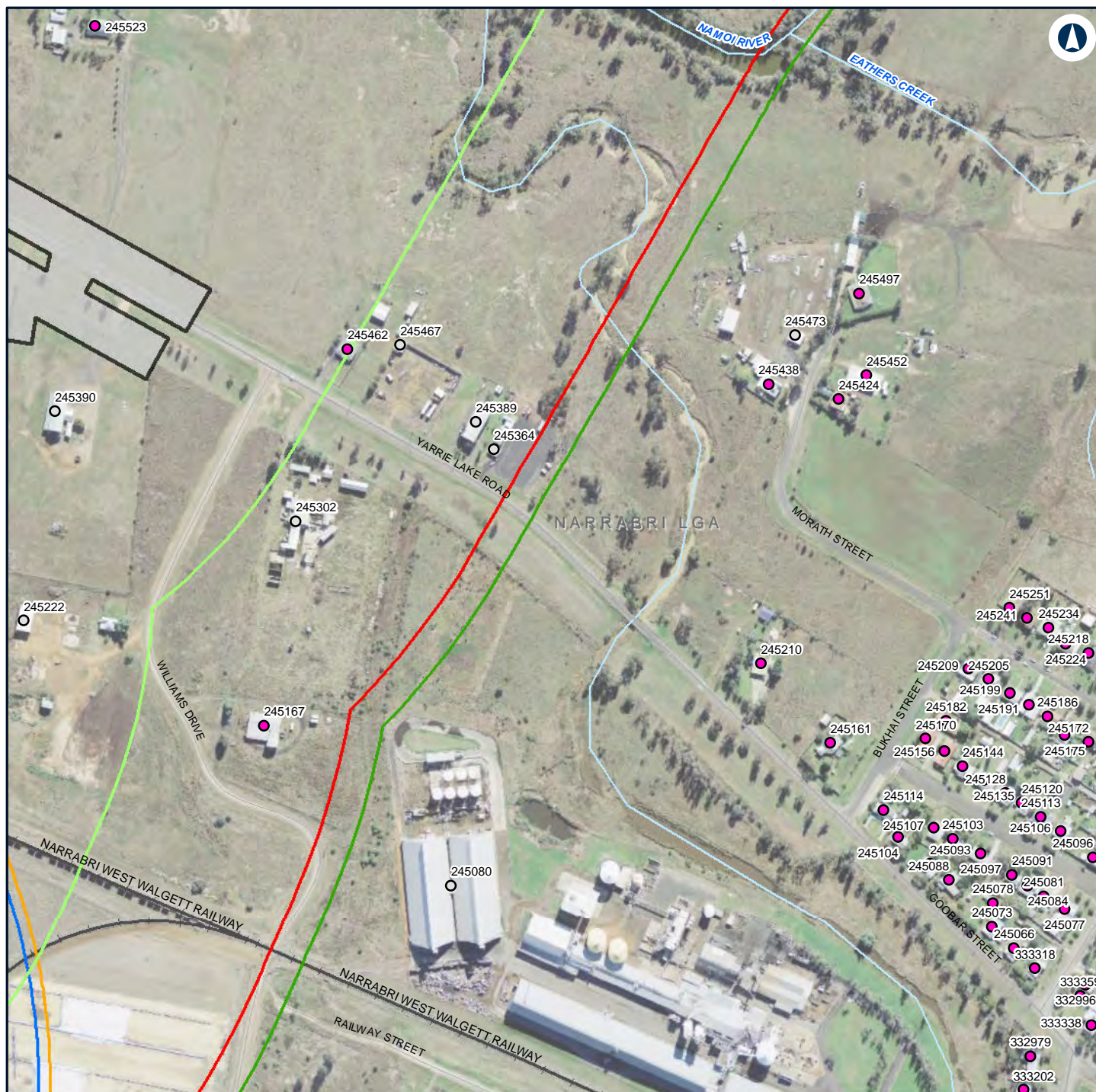
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- |  |                                |
|--|--------------------------------|
| Construction footprint                             | BS 5228-2:2009 (1 mm/s, 140 m) |
| <b>Vibration from bridge construction (piling)</b> | <b>Structure type</b>          |
| AVTG night max (0.26 m/s 1.75, 490 m)              | Commercial/Industrial          |
| AVTG day max (0.4 m/s 1.75, 670 m)                 | Residential                    |
| BS 5228-2:2009 (1 mm/s, 700 m)                     |                                |
| <b>Vibration from rail earthworks</b>              |                                |
| AVTG day max (0.4 m/s 1.75, 128 m)                 |                                |



## NARRABRI TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 78 OF 94

0 0.1 0.2  
Km

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## LEGEND

- |  |                                    |
|--|------------------------------------|
| Construction footprint                             | AVTG day max (0.4 m/s 1.75, 128 m) |
| <b>Vibration from bridge construction (piling)</b> | BS 5228-2:2009 (1 mm/s, 140 m)     |
| AVTG night max (0.26 m/s 1.75, 490 m)              | <b>Structure type</b>              |
| AVTG day max (0.4 m/s 1.75, 670 m)                 | Commercial/Industrial              |
| BS 5228-2:2009 (1 mm/s, 700 m)                     | Residential                        |
| <b>Vibration from rail earthworks</b>              |                                    |
| AVTG night max (0.26 m/s 1.75, 94 m)               |                                    |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 79 OF 94

0 0.1 0.2  
Km

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Author: GHD

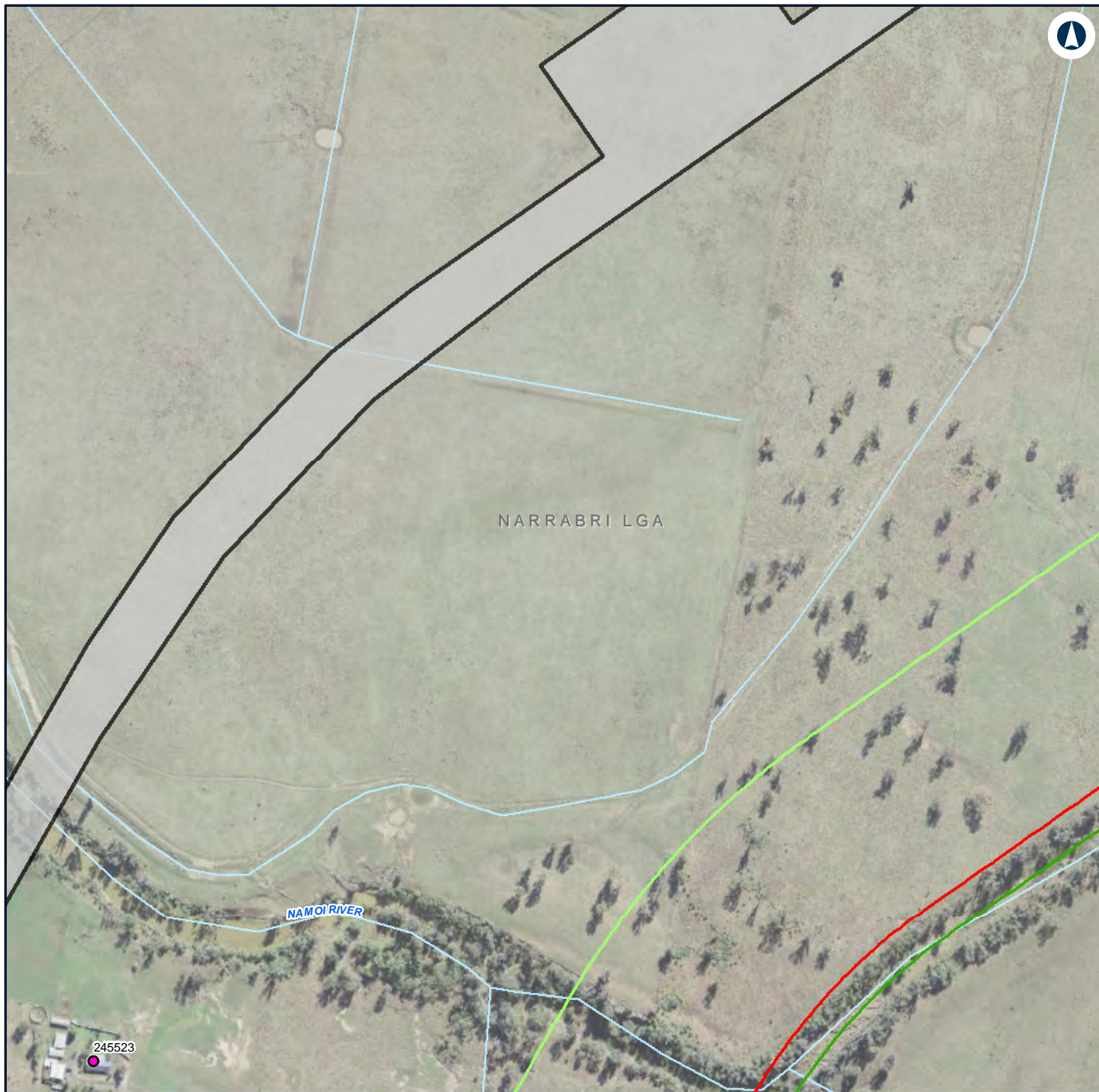
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

Construction footprint

#### Vibration from bridge construction (piling)

AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

#### Structure type

Residential



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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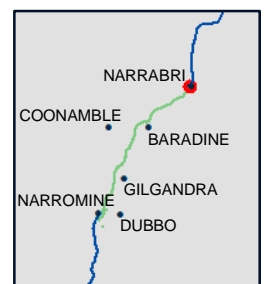
## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s 1.75, 490 m)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 81 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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## LEGEND

### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 82 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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## LEGEND

Construction footprint

### Vibration from bridge construction (piling)

AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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## LEGEND

- Bridge centre (propagation source)
  - Construction footprint
  - Residential
- Vibration from bridge construction (piling)**
- AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 84 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 20/07/2020

Paper: A4

Author: GHD

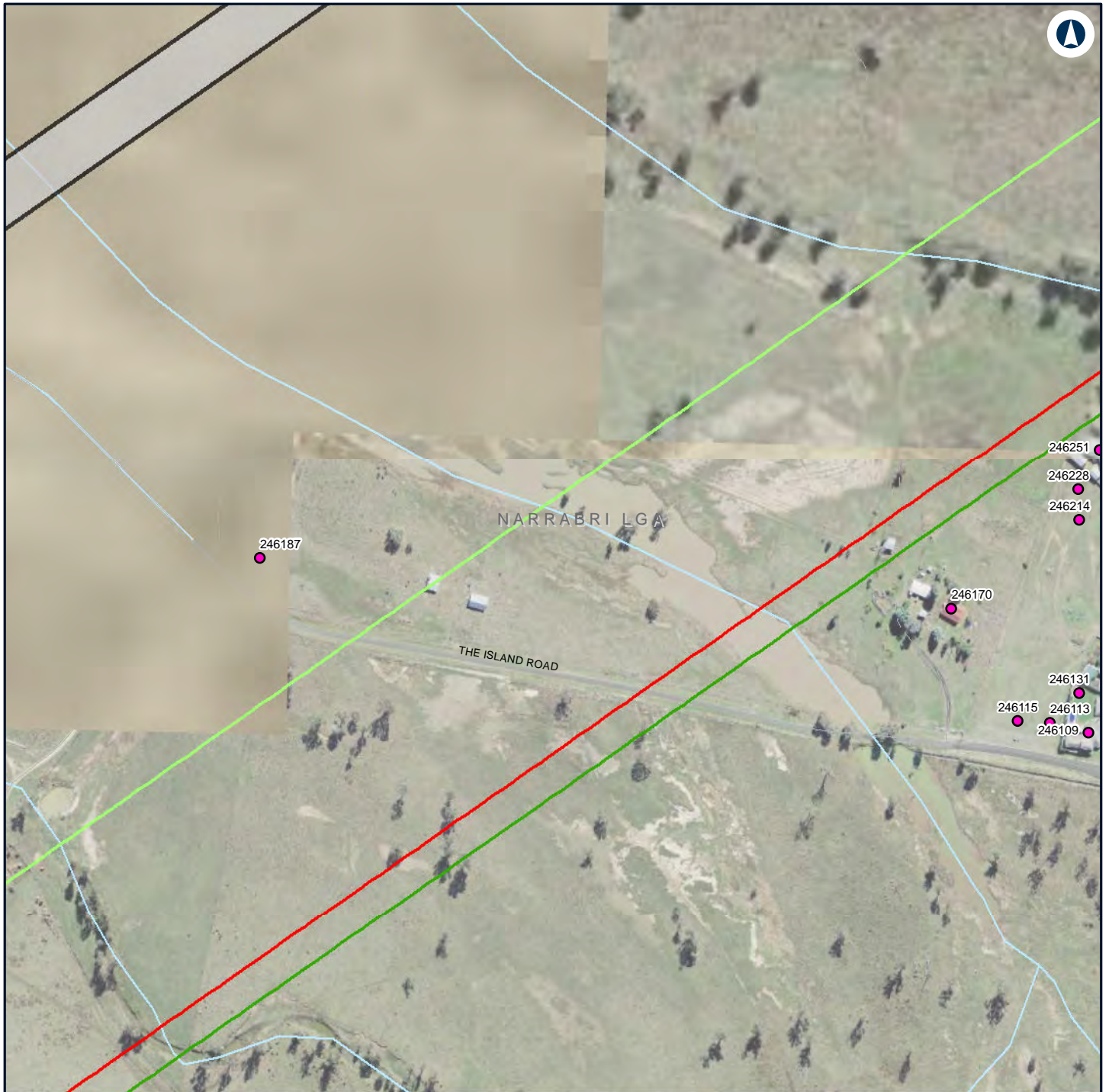
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

Construction footprint

#### Vibration from bridge construction (piling)

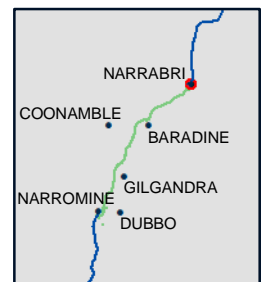
AVTG night max (0.26 m/s 1.75, 490 m)

AVTG day max (0.4 m/s 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

#### Structure type

Residential



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

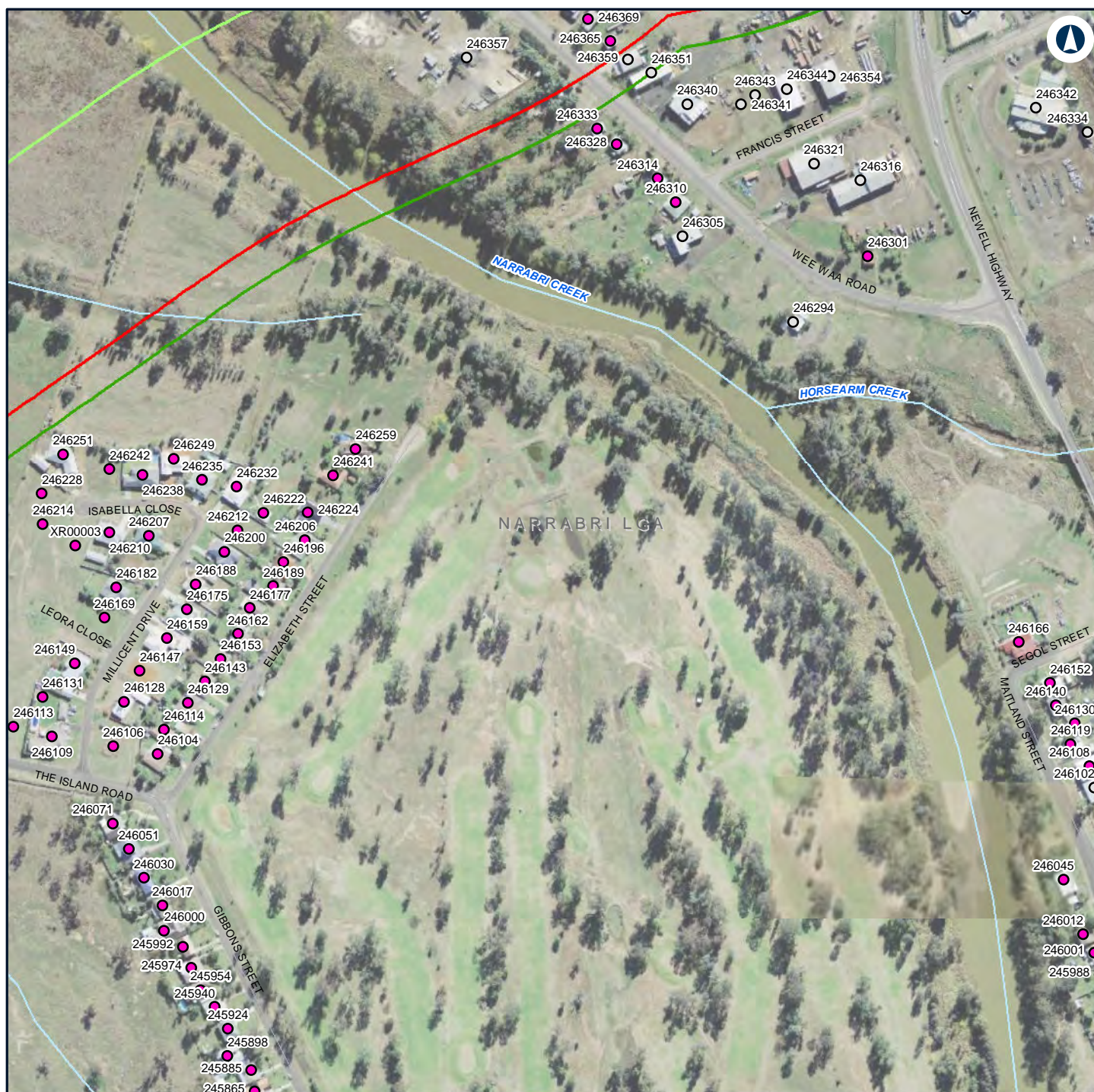
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s 1.75, 490 m)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Commercial/Industrial
- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
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0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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## LEGEND

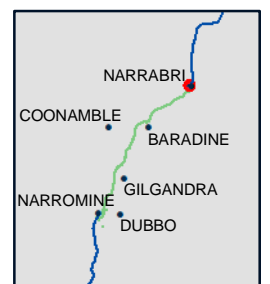
### Vibration from bridge construction (piling)

AVTG day max (0.4 m/s, 1.75, 670 m)

BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

● Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 87 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

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#### LEGEND

- |  |                                    |
|--|------------------------------------|
| Construction footprint                             | AVTG day max (0.4 m/s 1.75, 128 m) |
| <b>Vibration from bridge construction (piling)</b> | BS 5228-2:2009 (1 mm/s, 140 m)     |
| AVTG night max (0.26 m/s 1.75, 490 m)              | <b>Structure type</b>              |
| AVTG day max (0.4 m/s 1.75, 670 m)                 | Commercial/Industrial              |
| BS 5228-2:2009 (1 mm/s, 700 m)                     | Residential                        |
| <b>Vibration from rail earthworks</b>              |                                    |
| AVTG night max (0.26 m/s 1.75, 94 m)               |                                    |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 88 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

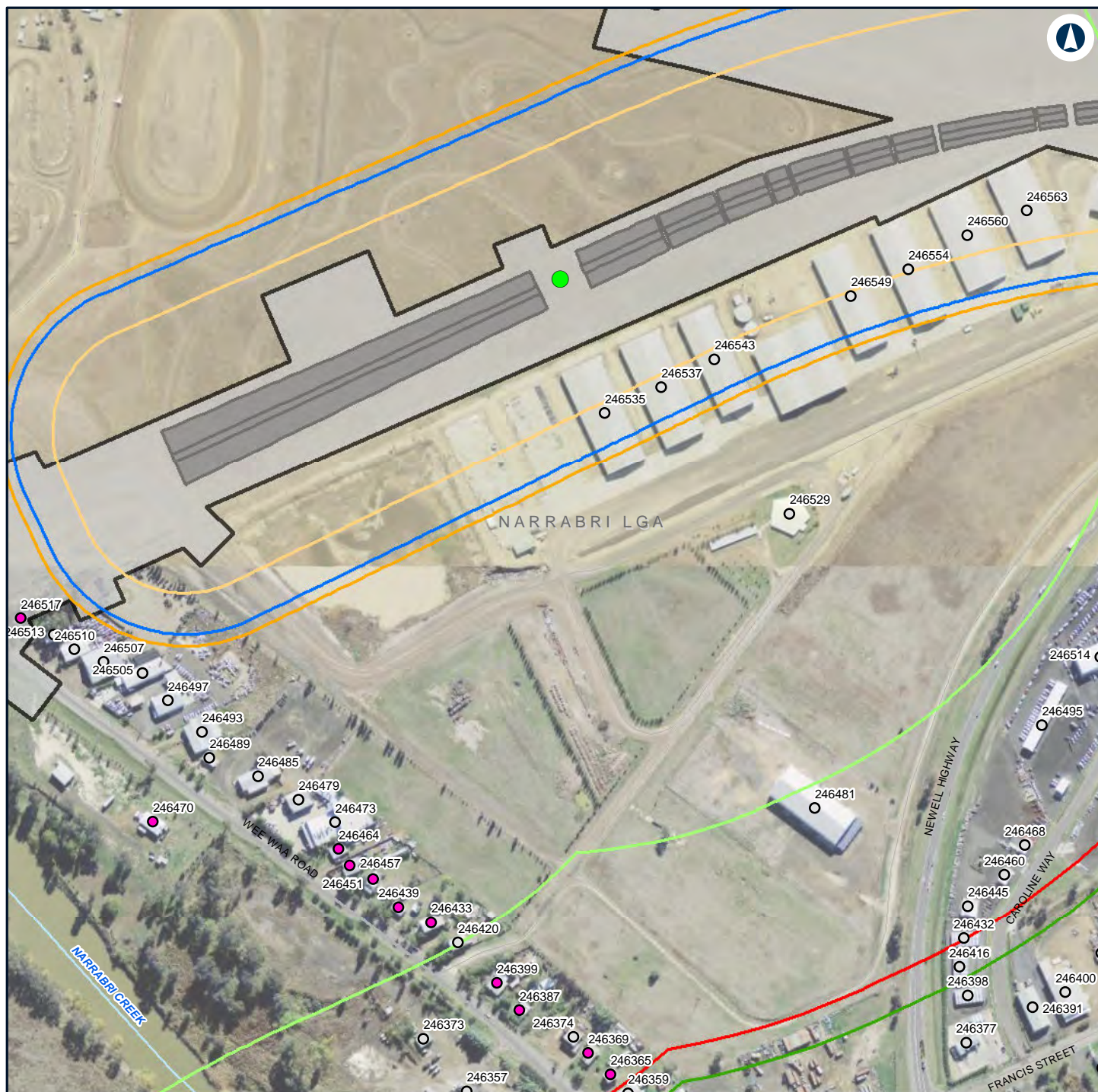
Scale: 1:5,000

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## LEGEND

- Bridge centre (propagation source)
- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Commercial/Industrial
  - Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 89 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

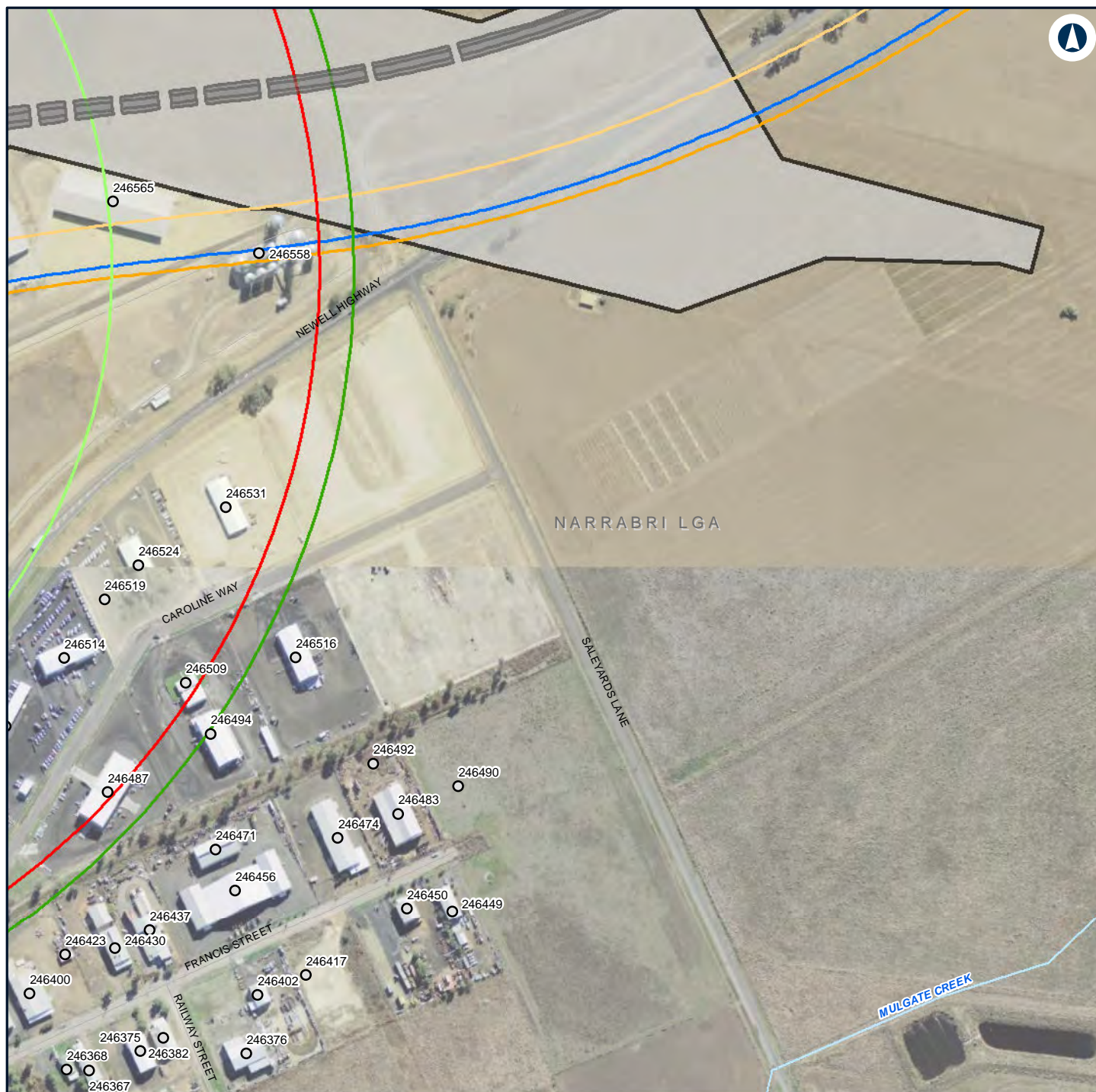
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- |  |   |                       |                                      |
|--|---|-----------------------|--------------------------------------|
|  | Construction footprint                      |                       | Vibration from rail earthworks       |
|  | Rail earthworks extent (propagation source) |                       | AVTG night max (0.26 m/s 1.75, 94 m) |
| <b>Vibration from bridge construction (piling)</b> |   |                       | AVTG day max (0.4 m/s 1.75, 128 m)   |
|  | AVTG night max (0.26 m/s 1.75, 490 m)       |                       | BS 5228-2:2009 (1 mm/s, 140 m)       |
|  | AVTG day max (0.4 m/s 1.75, 670 m)          | <b>Structure type</b> |                                      |
|  | BS 5228-2:2009 (1 mm/s, 700 m)              |                       | Commercial/Industrial                |



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 90 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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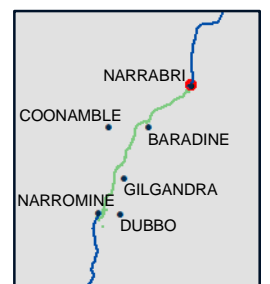
## LEGEND

### Vibration from bridge construction (piling)

- AVTG night max (0.26 m/s 1.75, 490 m)
- AVTG day max (0.4 m/s 1.75, 670 m)
- BS 5228-2:2009 (1 mm/s, 700 m)

### Structure type

- Residential



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 91 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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#### LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Vibration from bridge construction (piling)**
  - AVTG night max (0.26 m/s 1.75, 490 m)
  - AVTG day max (0.4 m/s 1.75, 670 m)
  - BS 5228-2:2009 (1 mm/s, 700 m)
- Vibration from rail earthworks**
  - AVTG night max (0.26 m/s 1.75, 94 m)
  - AVTG day max (0.4 m/s 1.75, 128 m)
  - BS 5228-2:2009 (1 mm/s, 140 m)
- Structure type**
  - Commercial/Industrial



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 92 OF 94

0 0.1 0.2  
Km

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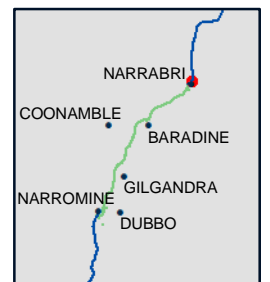


## LEGEND

- Construction footprint
- Rail earthworks extent (propagation source)
- Residential

## Vibration from rail earthworks

- AVTG night max (0.26 m/s 1.75, 94 m)
- AVTG day max (0.4 m/s 1.75, 128 m)
- BS 5228-2:2009 (1 mm/s, 140 m)



## NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 93 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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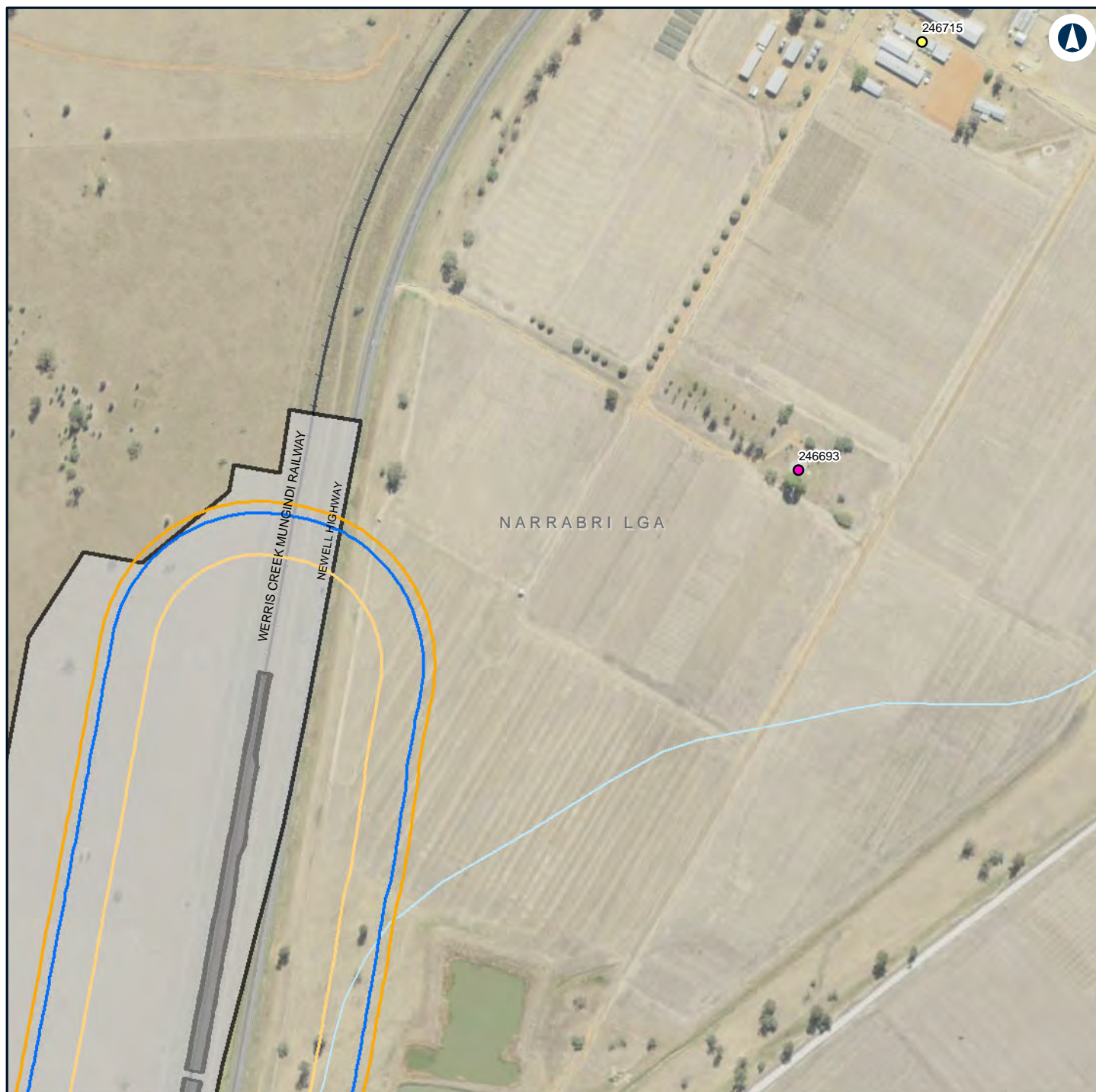
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#### LEGEND

- |  |   |
|--|---|
|  Construction footprint                      | <b>Structure type</b>   |
|  Rail earthworks extent (propagation source) |  Community   |
| <b>Vibration from rail earthworks</b>  |  Residential |
|  AVTG night max (0.26 m/s 1.75, 94 m)        |   |
|  AVTG day max (0.4 m/s 1.75, 128 m)          |   |
|  BS 5228-2:2009 (1 mm/s, 140 m)              |   |



#### NARROMINE TO NARRABRI Construction vibration buffers, Human comfort - Rail earthworks / Bridges (piling)/ Borrow pit finishing

Appendix M  
MAP 94 OF 94

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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# TECHNICAL REPORT

# 8

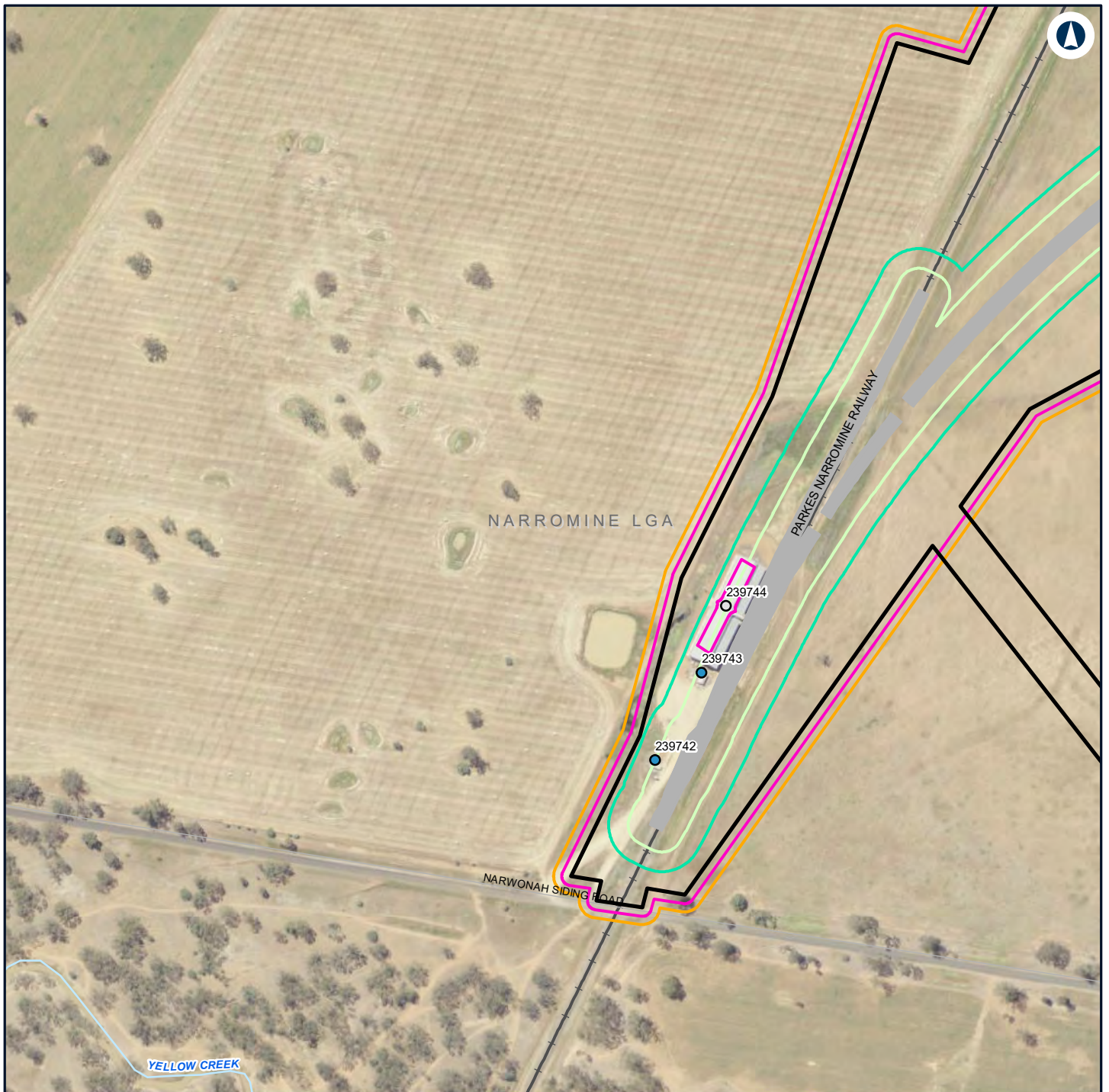
## Noise and vibration assessment – construction and other operations

### **Appendix N** Construction vibration buffers – structural damage

NARROMINE TO NARRABRI ENVIRONMENTAL IMPACT STATEMENT







#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Commercial/Industrial
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 1 OF 113

0 0.1 0.2  
Km

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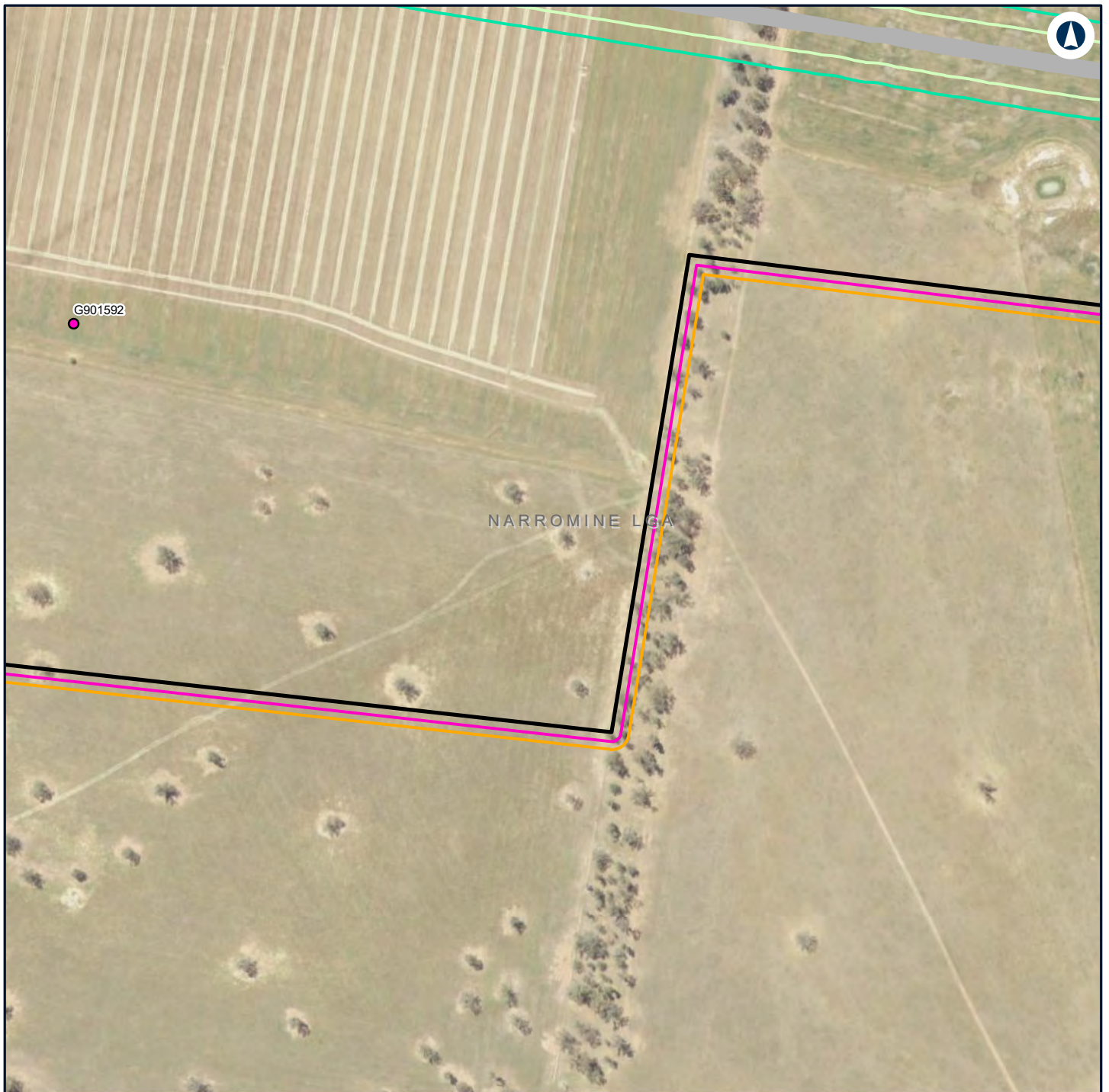
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 2 OF 113

0 0.1 0.2  
Km

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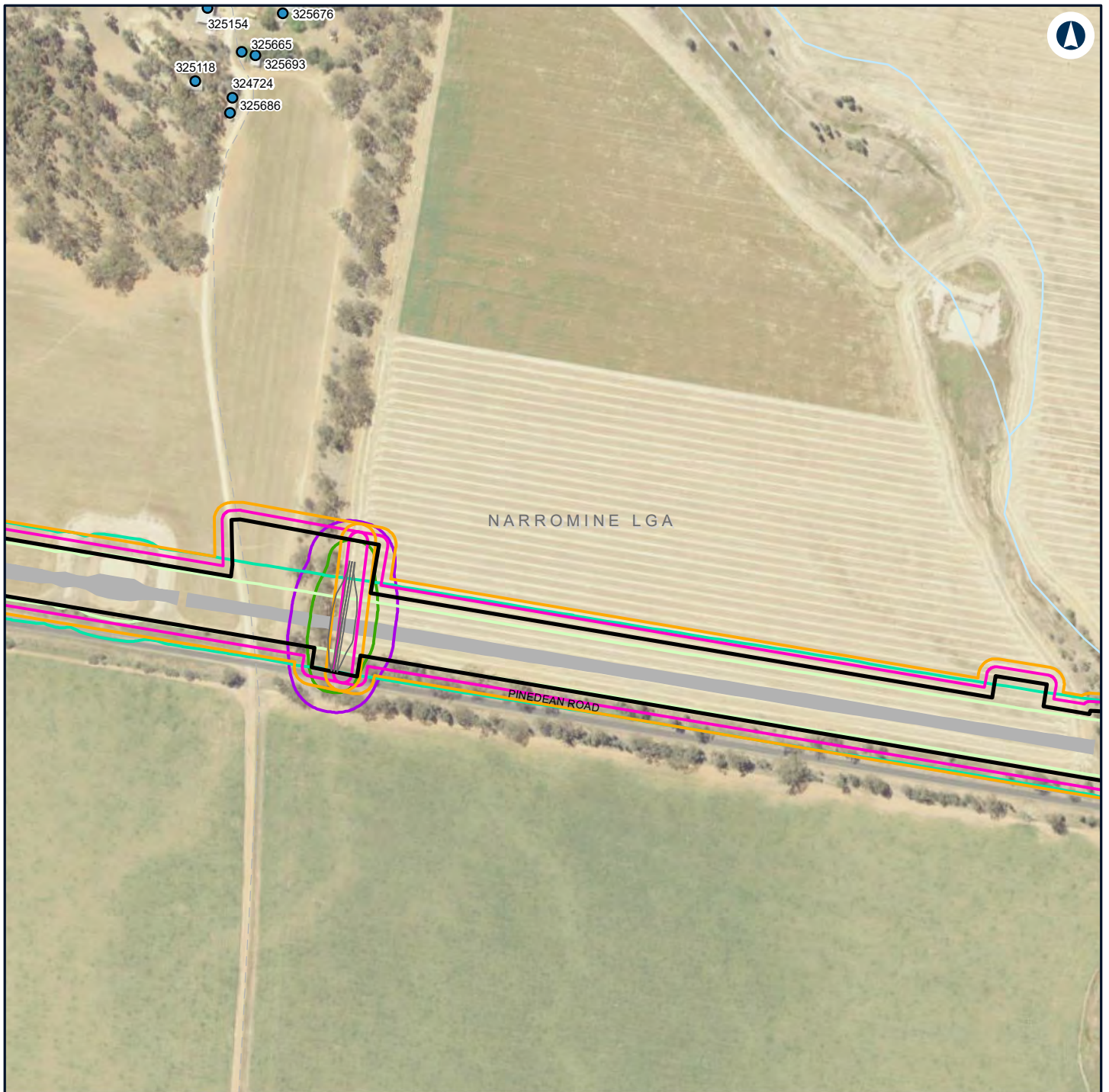
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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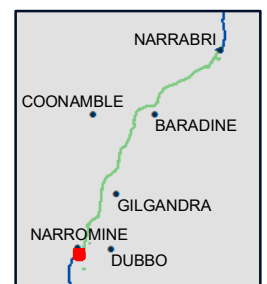
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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 3 OF 113

0 0.1 0.2  
Km

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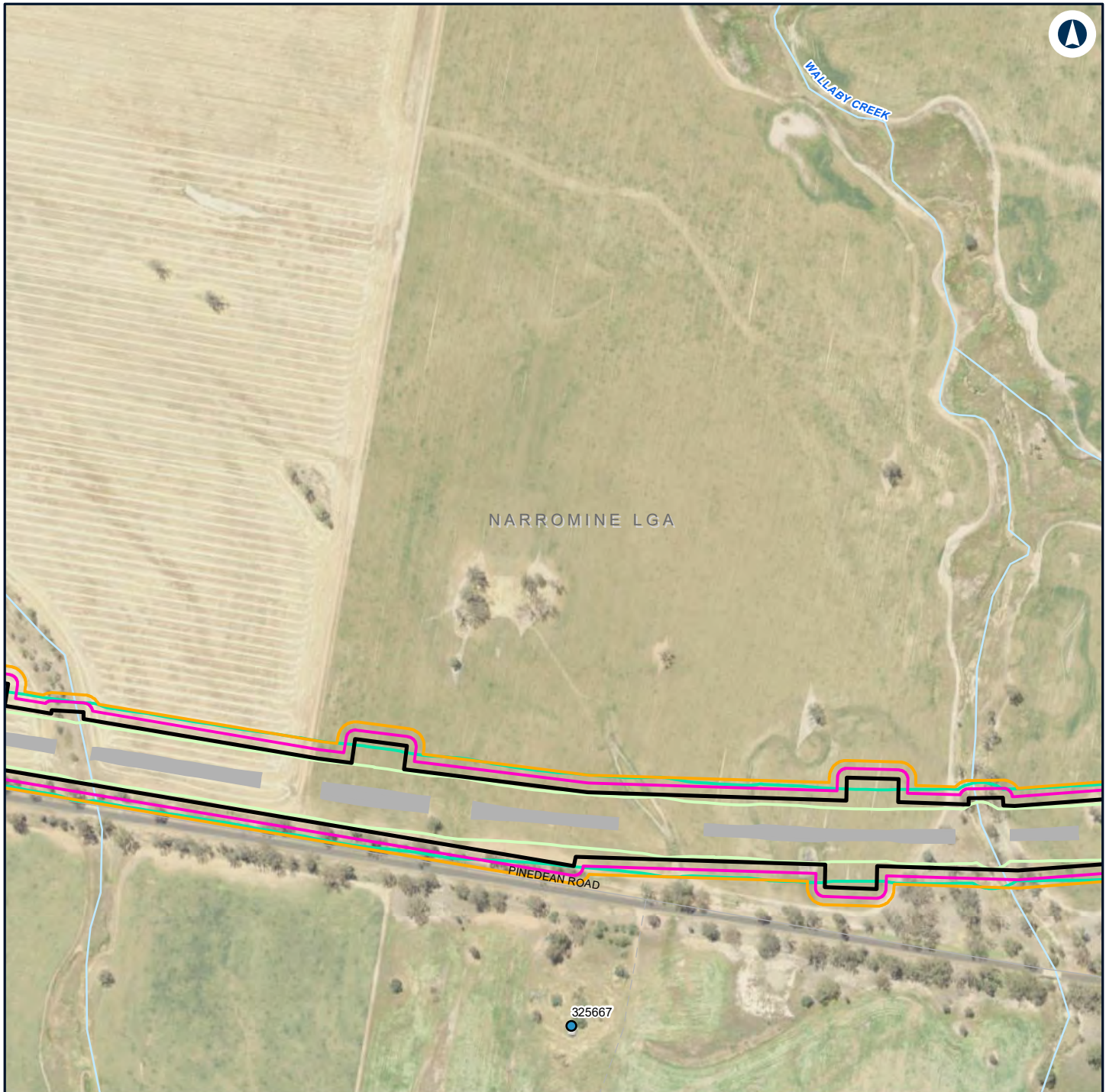
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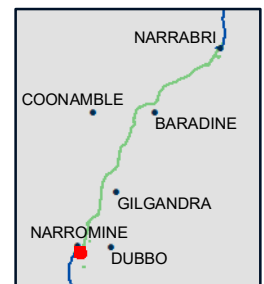
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 4 OF 113

0 0.1 0.2  
Km

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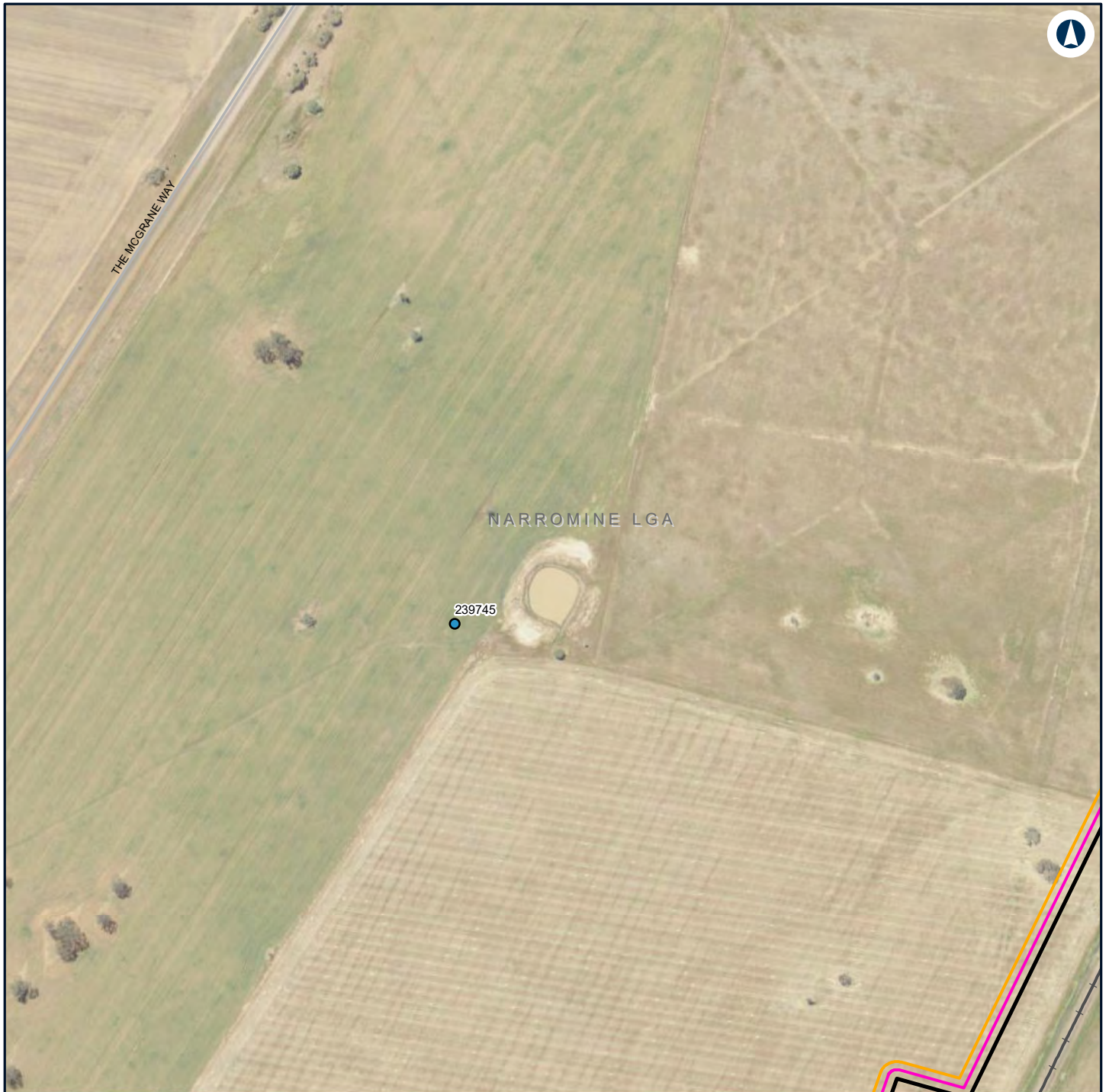
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD





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#### LEGEND

-  Construction footprint
-  Clearing (Dozer) – Heritage structures: 3mm/s, 15m
-  Clearing (Dozer) – Standard buildings: 5mm/s, 8m
-  Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 5 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

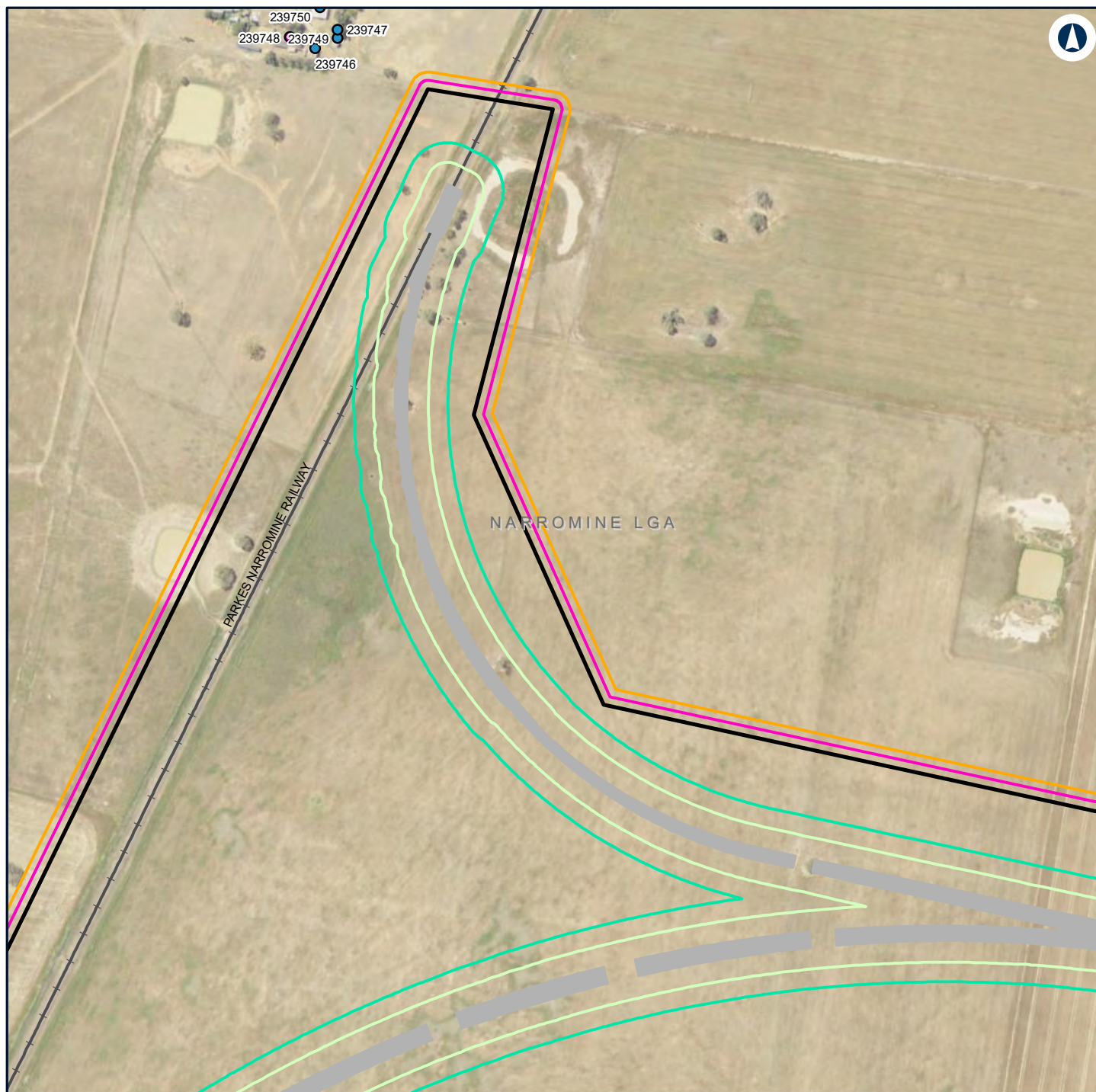
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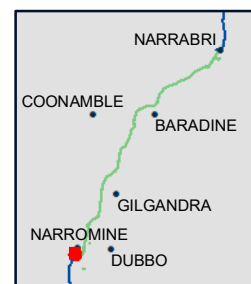
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 6 OF 113

0 0.1 0.2  
Km

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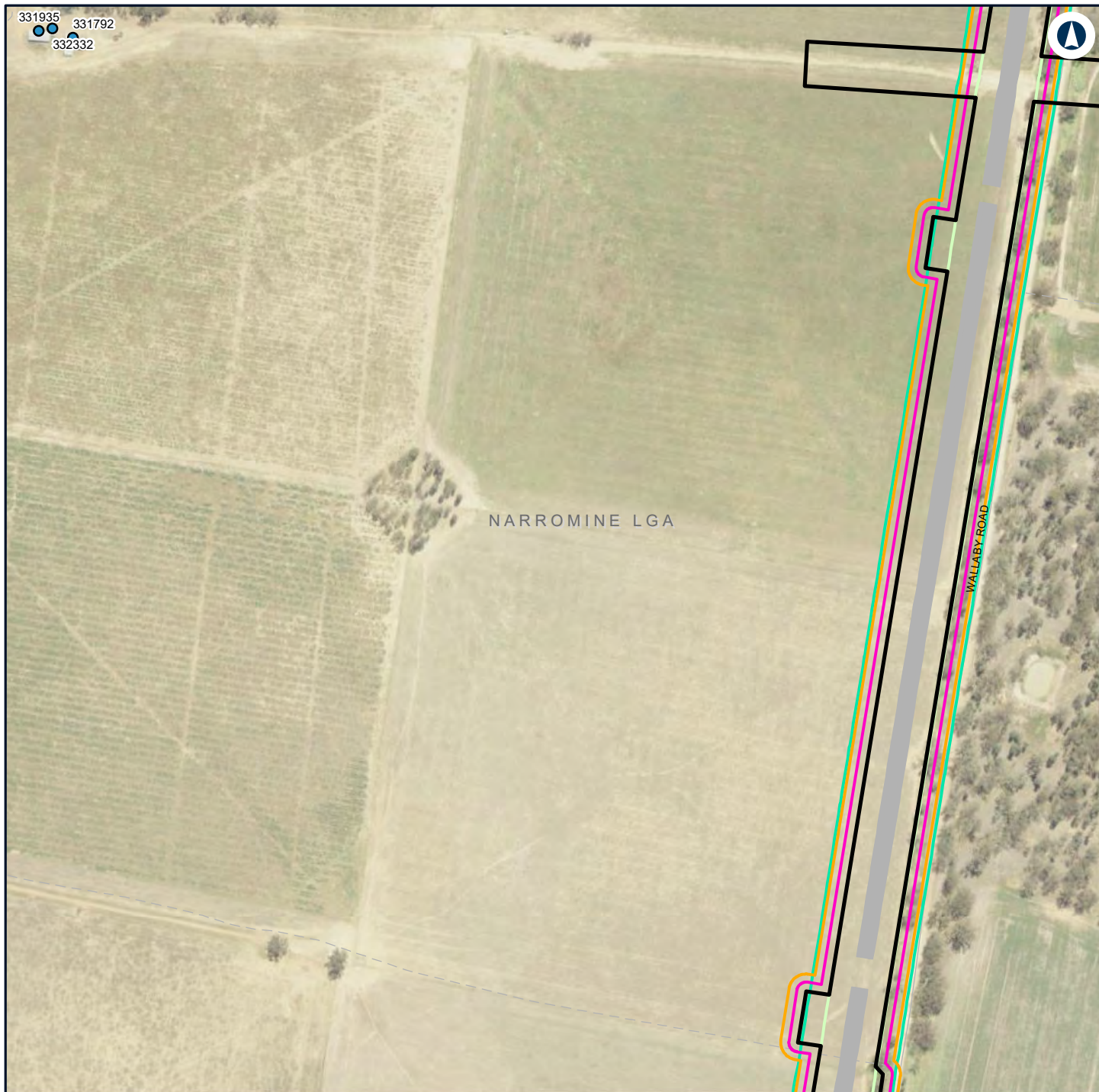
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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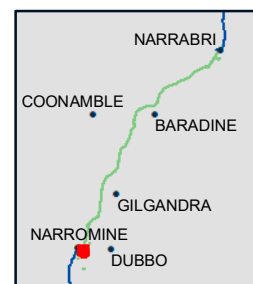
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 7 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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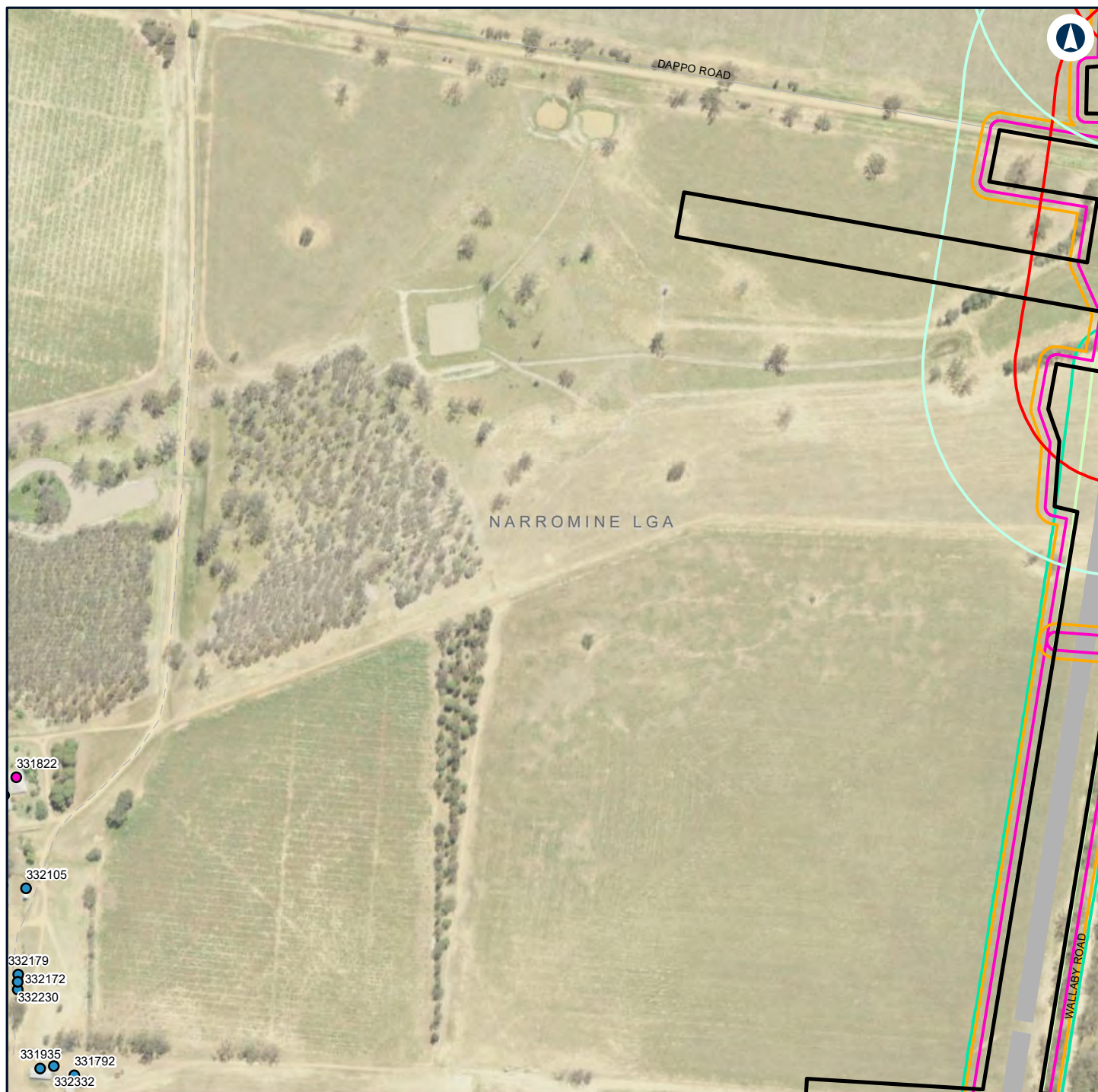
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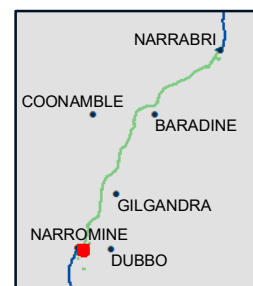




#### LEGEND

- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 8 OF 113

0 0.1 0.2  
Km

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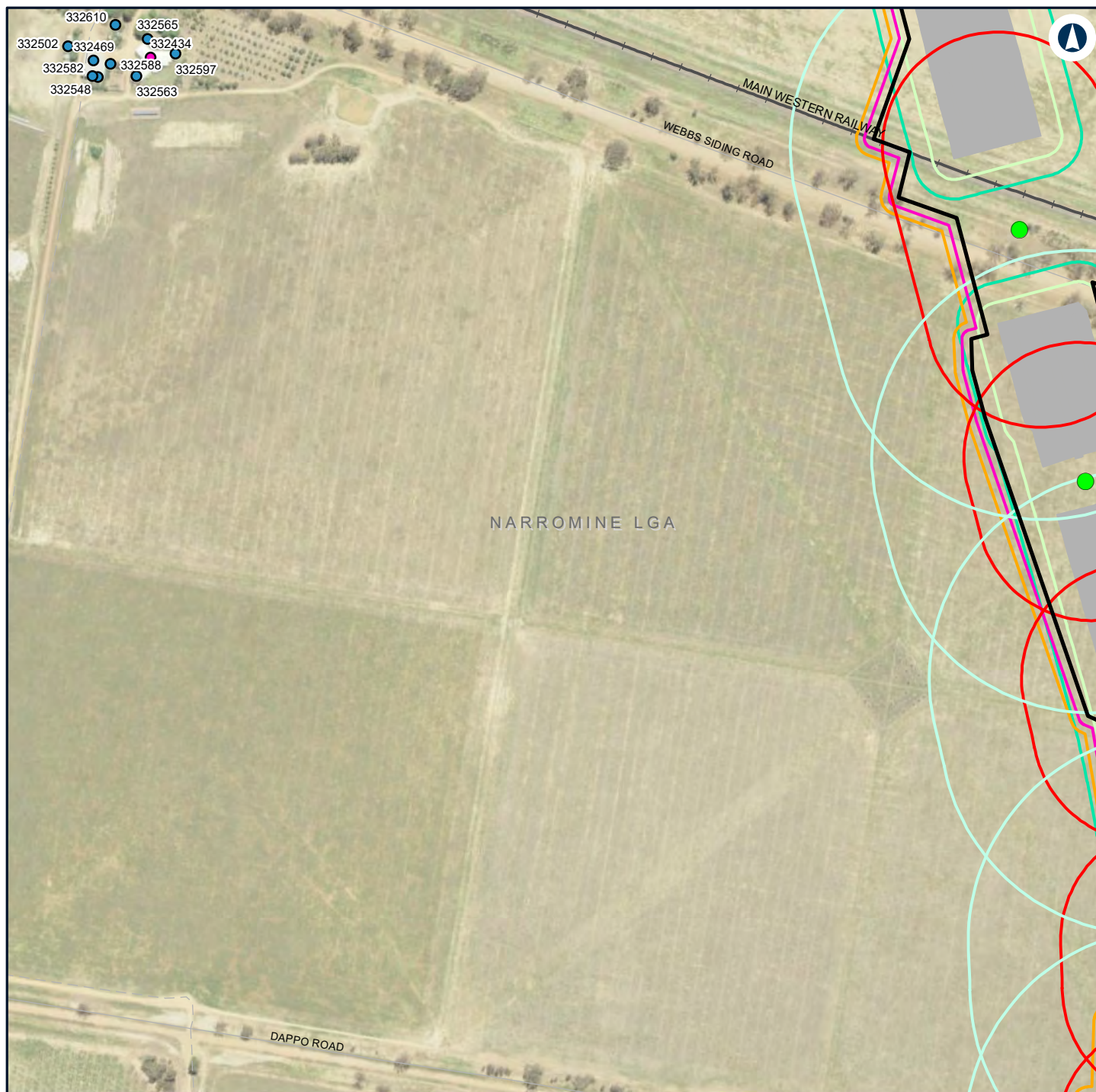
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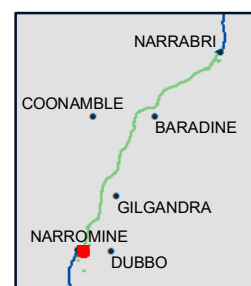
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## LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 9 OF 113

0 0.1 0.2  
Km

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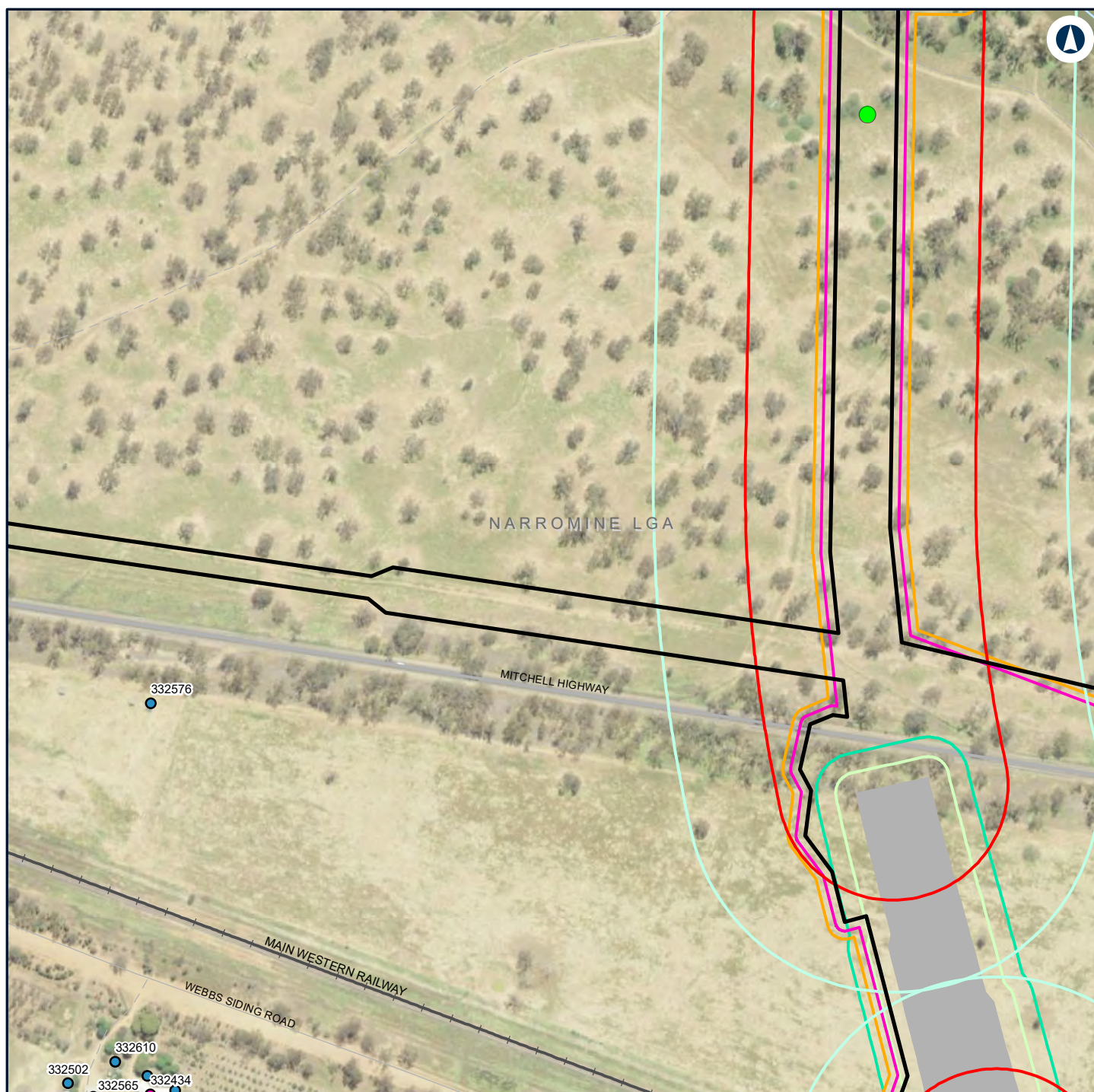
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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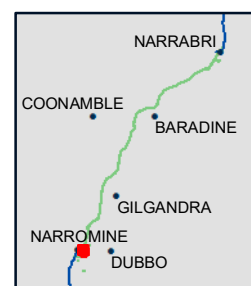
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## LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 10 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

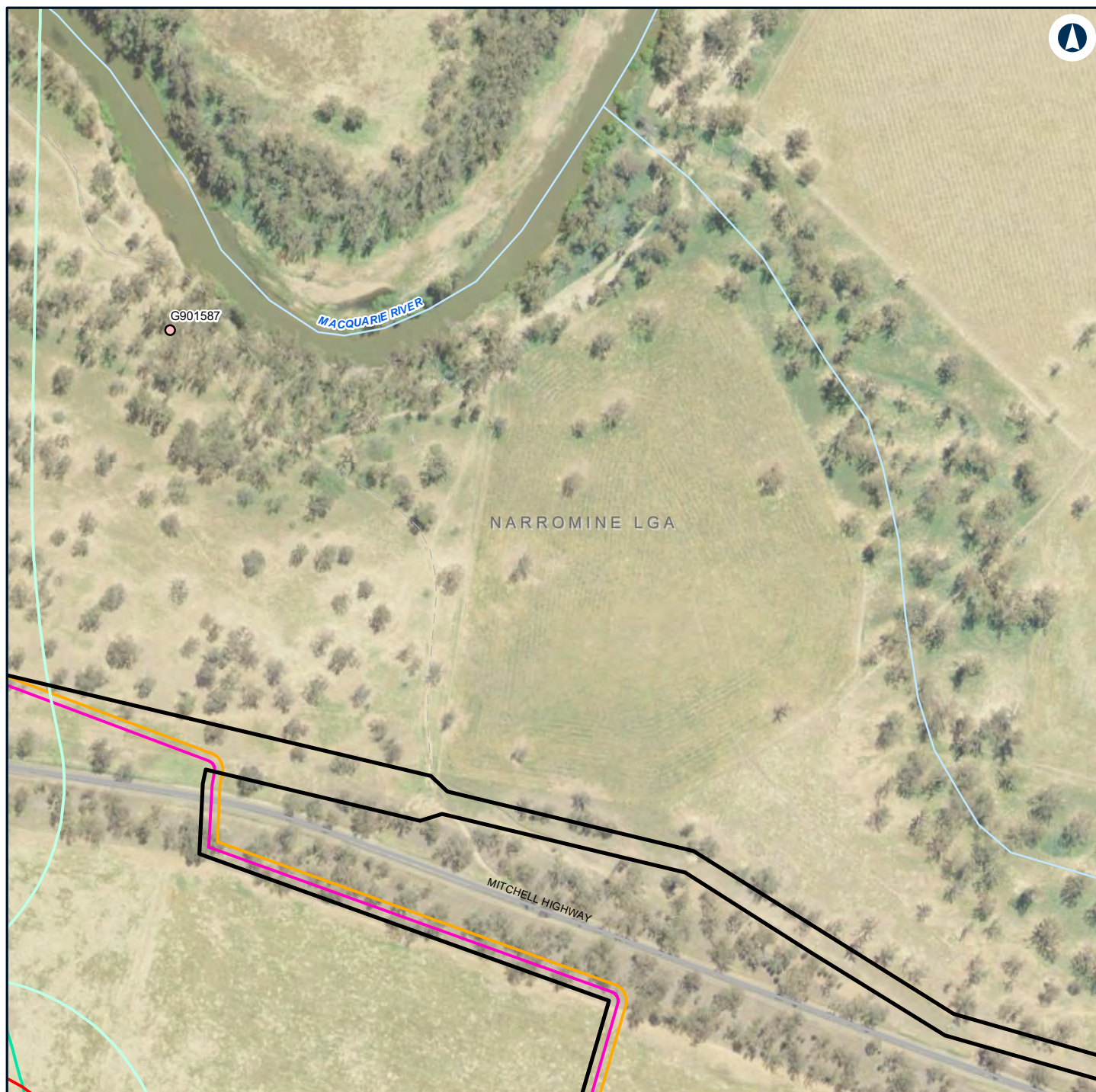
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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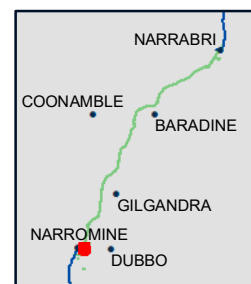
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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Passive recreation



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 11 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 12 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

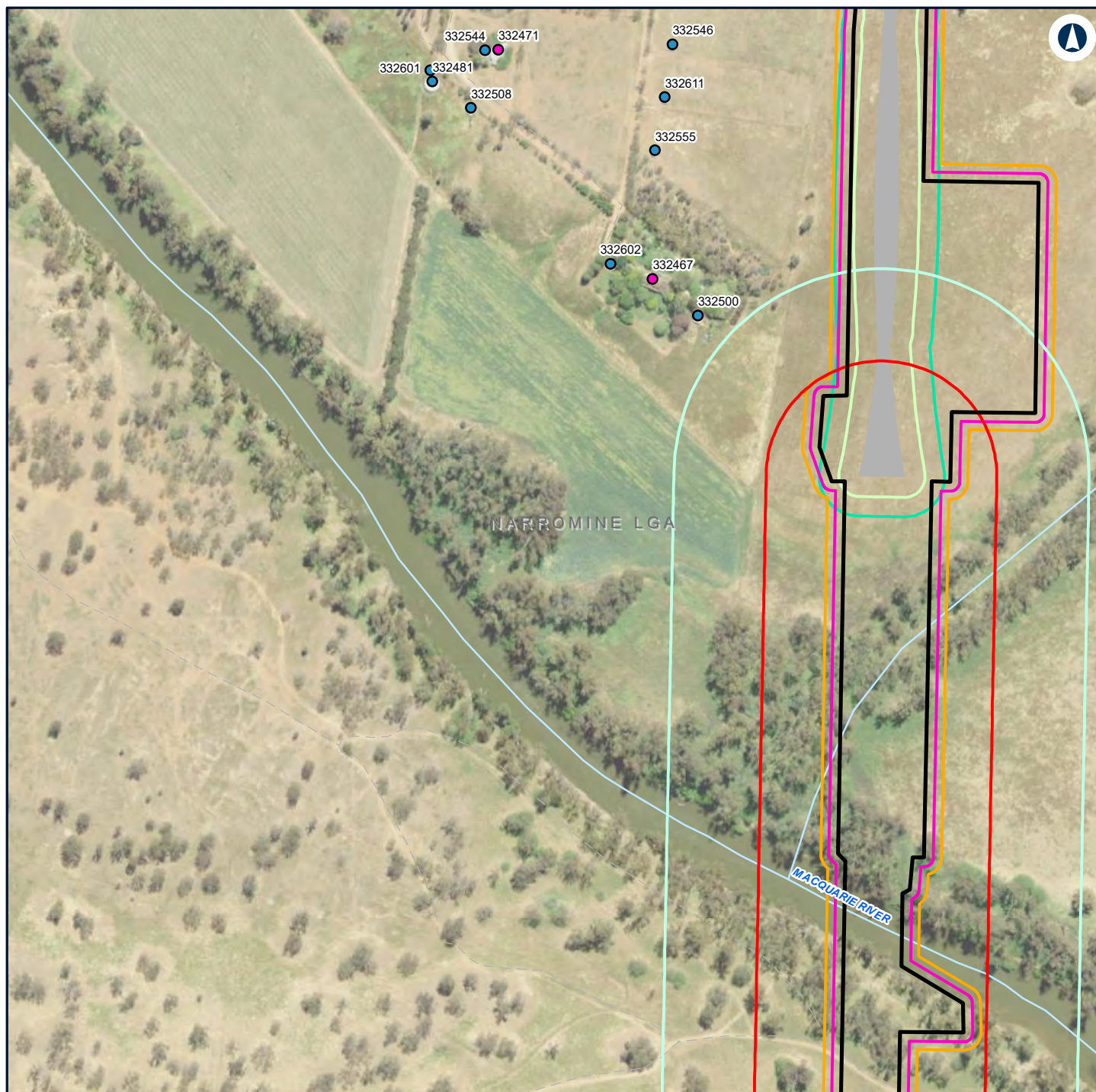
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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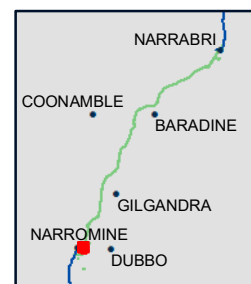




#### LEGEND

- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 13 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Commercial/Industrial
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 14 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

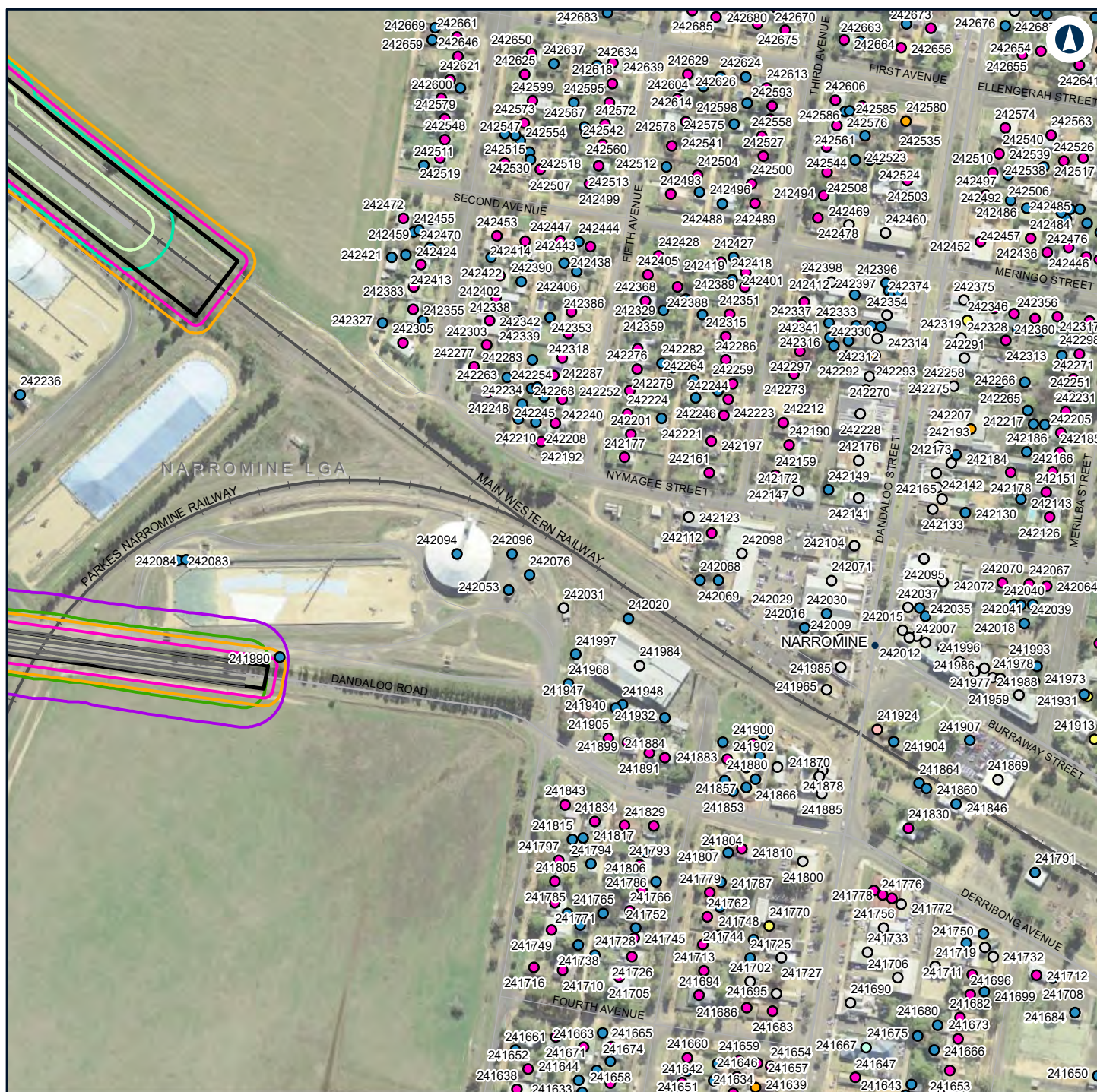
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- |  |   |
|--|---|
| — Road design  | □ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m |
| ▬ Construction footprint   | ○ Commercial/Industrial   |
| ▬ Rail earthworks extent   | ○ Community   |
| ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m                   | ○ Health  |
| ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m                     | ○ Other   |
| ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m | ○ Passive recreation  |
| ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m  | ○ Residential   |
| ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m | ○ Worship   |



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 15 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

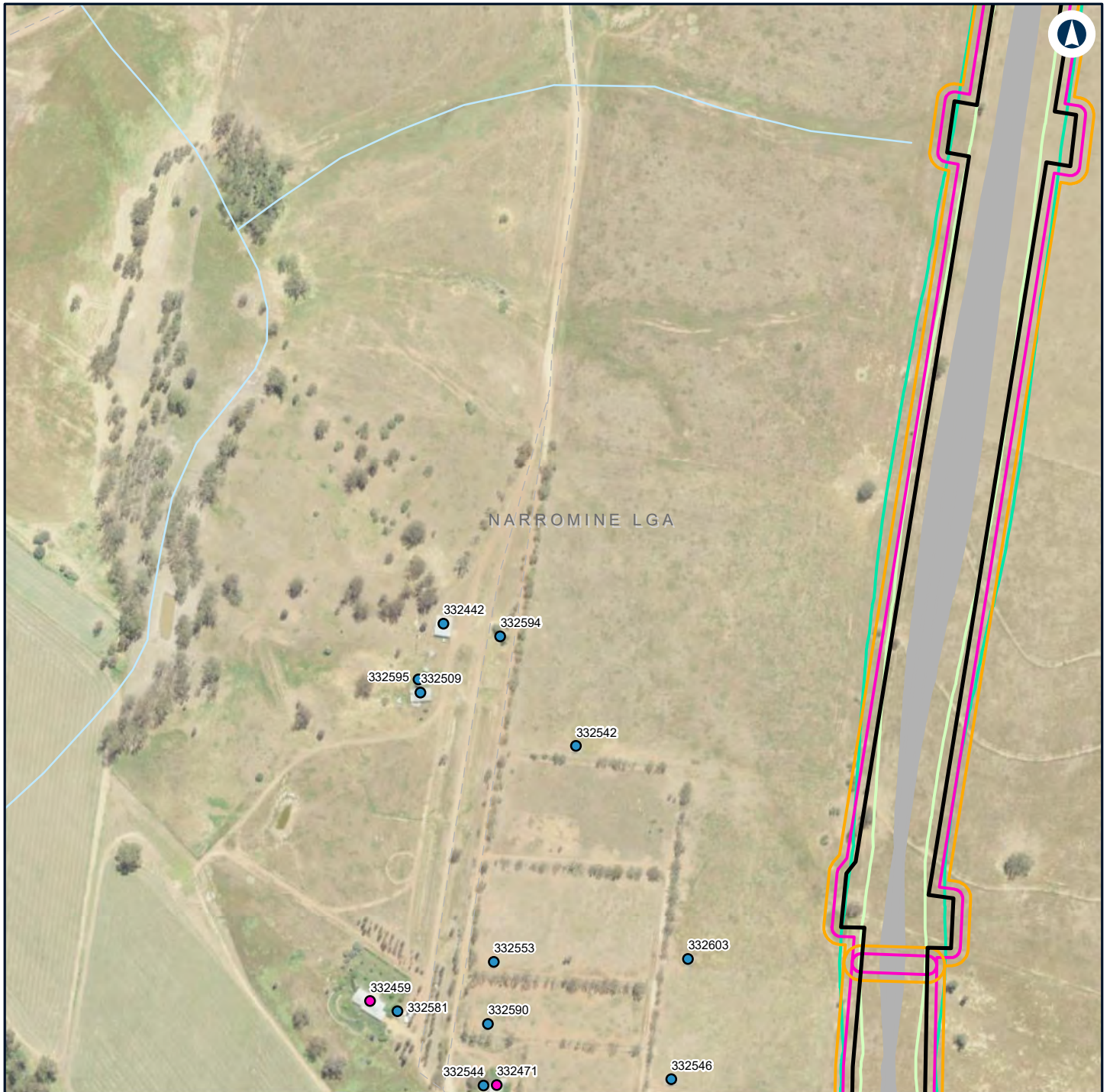
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

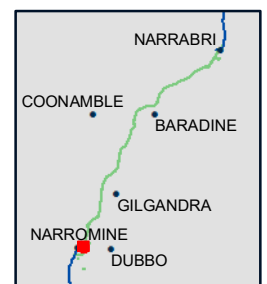
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 16 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

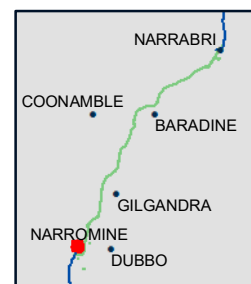
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 17 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

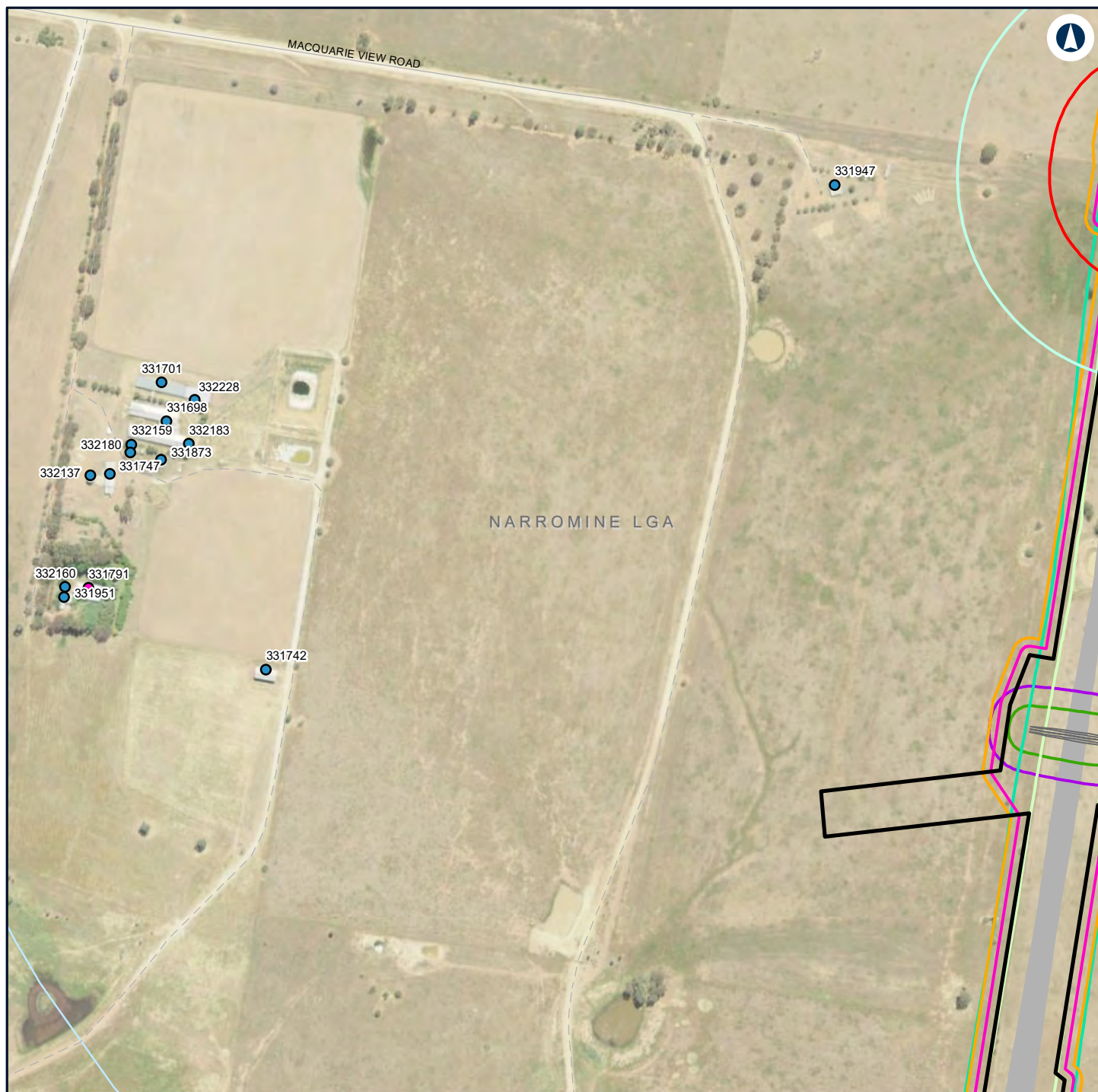
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

— Road design

▬ Construction footprint

▬ Rail earthworks extent

▬ Bridges (Impact piling) – Heritage structures: 3mm/s, 180m

▬ Bridges (Impact piling) – Standard buildings: 5mm/s, 100m

▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m

▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Active recreation

● Other

● Residential



## NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 18 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

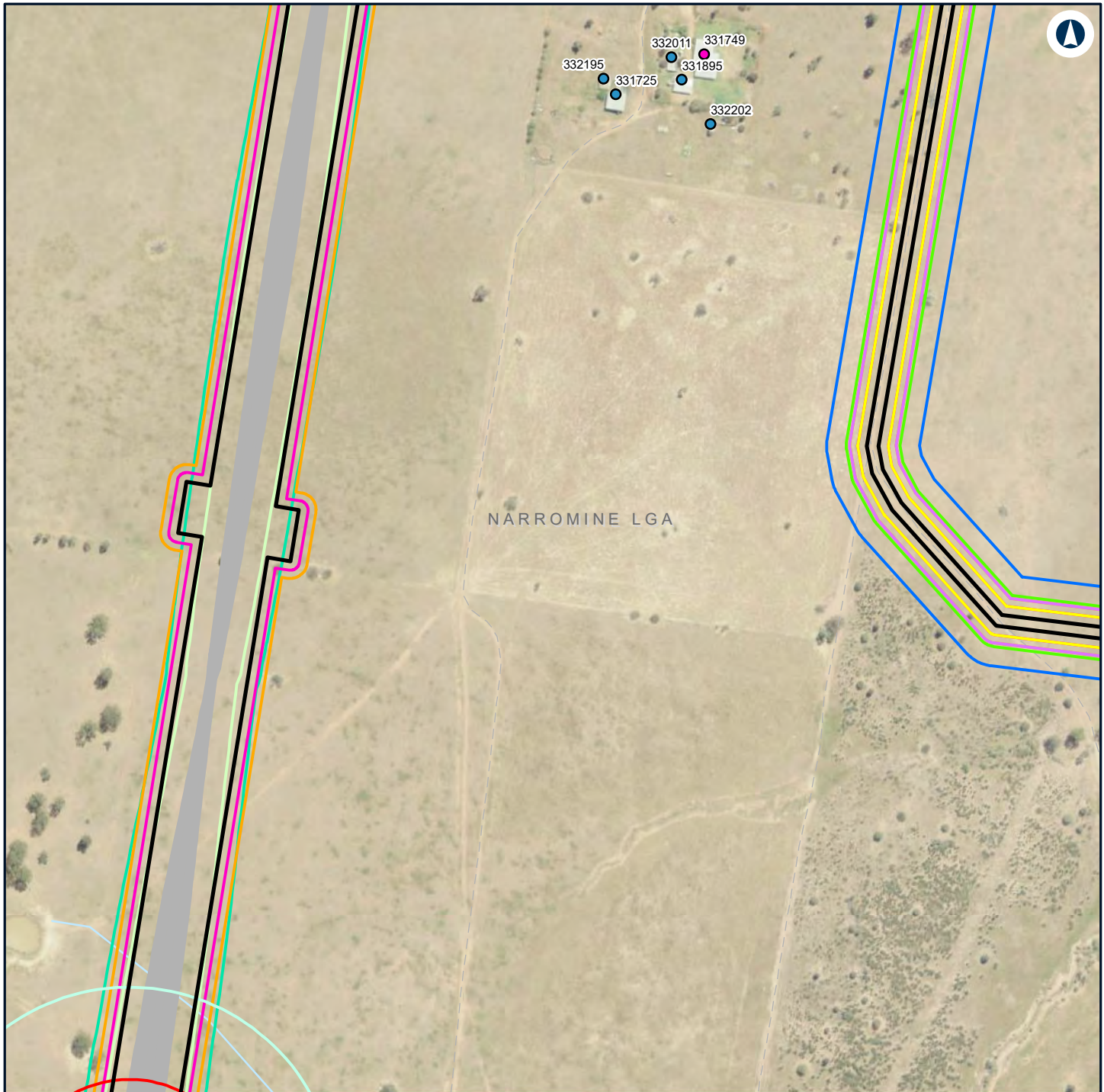
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- |  |  |
|--|--|
| Construction footprint   | Bridges (Impact piling) – Standard buildings: 5mm/s, 100m            |
| Rail earthworks extent   | Clearing (Dozer) – Heritage structures: 3mm/s, 15m                   |
| Borrow pits (Dozer) – Heritage structures: 3mm/s, 15m            | Clearing (Dozer) – Standard buildings: 5mm/s, 8m                     |
| Borrow pits (Vibratory roller) – Standard buildings: 5mm/s, 18m  | Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m |
| Borrow pits (Vibratory roller) – Heritage structures: 3mm/s, 35m | Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m  |
| Borrow pits (Dozer) – Standard buildings: 5mm/s, 8m              | Other  |
| Bridges (Impact piling) – Heritage structures: 3mm/s, 180m       | Residential  |



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 19 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

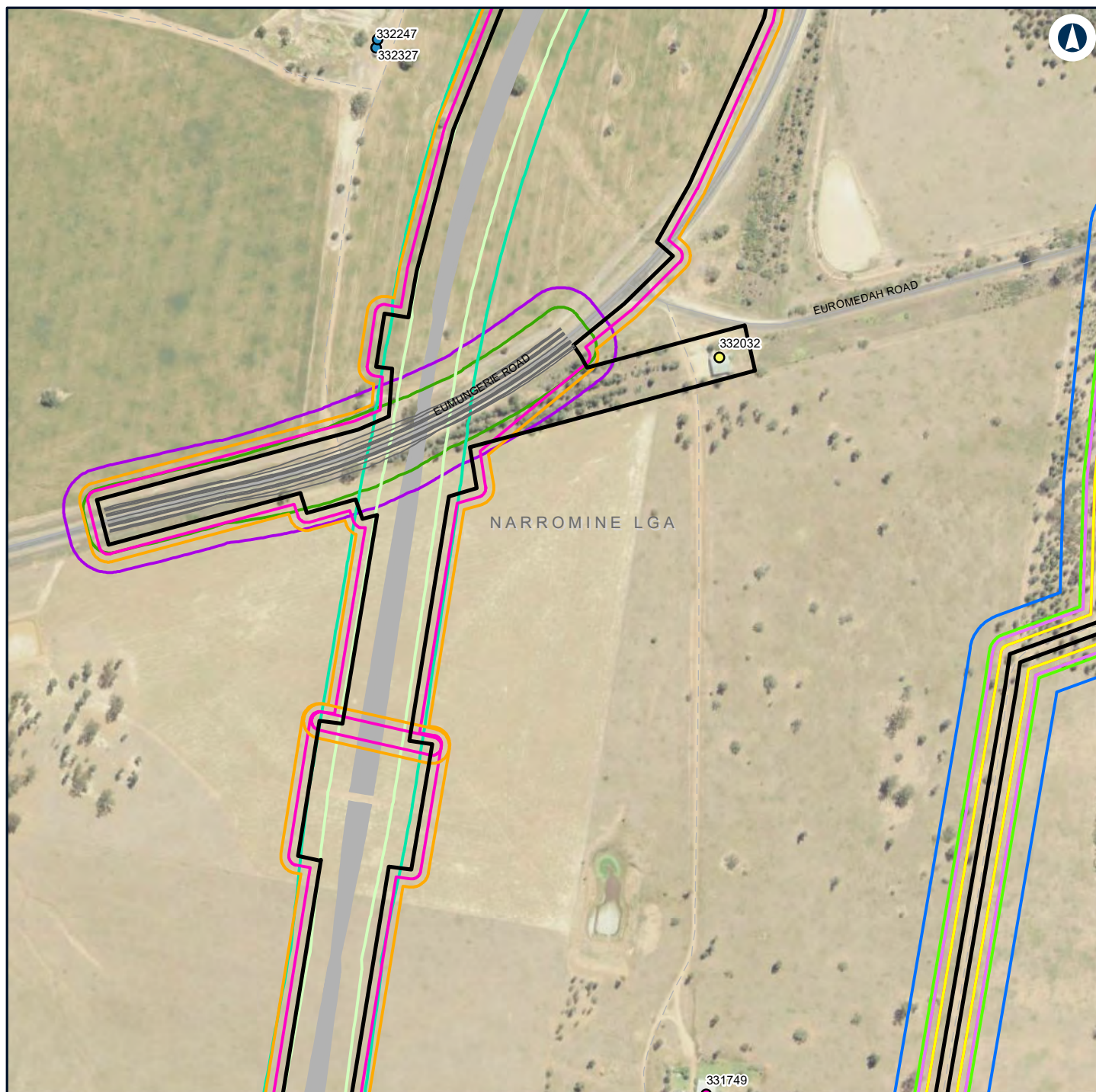
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- |   |  |
|---|--|
| — Road design   | <span style="border: 2px solid magenta; padding: 2px;"> </span> Clearing (Dozer) – Standard buildings: 5mm/s, 8m                       |
| <span style="border: 2px solid black; padding: 2px;"> </span> Construction footprint  | <span style="border: 2px solid cyan; padding: 2px;"> </span> Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m      |
| <span style="background-color: gray; border: 1px solid black; padding: 2px;"> </span> Rail earthworks extent                      | <span style="border: 2px solid lightgreen; padding: 2px;"> </span> Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m |
| <span style="border: 2px solid magenta; padding: 2px;"> </span> Borrow pits (Dozer) – Heritage structures: 3mm/s, 15m             | <span style="border: 2px solid purple; padding: 2px;"> </span> Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m    |
| <span style="border: 2px solid limegreen; padding: 2px;"> </span> Borrow pits (Vibratory roller) – Standard buildings: 5mm/s, 18m | <span style="border: 2px solid green; padding: 2px;"> </span> Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m      |
| <span style="border: 2px solid blue; padding: 2px;"> </span> Borrow pits (Vibratory roller) – Heritage structures: 3mm/s, 35m     | <span style="color: blue;">●</span> Community  |
| <span style="border: 2px solid yellow; padding: 2px;"> </span> Borrow pits (Dozer) – Standard buildings: 5mm/s, 8m                | <span style="color: darkblue;">●</span> Other  |
| <span style="border: 2px solid orange; padding: 2px;"> </span> Clearing (Dozer) – Heritage structures: 3mm/s, 15m                 | <span style="color: magenta;">●</span> Residential   |



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 20 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

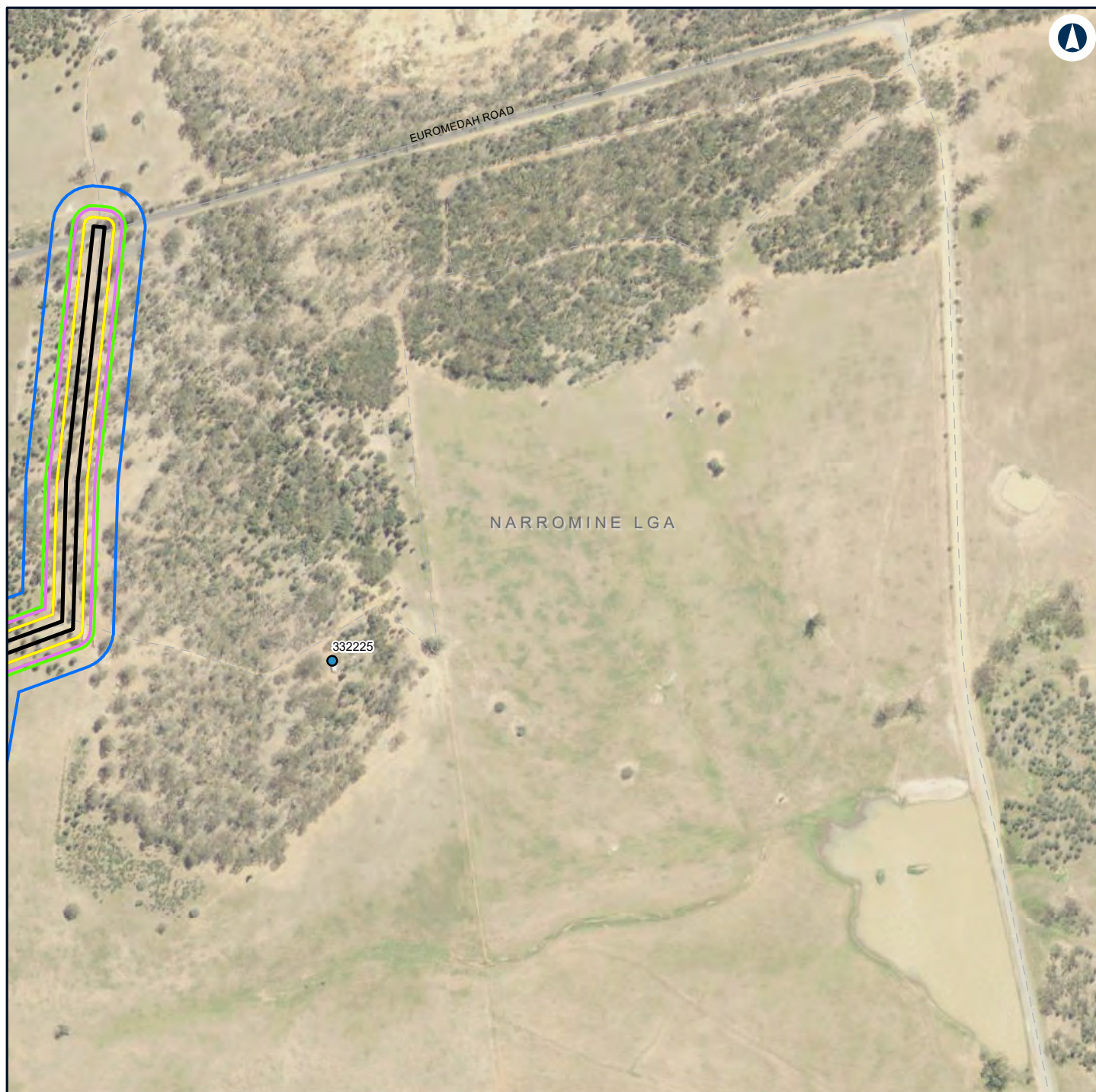
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Borrow pits (Dozer) – Heritage structures: 3mm/s, 15m
- Borrow pits (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Borrow pits (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Borrow pits (Dozer) – Standard buildings: 5mm/s, 8m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 21 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

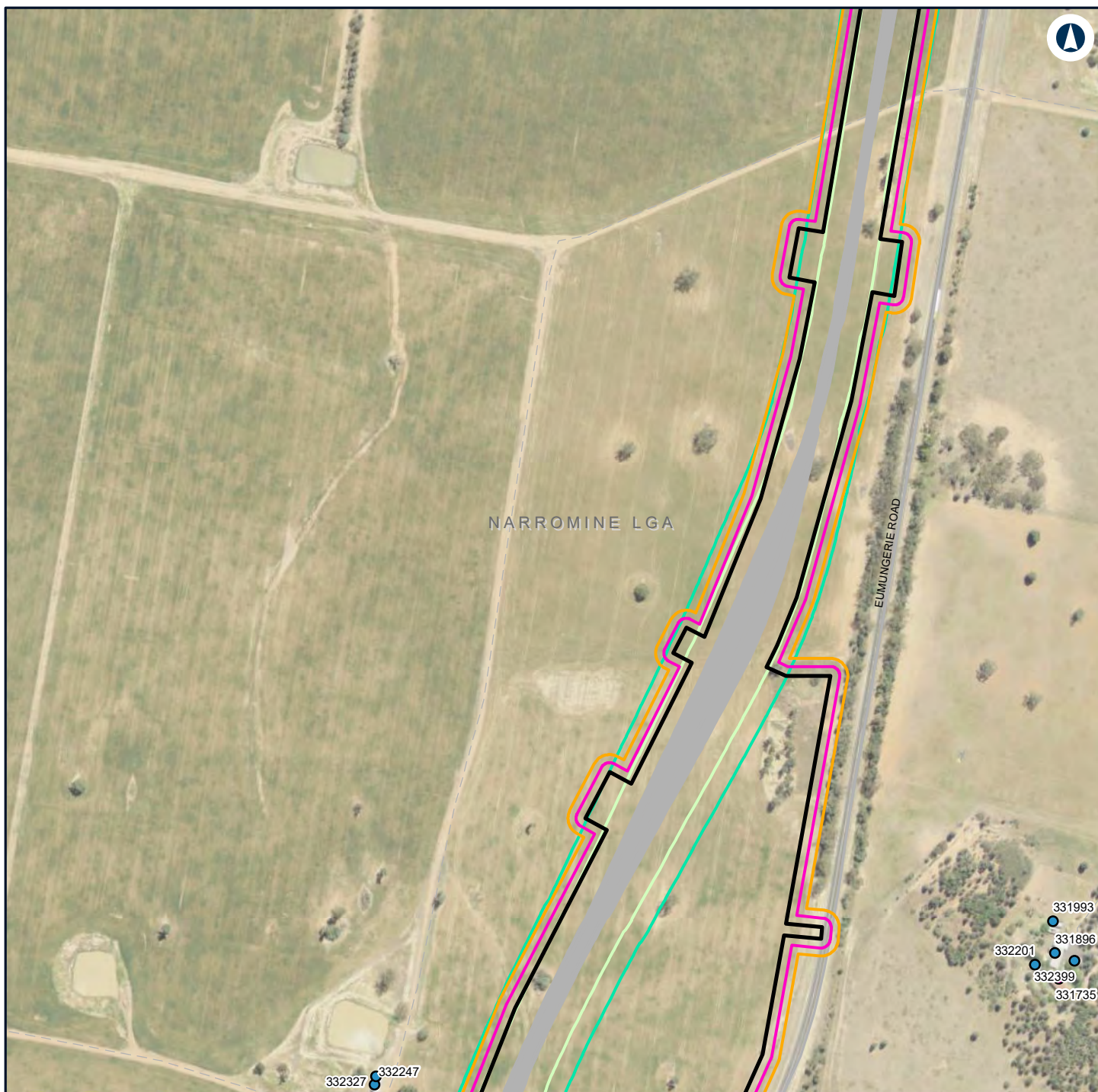
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 22 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

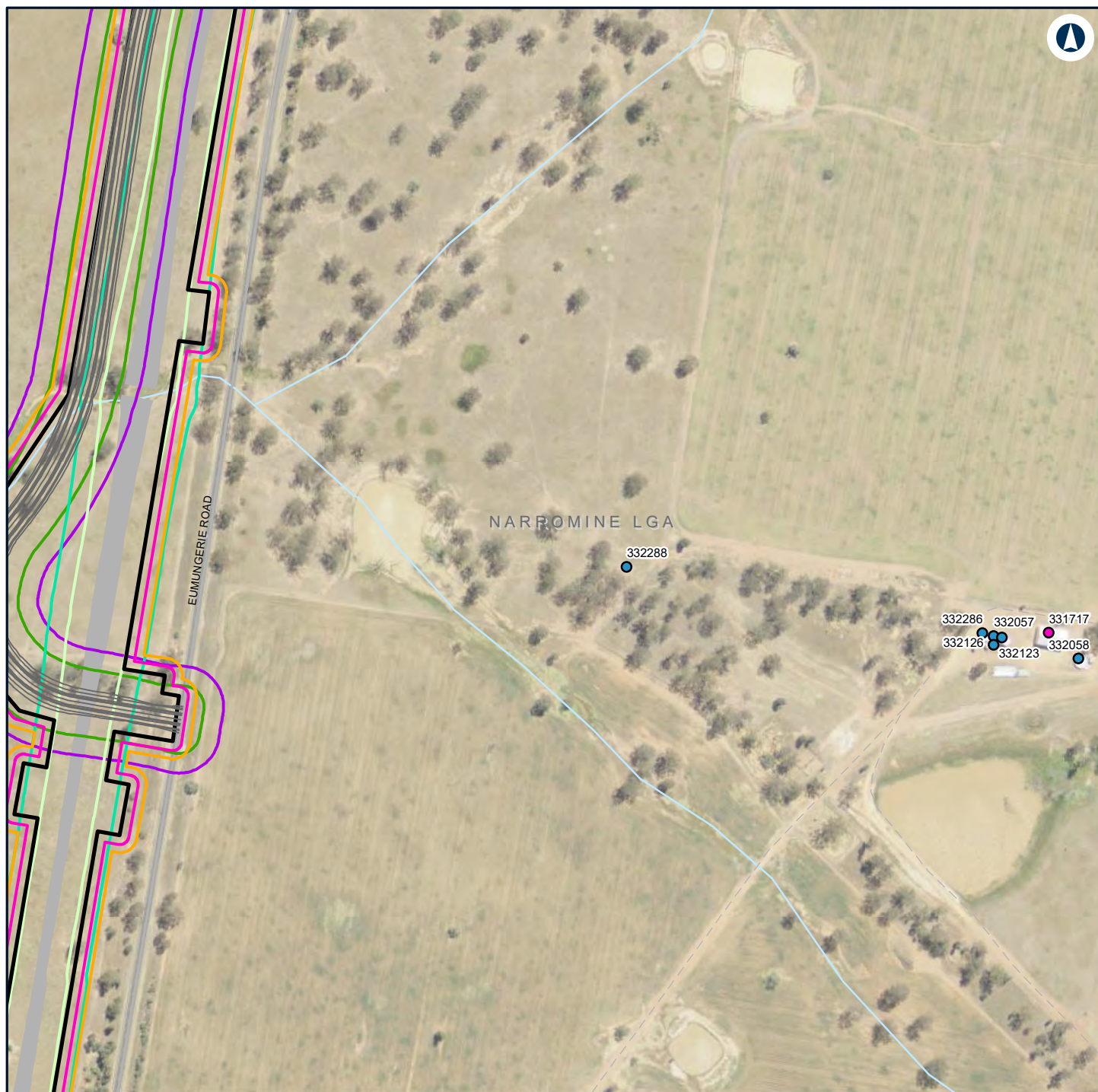
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

— Road design  
 ■ Construction footprint  
 ■ Rail earthworks extent

■ Clearing (Dozer) – Heritage structures: 3mm/s, 15m  
 ■ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

■ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

■ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m  
 ■ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m  
 ■ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m  
 ● Other  
 ● Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 23 OF 113

0 0.1 0.2  
 Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020  
 Author: GHD

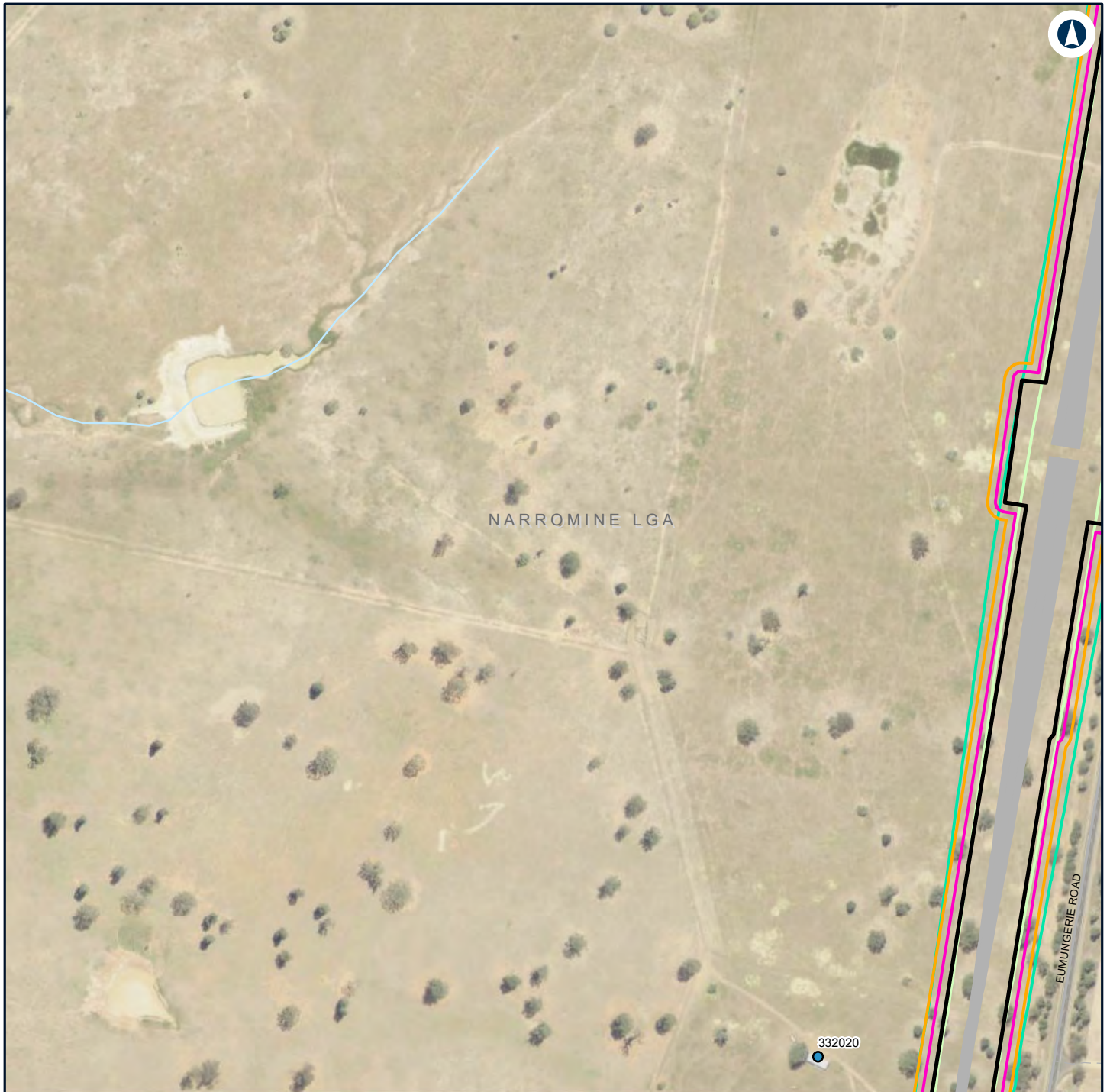
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 Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

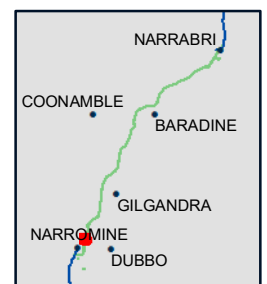
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 24 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

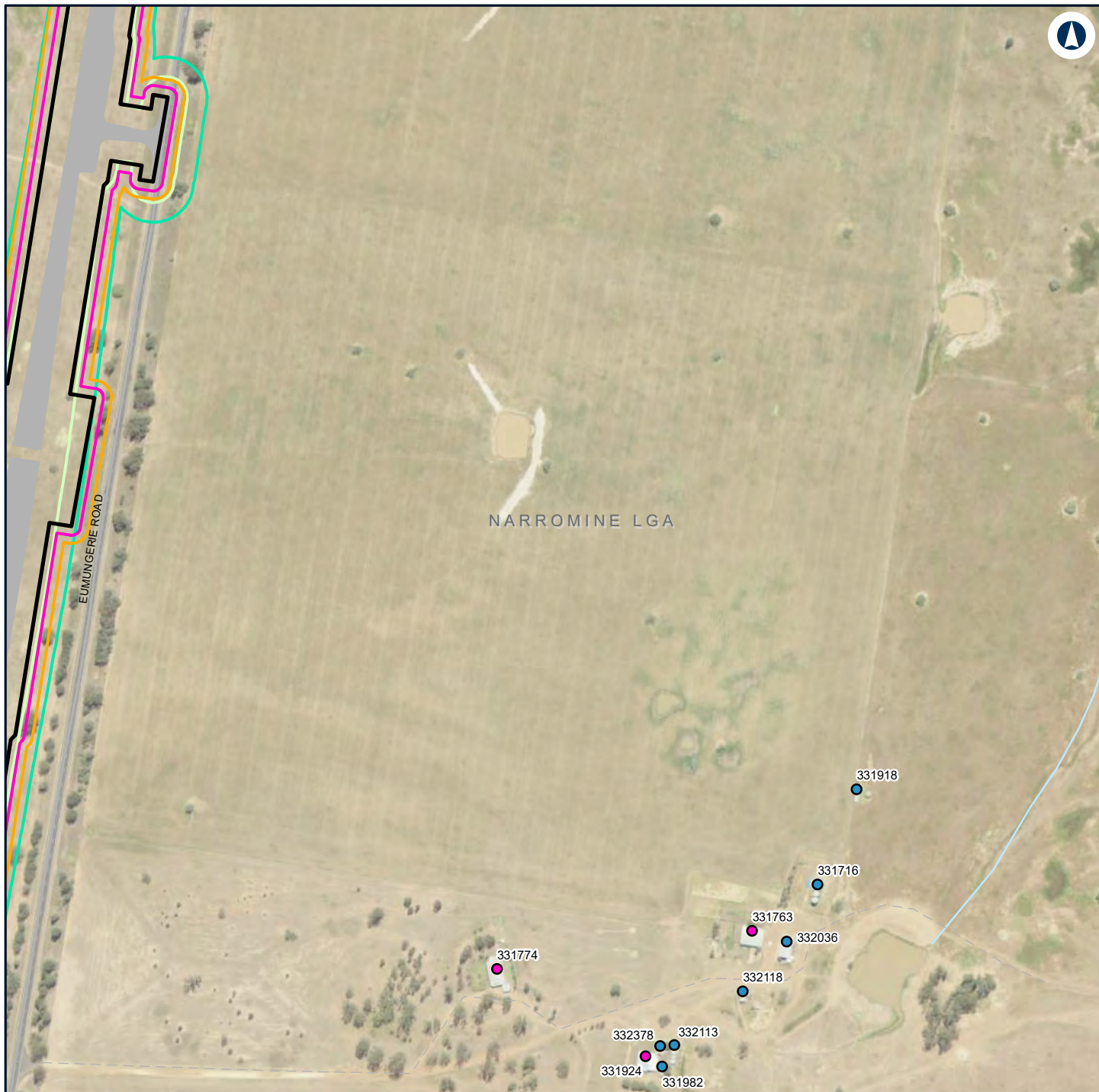
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

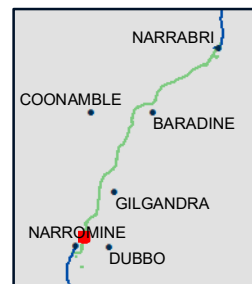
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 25 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

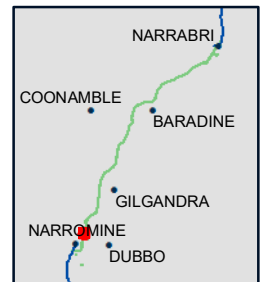
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 26 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

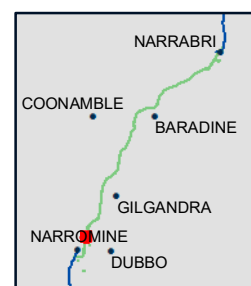
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## LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 27 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 28 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

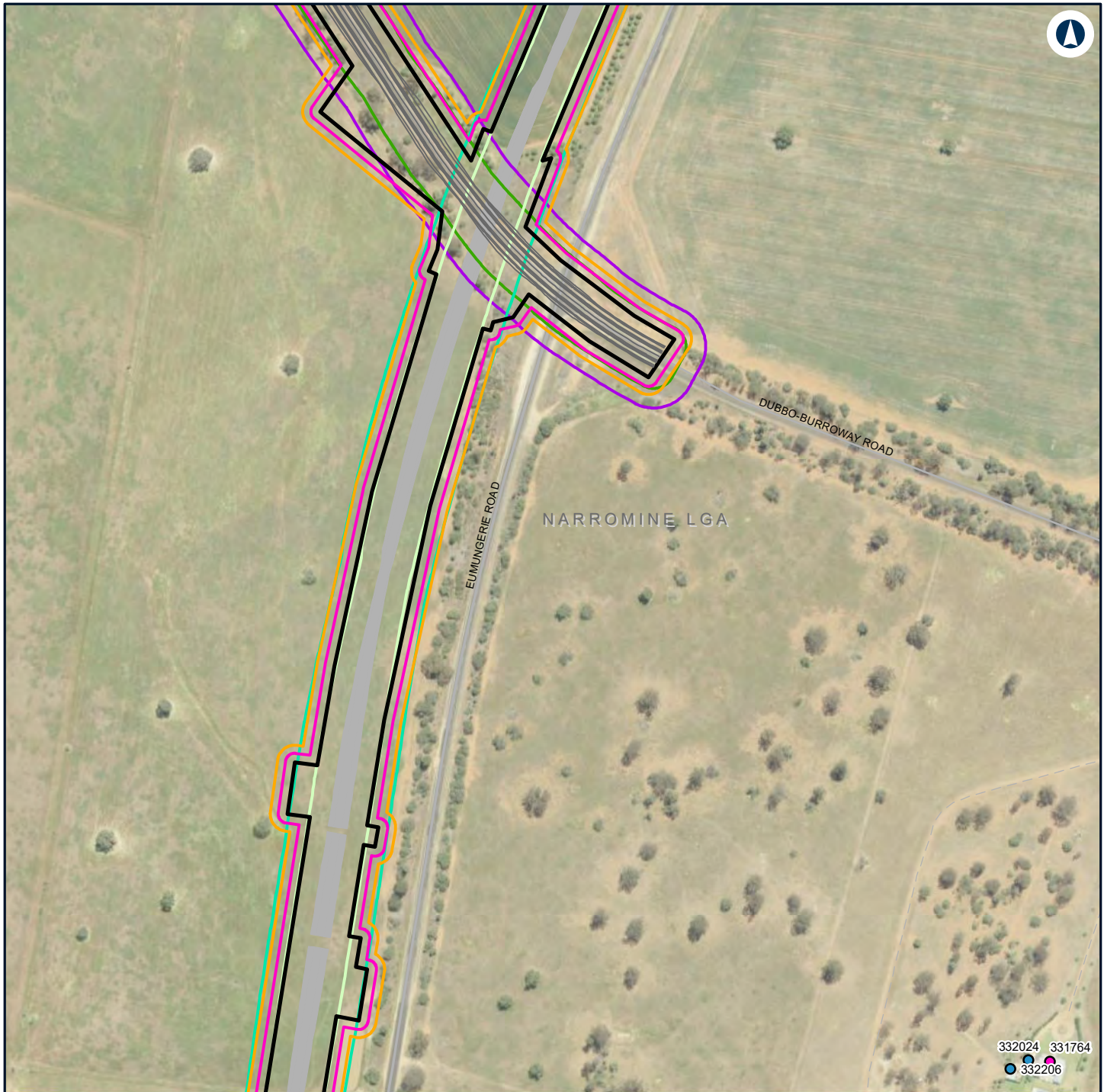
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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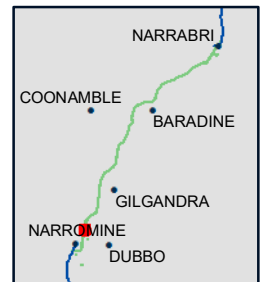
#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 29 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

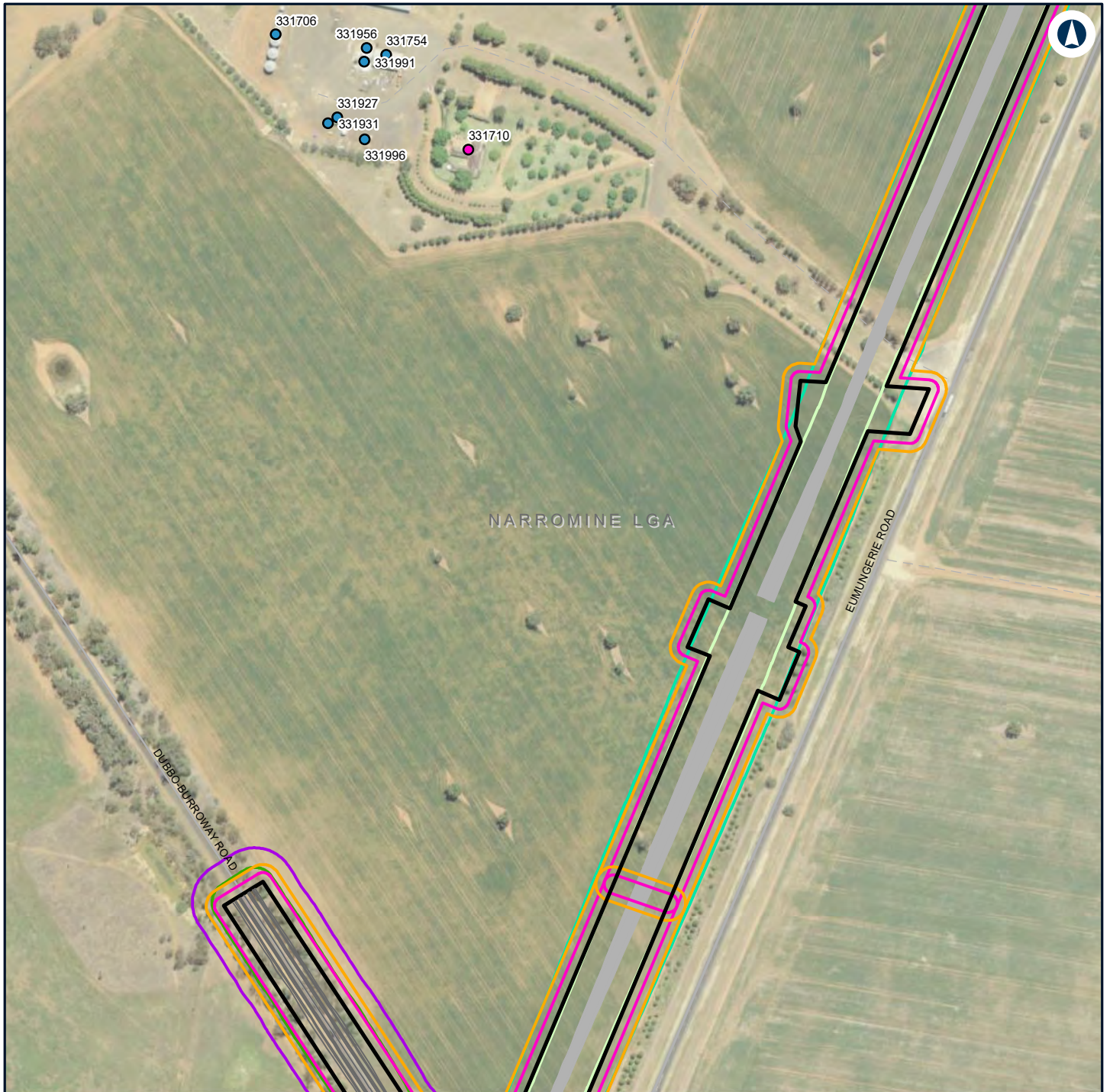
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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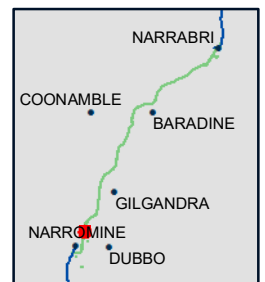




#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 30 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

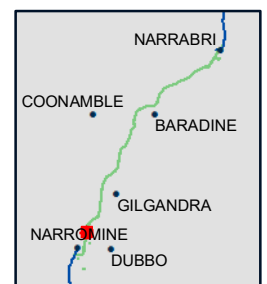
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 31 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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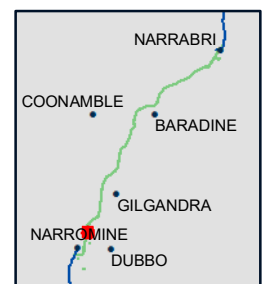
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 32 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

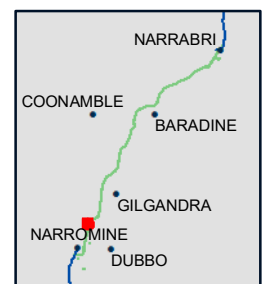
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 33 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

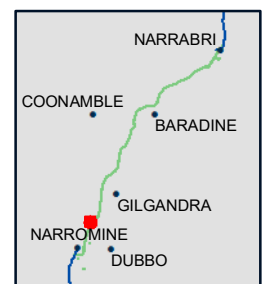
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 34 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

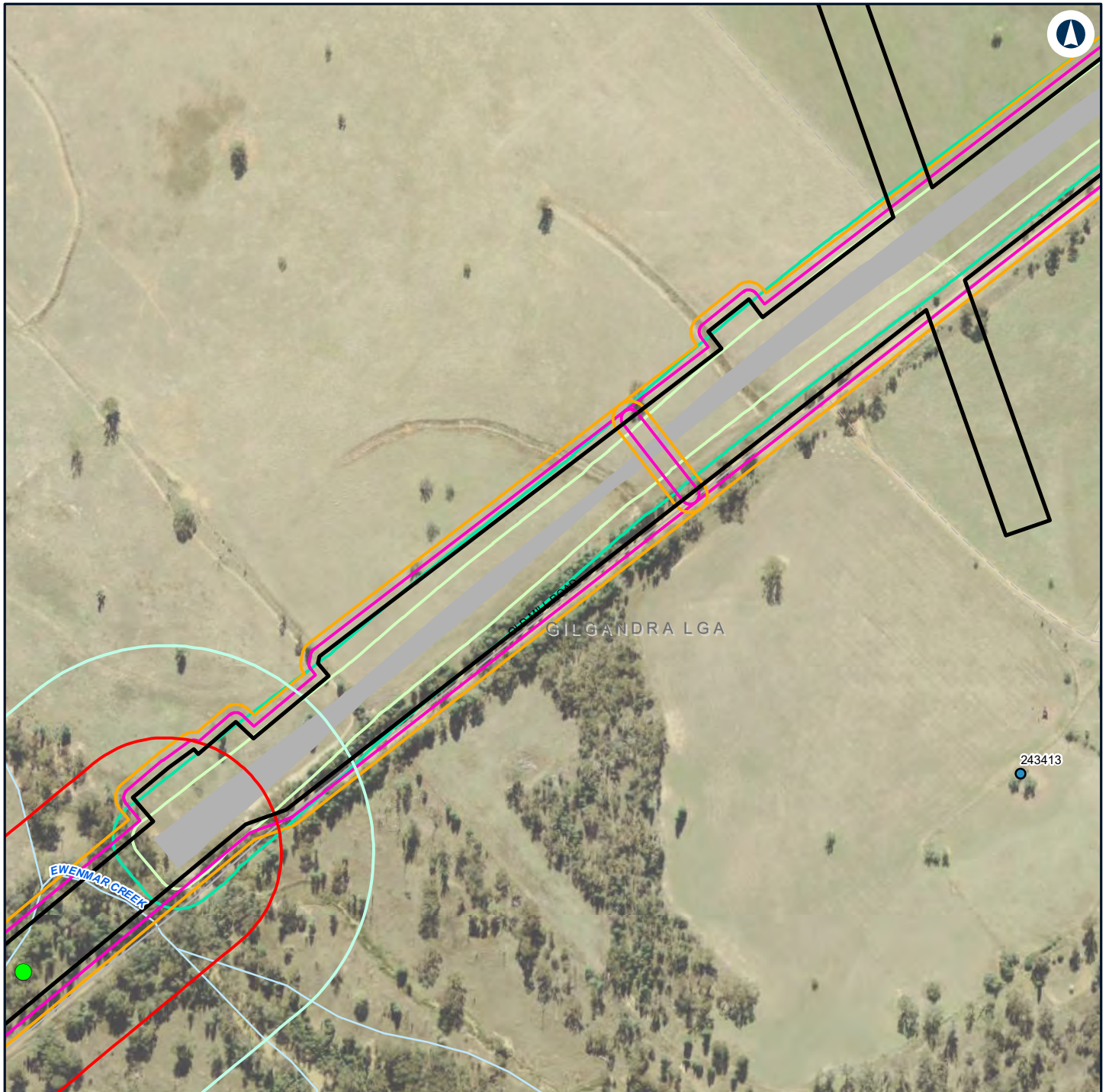
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

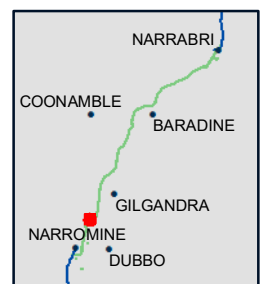
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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 35 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 36 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

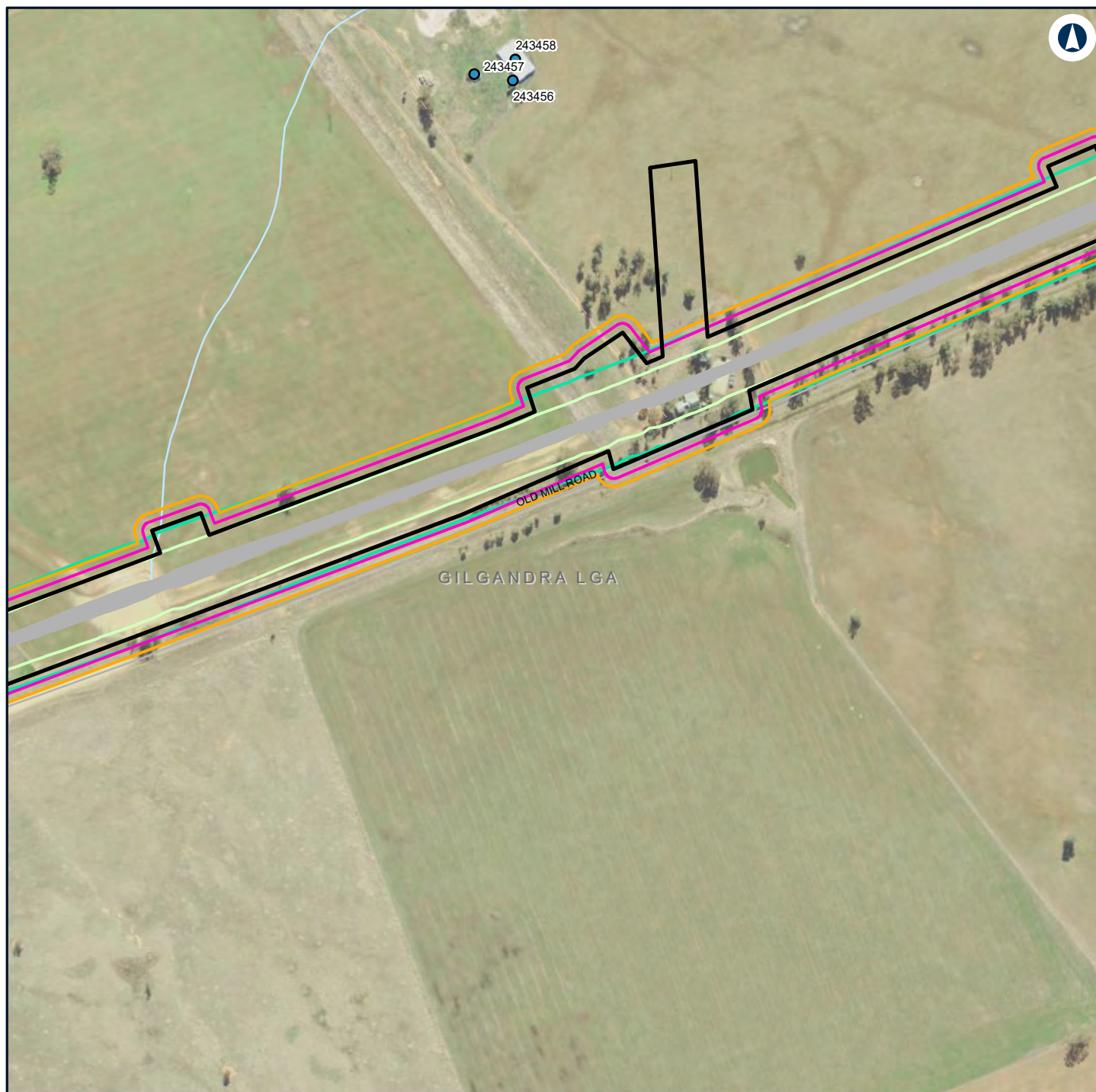
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 37 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

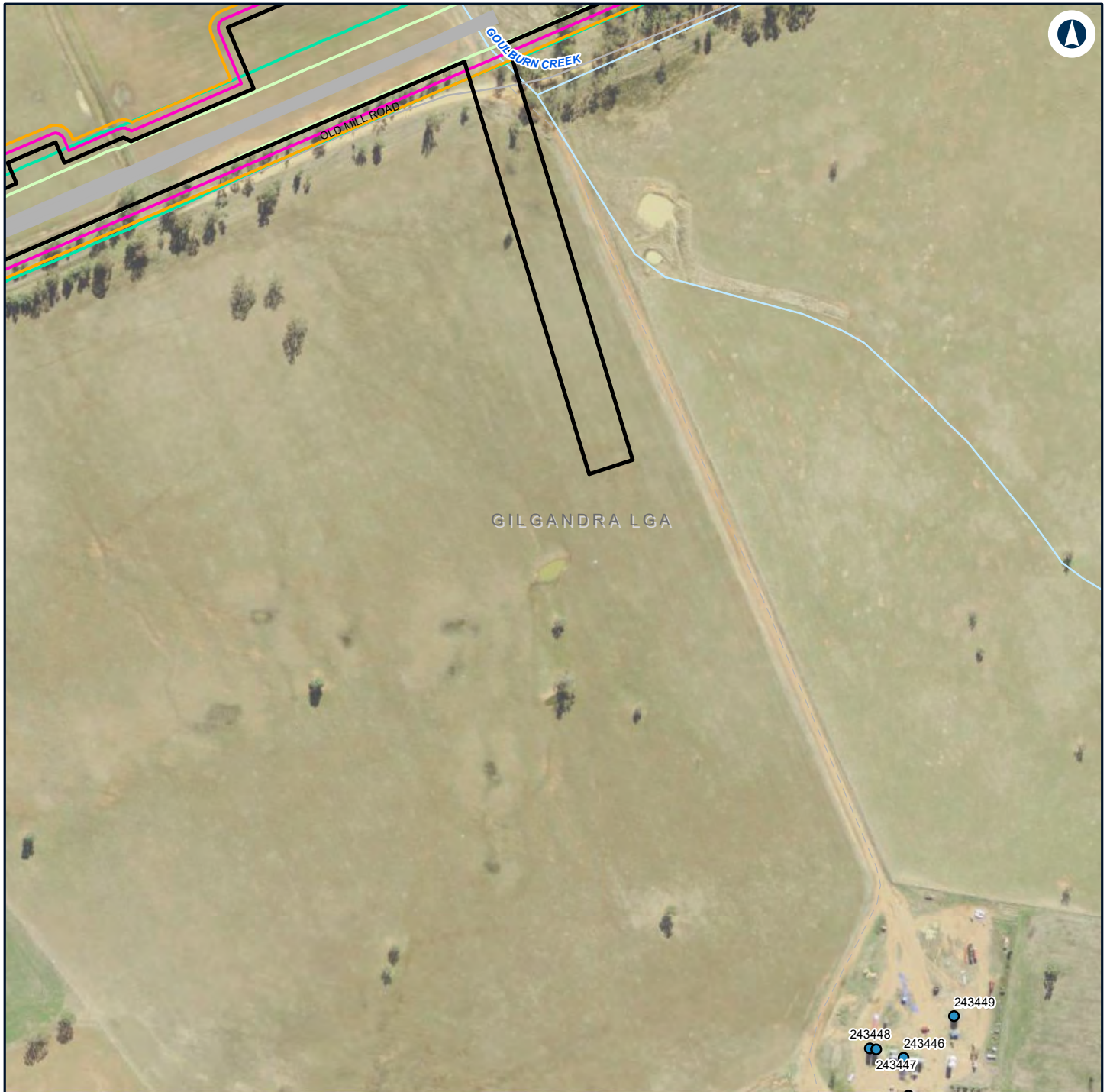
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

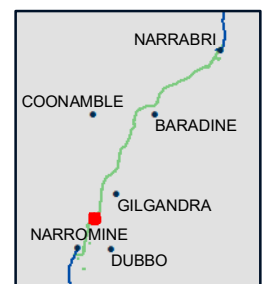
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 38 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

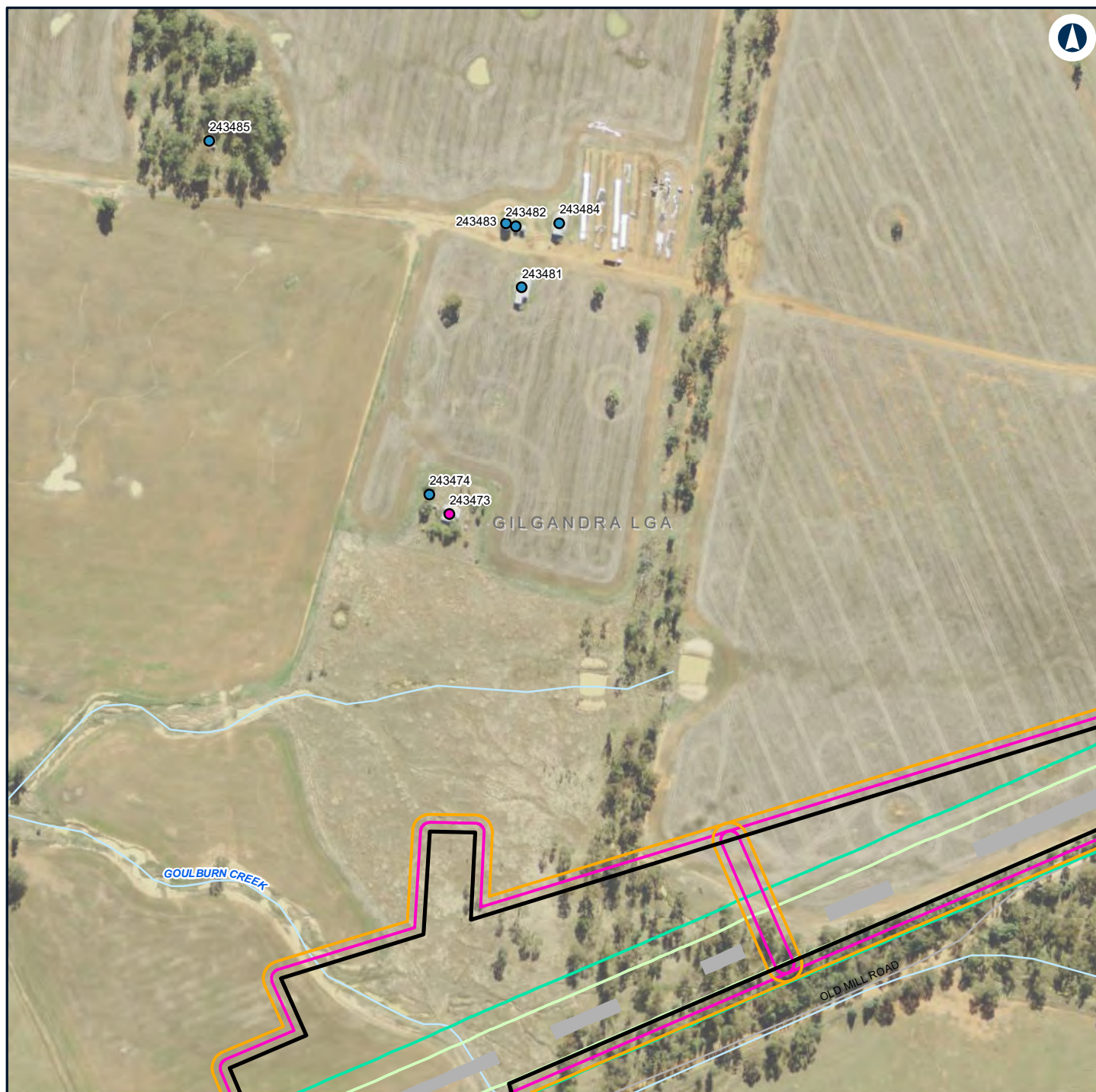
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 39 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

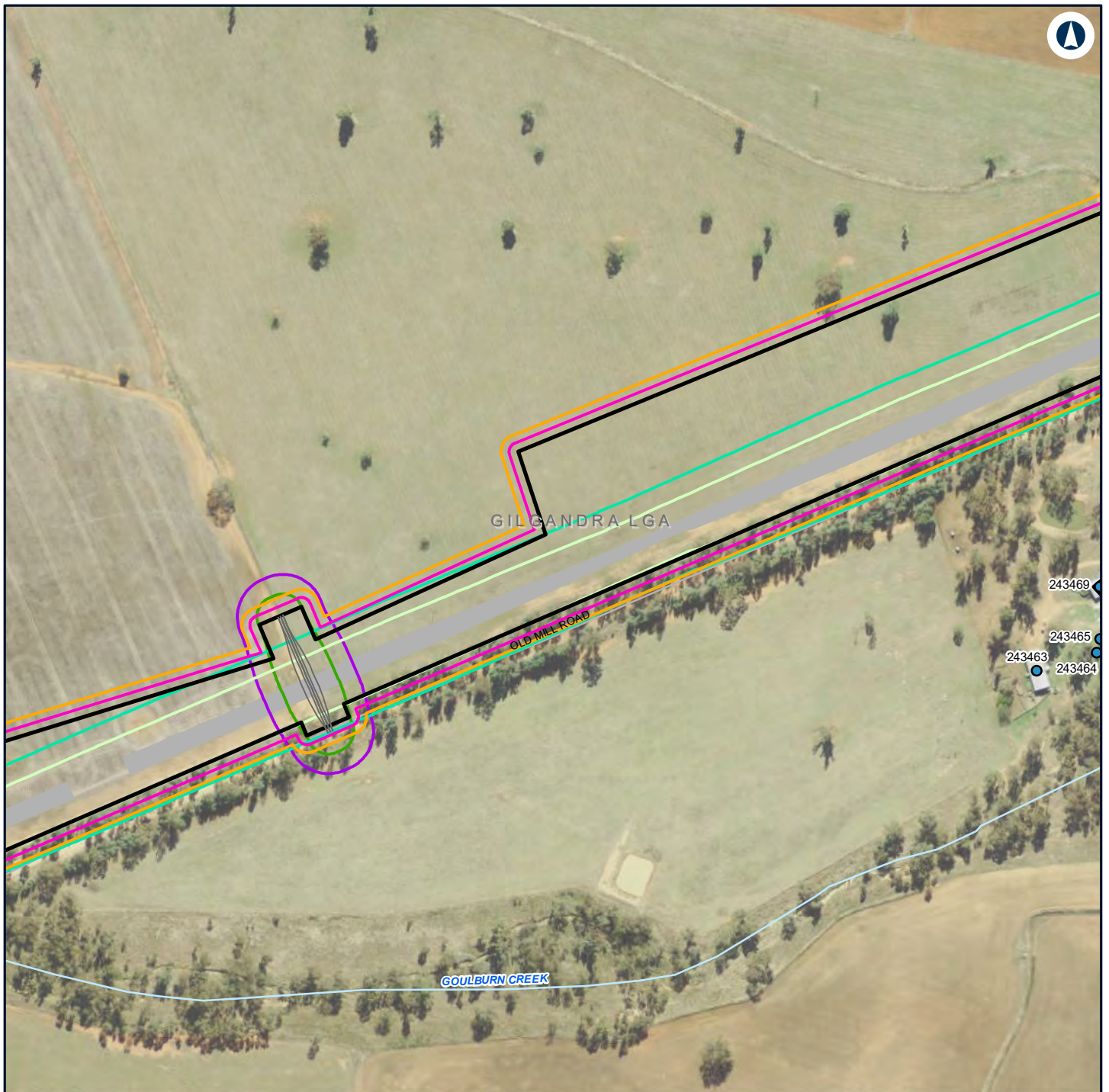
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

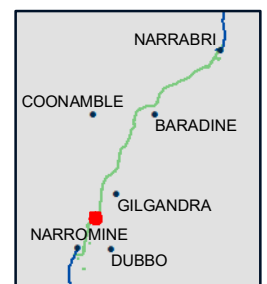
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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 40 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

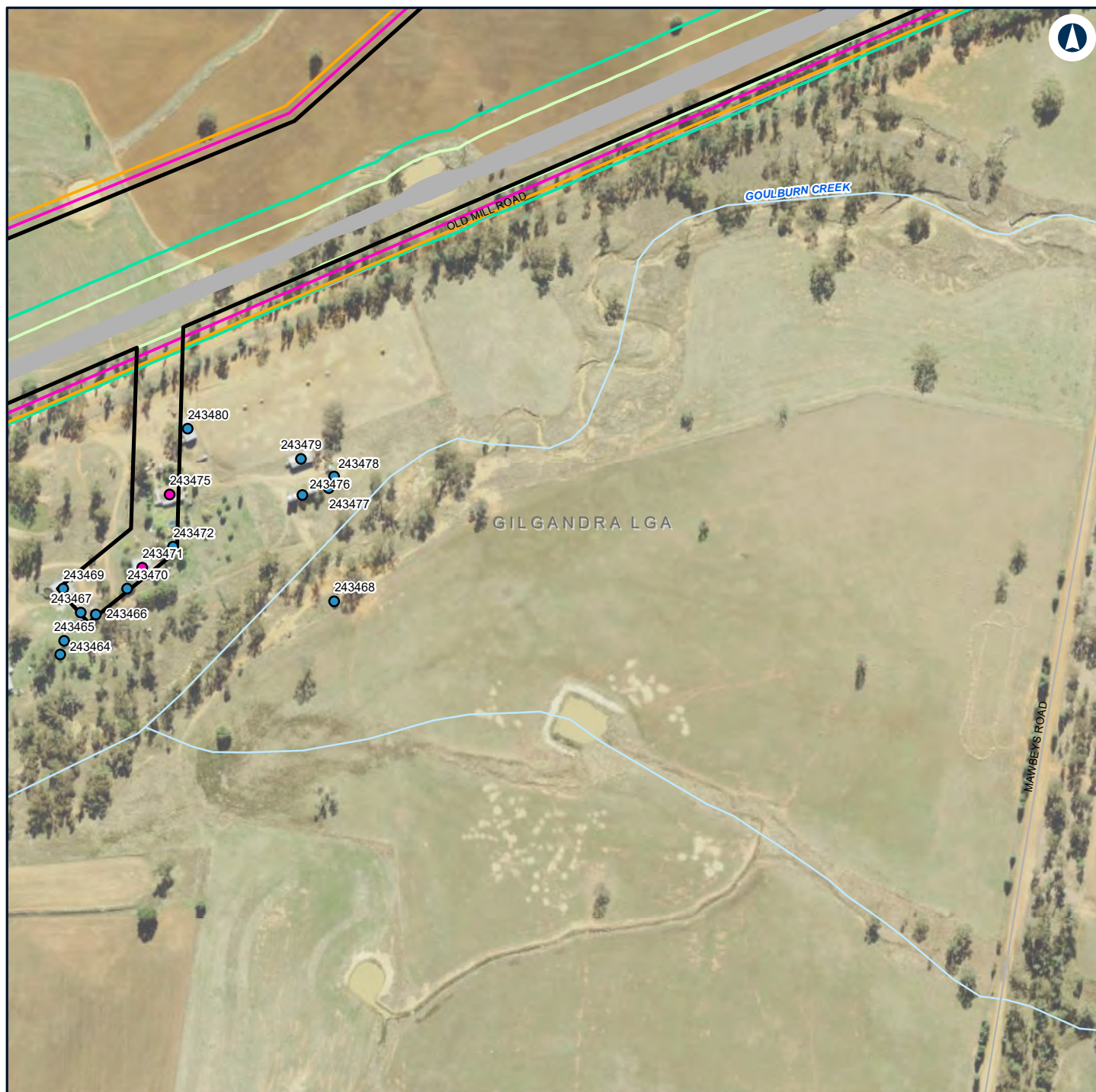
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 41 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

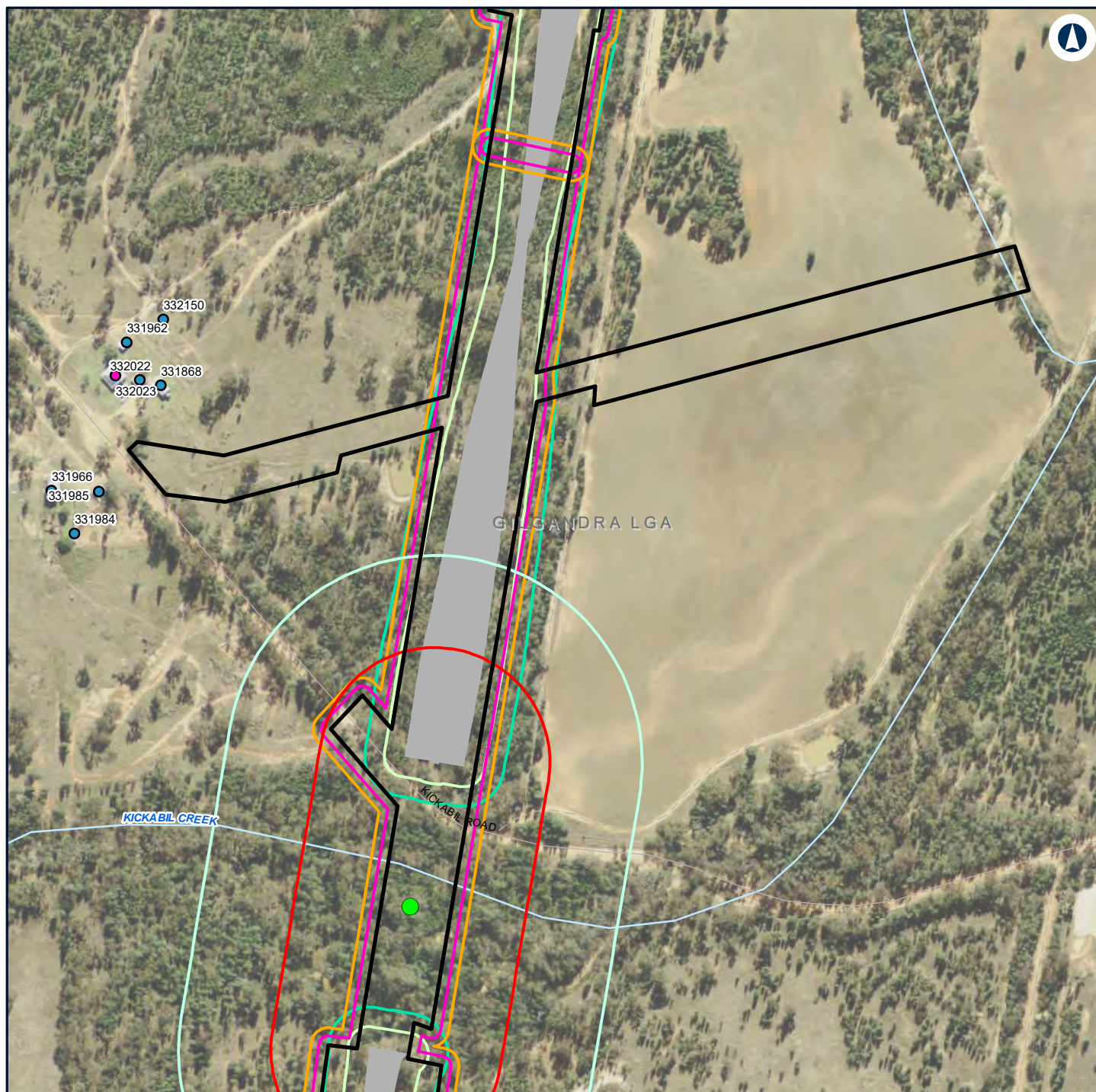
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 42 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

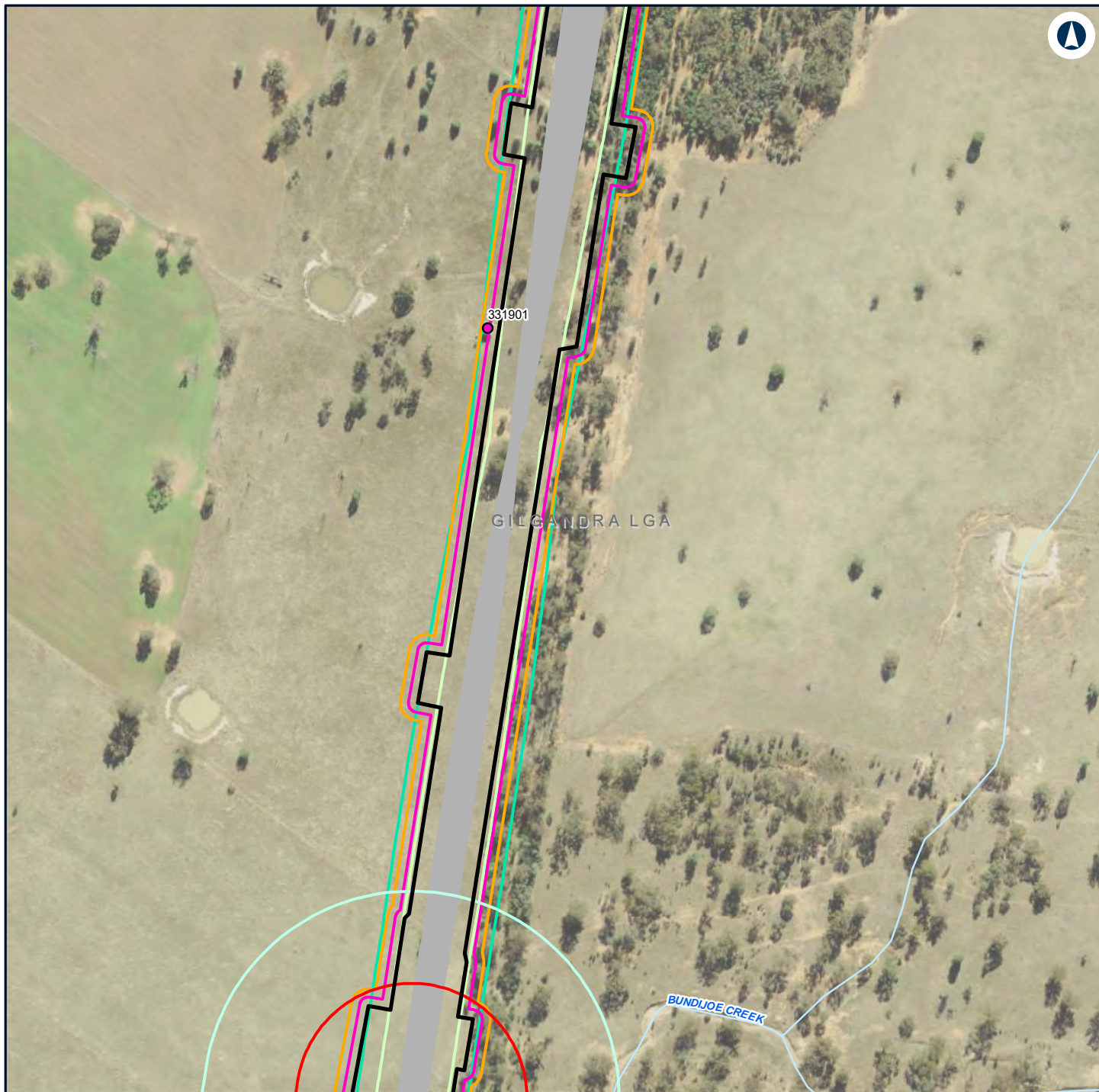
Scale: 1:5,000

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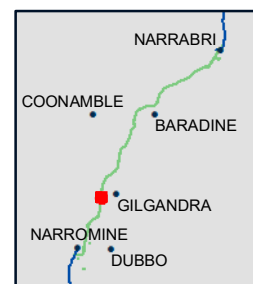




#### LEGEND

- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 43 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

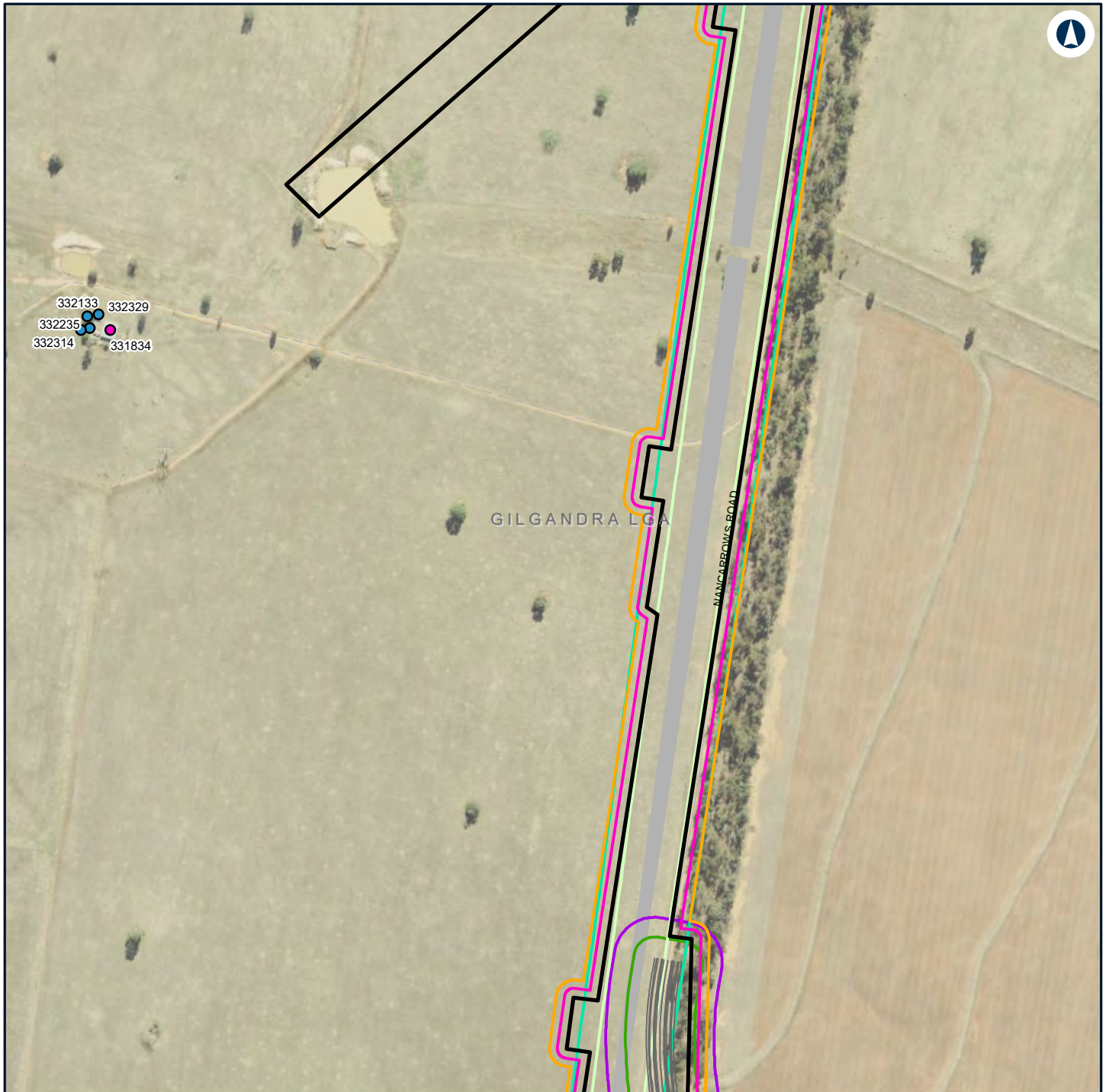
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

— Road design

▬ Construction footprint

▬ Rail earthworks extent

▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m

▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

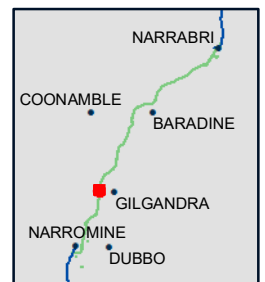
▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Other

● Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 44 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

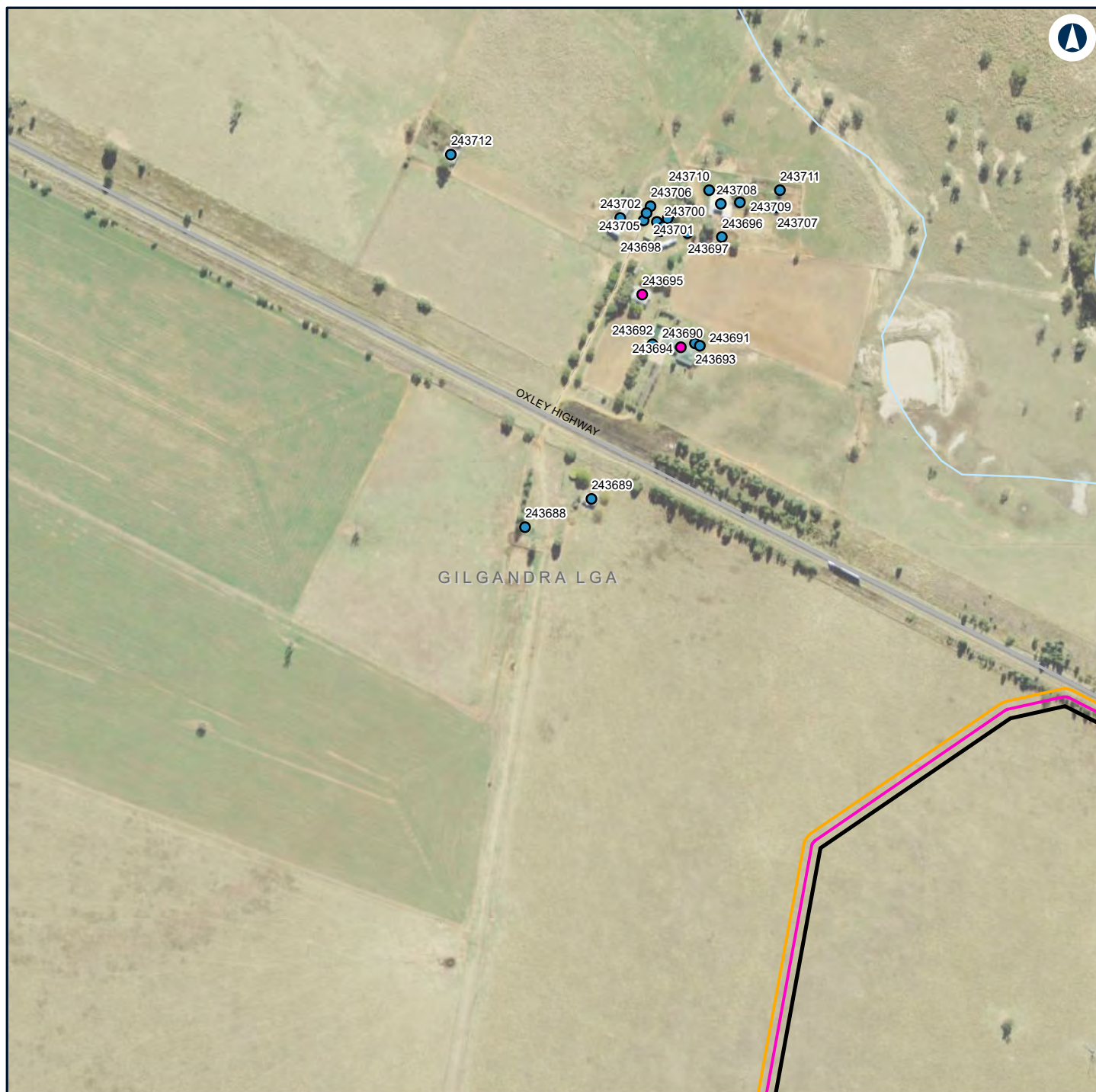
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 45 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 46 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

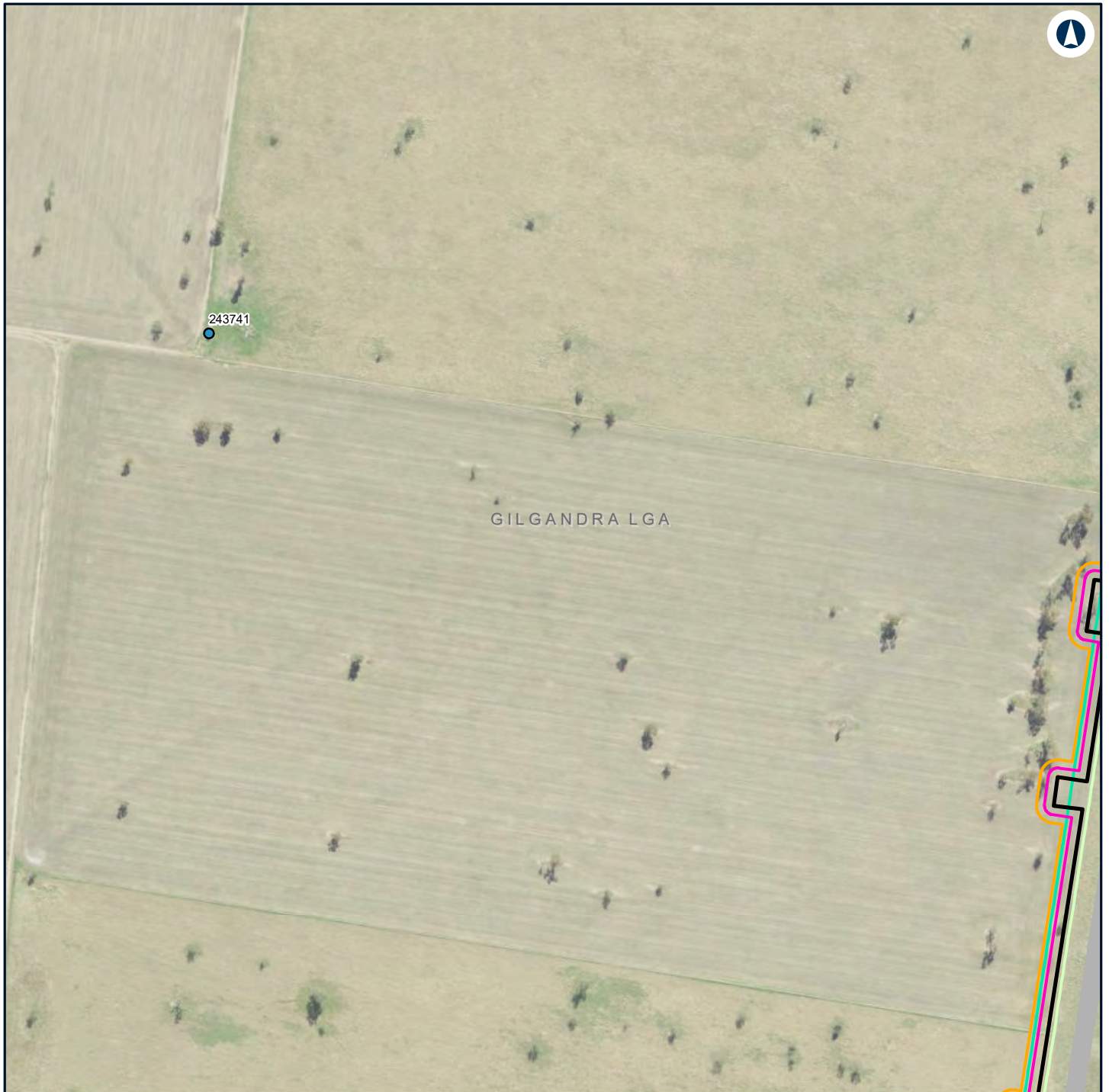
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

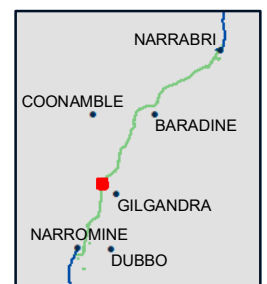
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 47 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

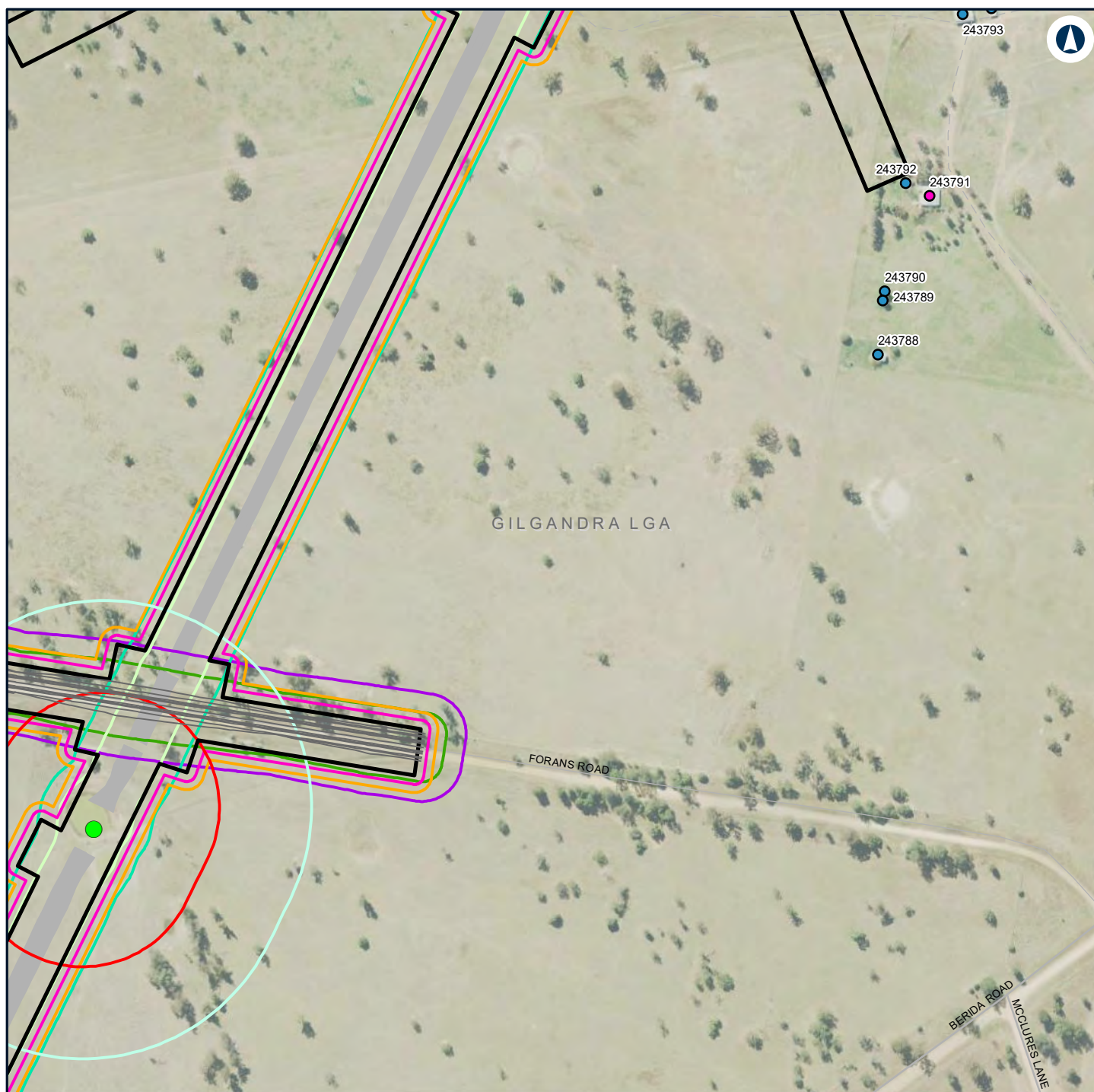
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Road design
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 48 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 49 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

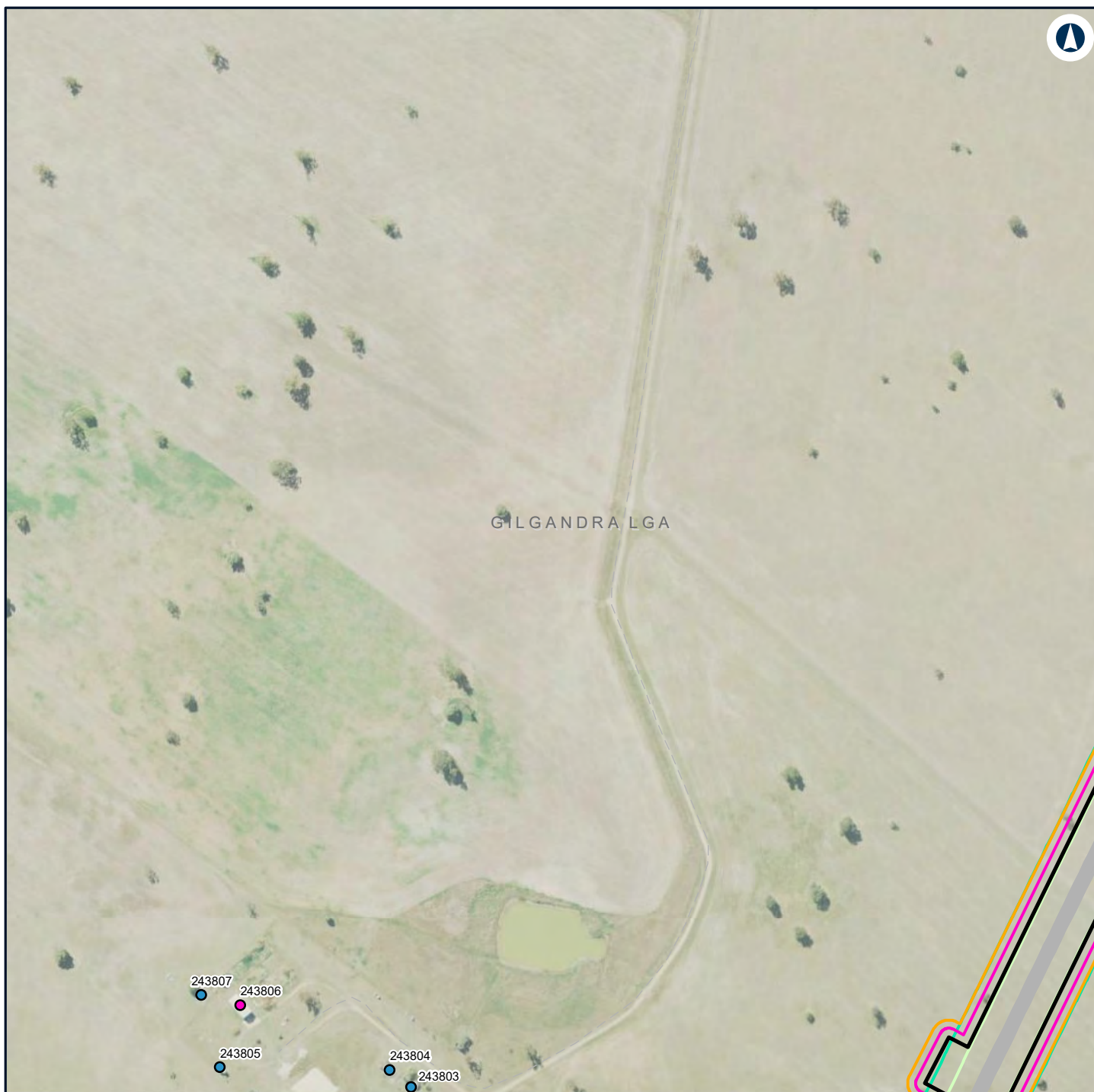
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 50 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Active recreation



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 51 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

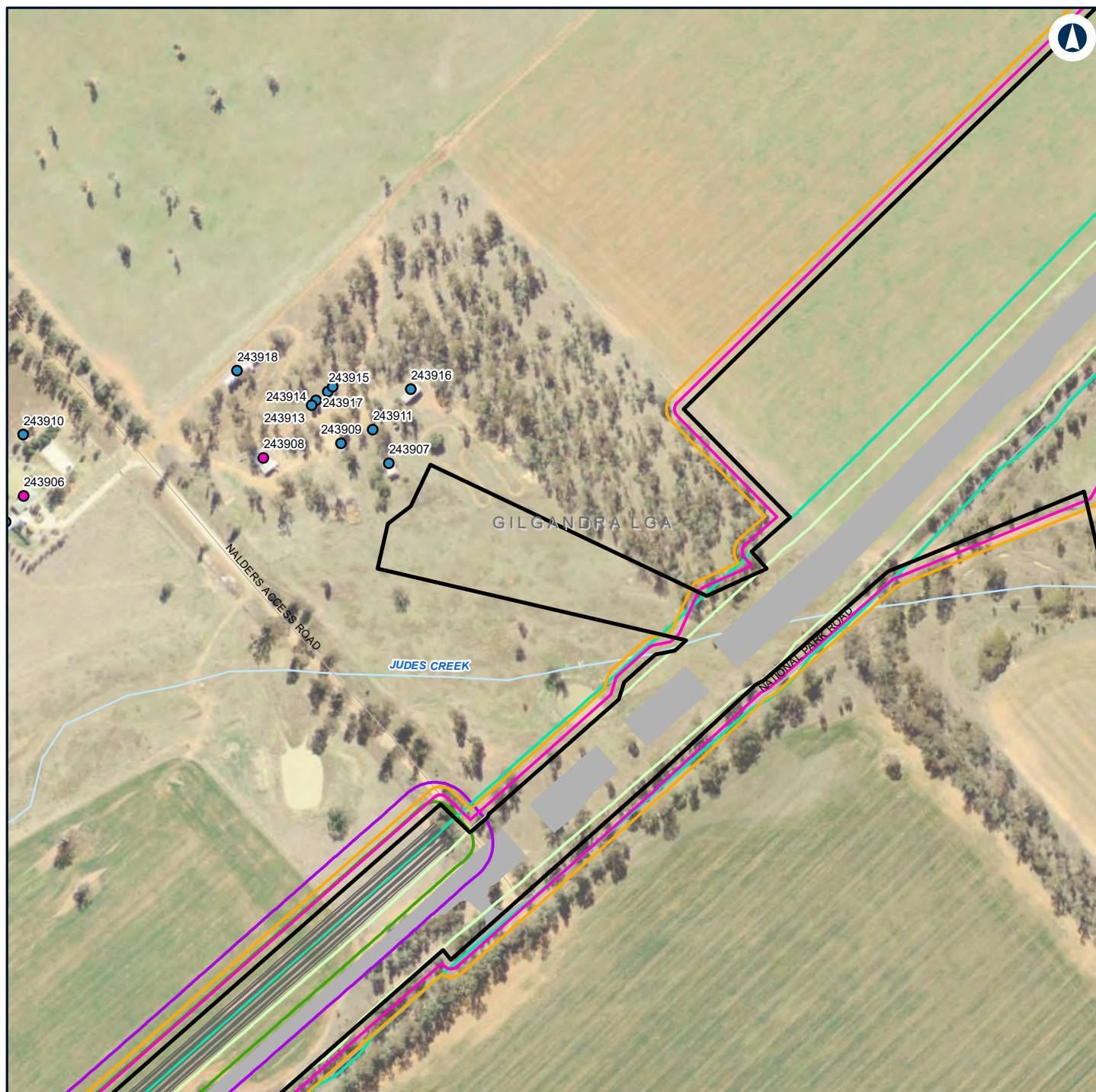
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

— Road design

▬ Construction footprint

▬ Rail earthworks extent

▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m

▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Other

● Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 52 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

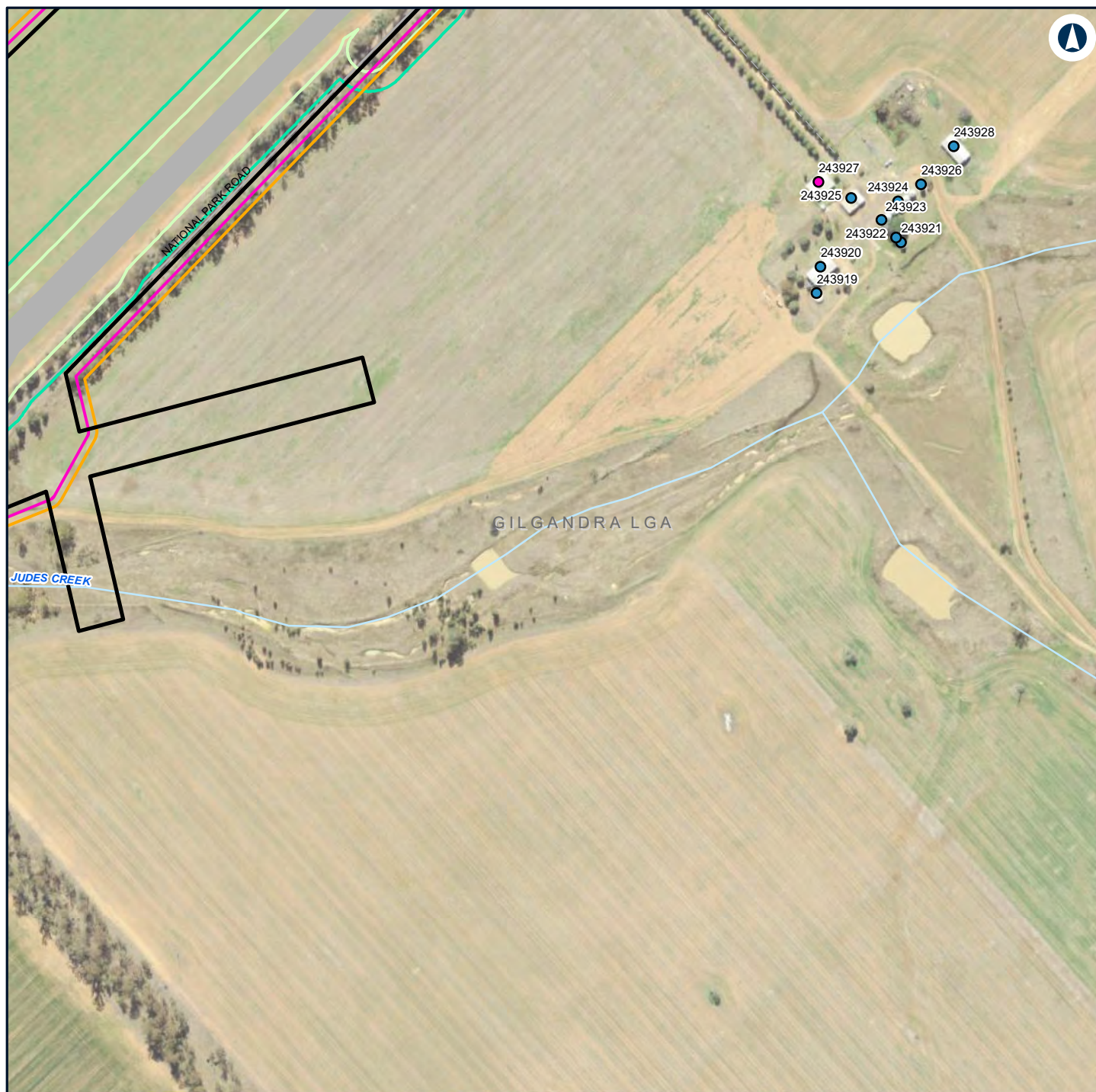
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 53 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

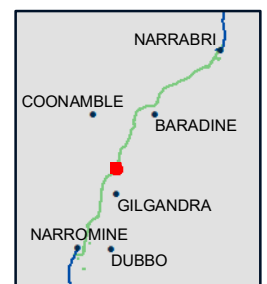
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 54 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

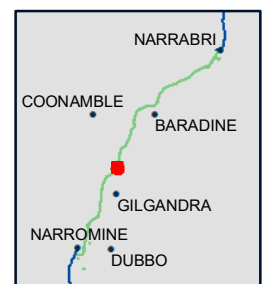
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 55 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

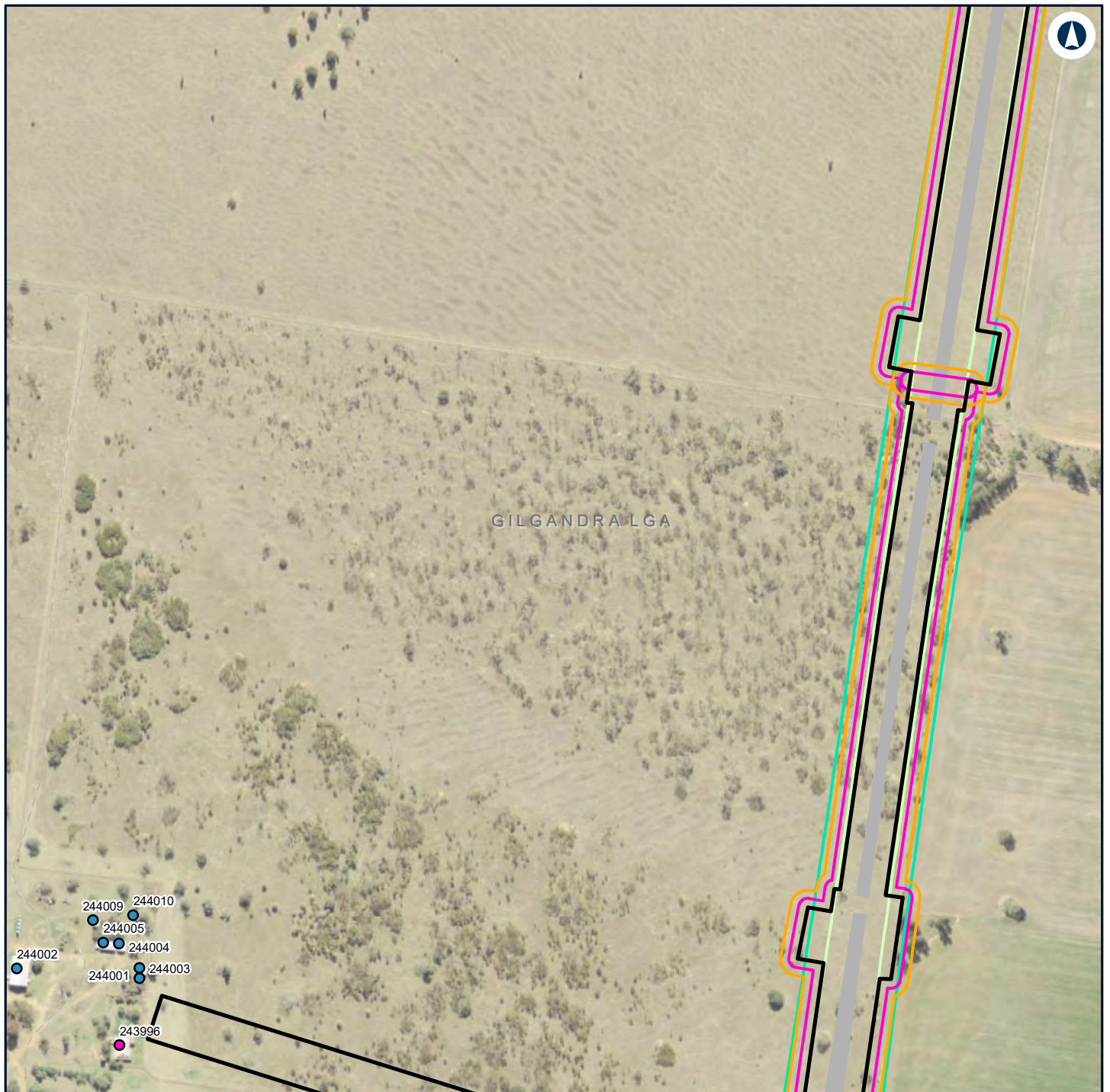
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

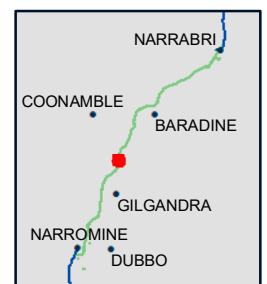
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 56 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

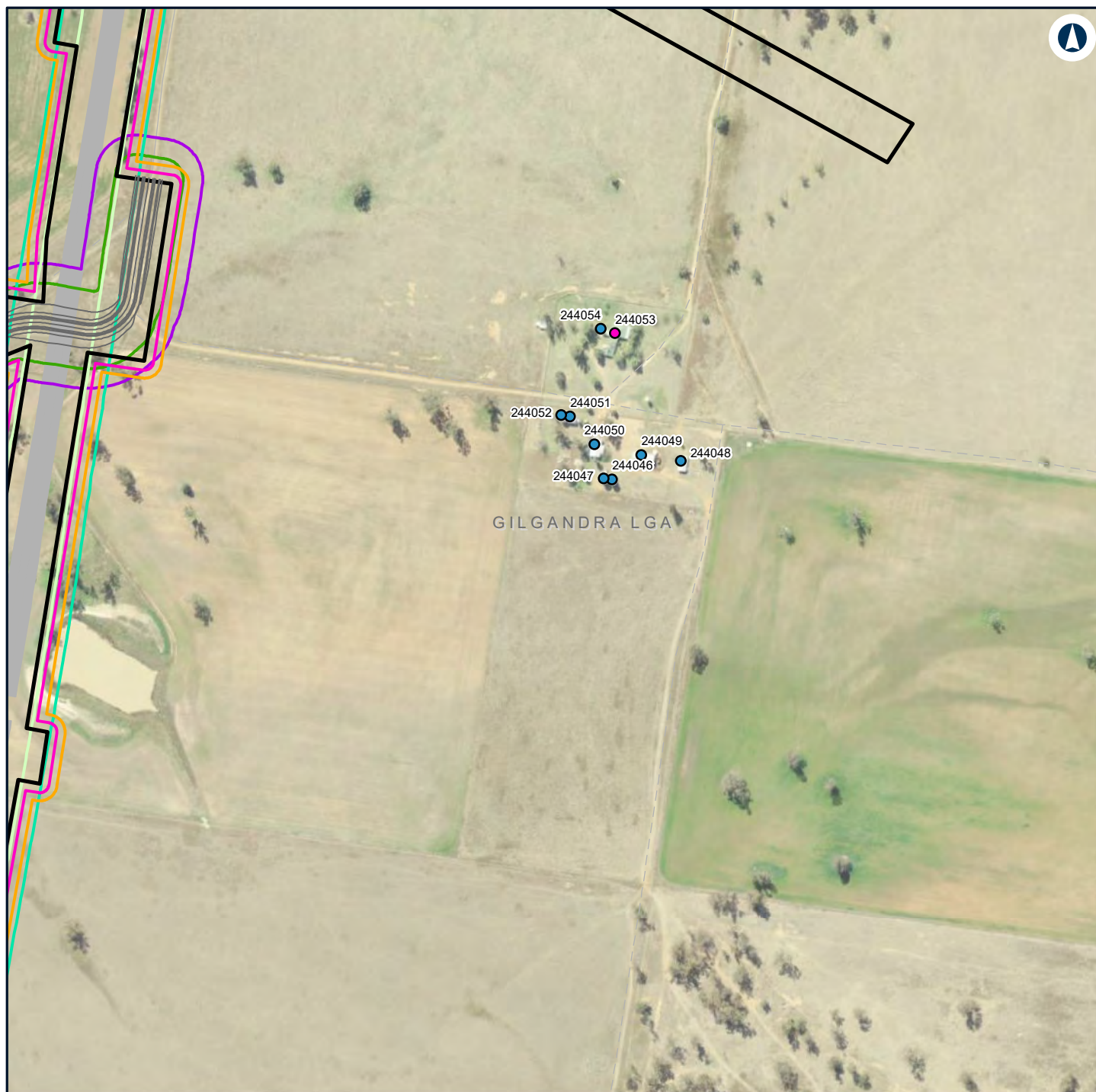
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 57 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

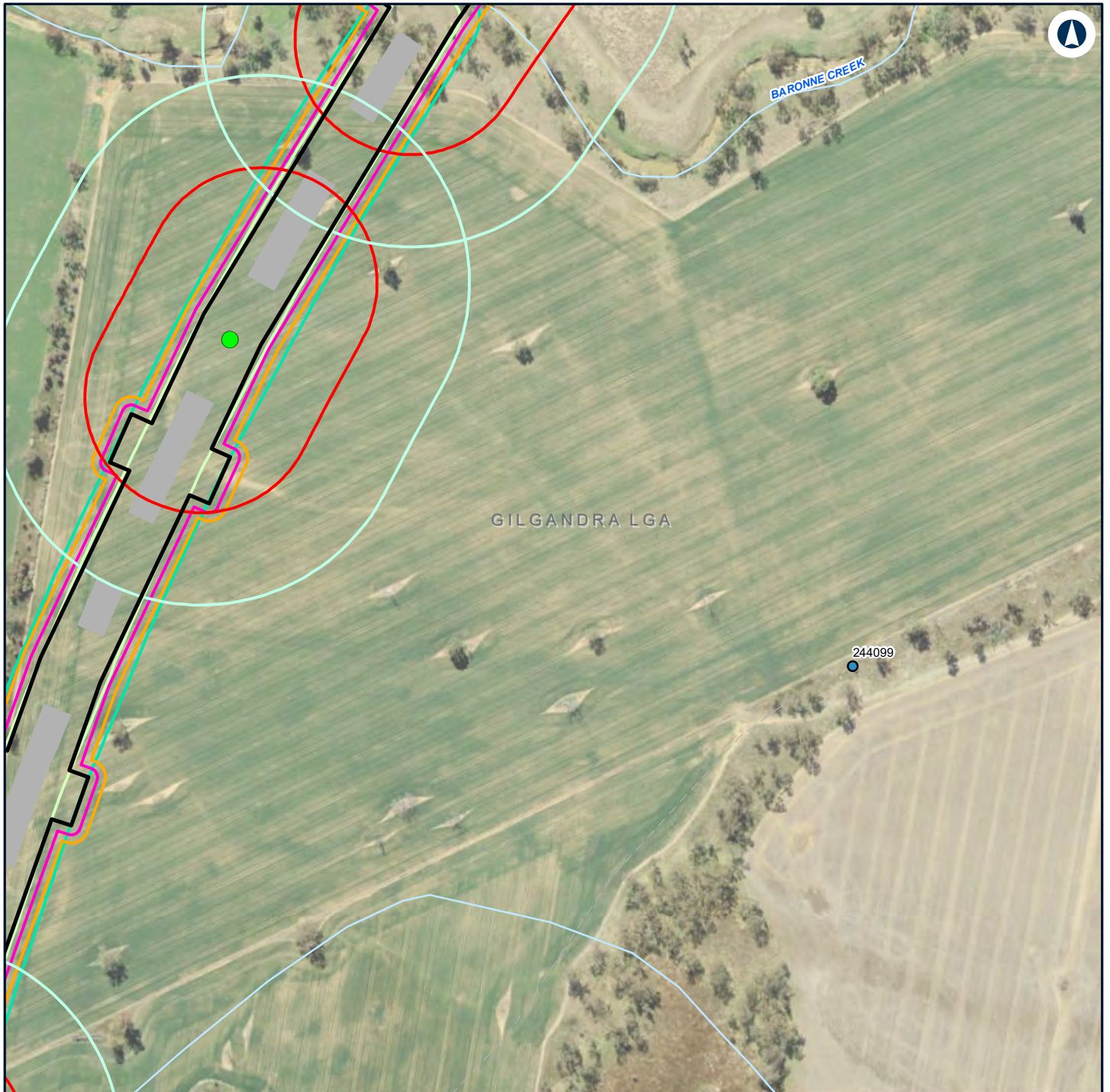
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

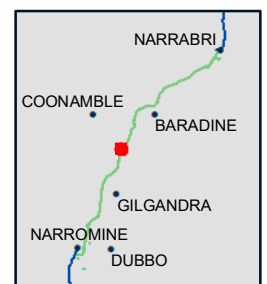
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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 58 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

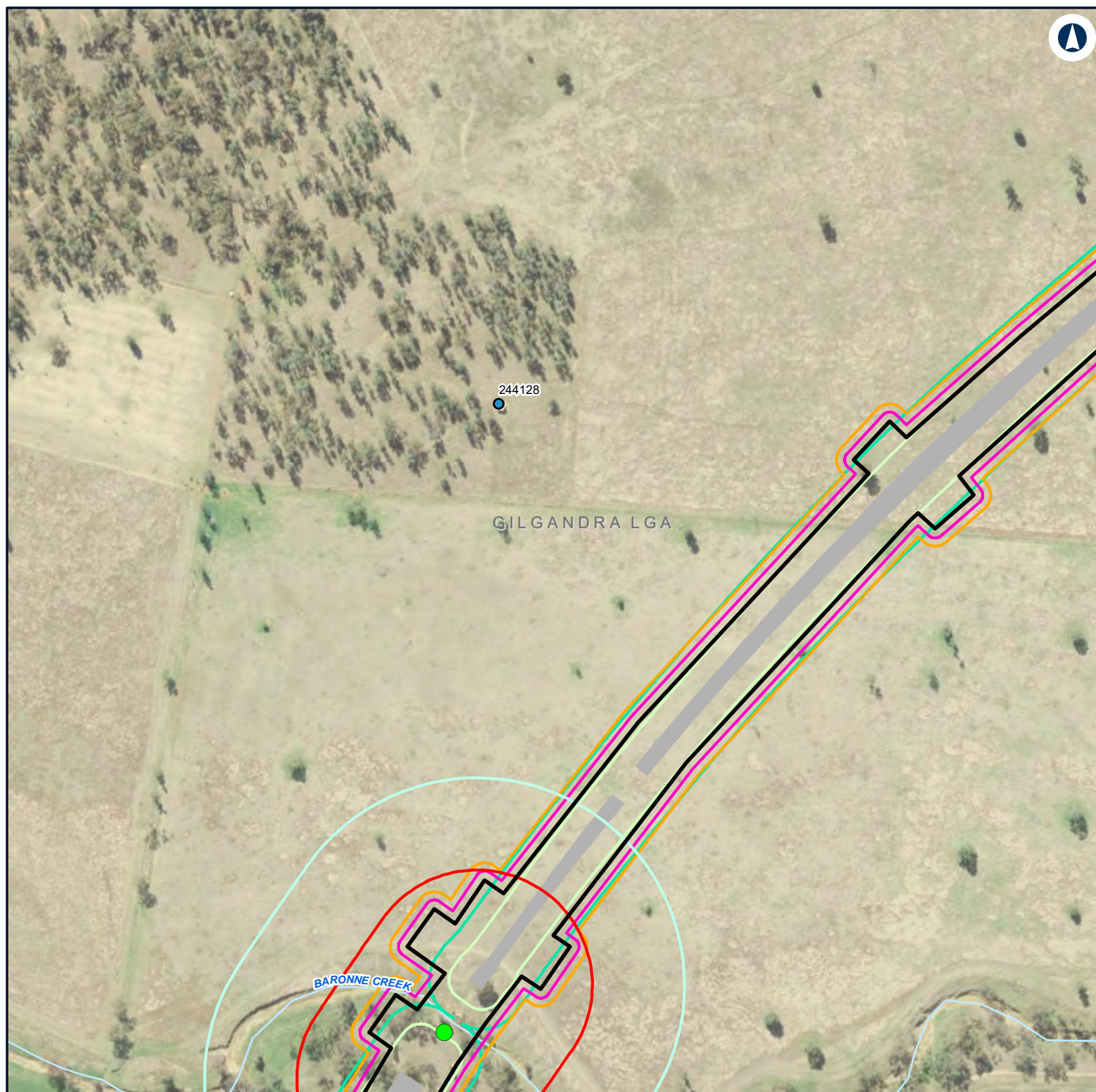
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 59 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

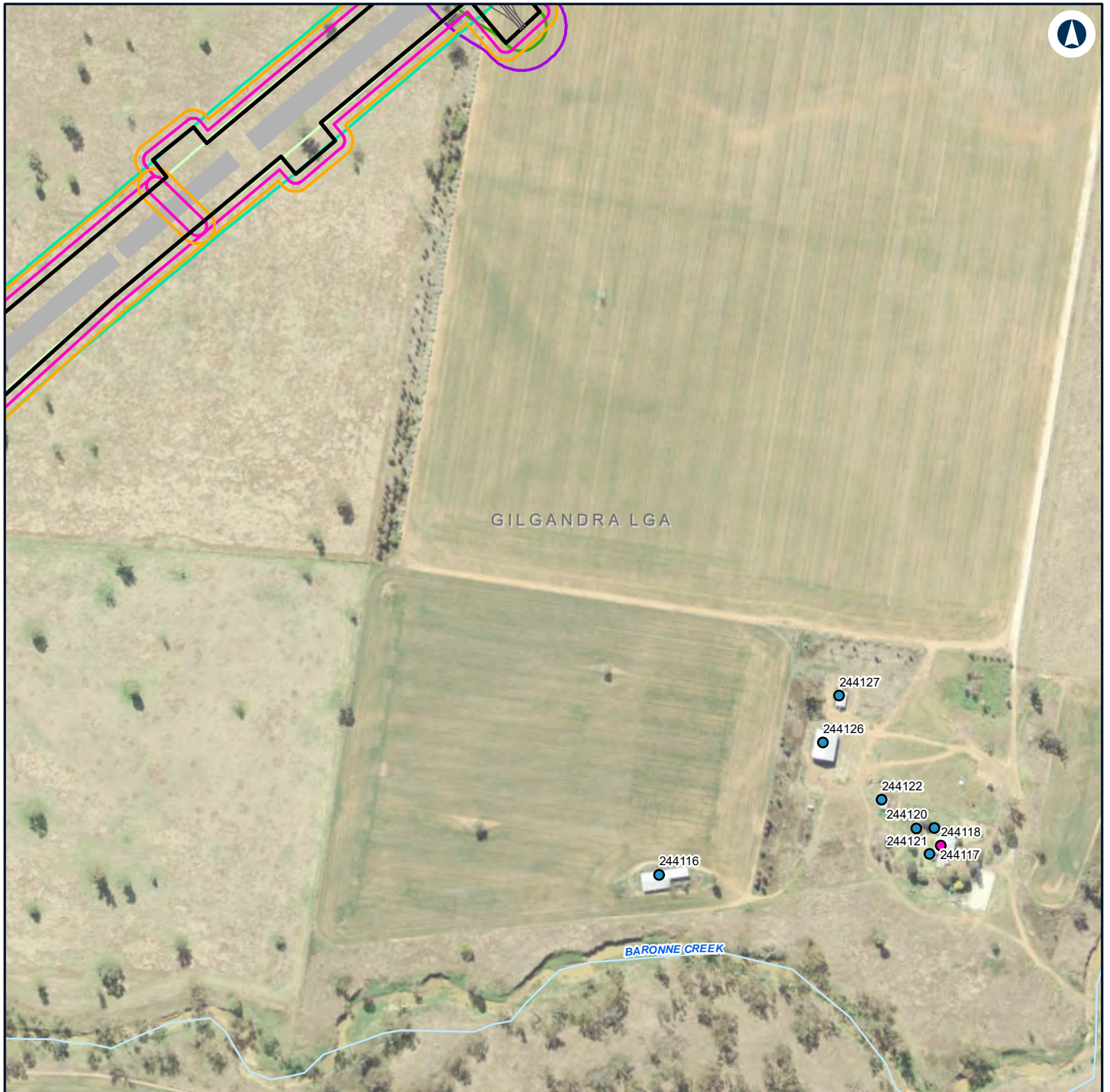
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 60 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

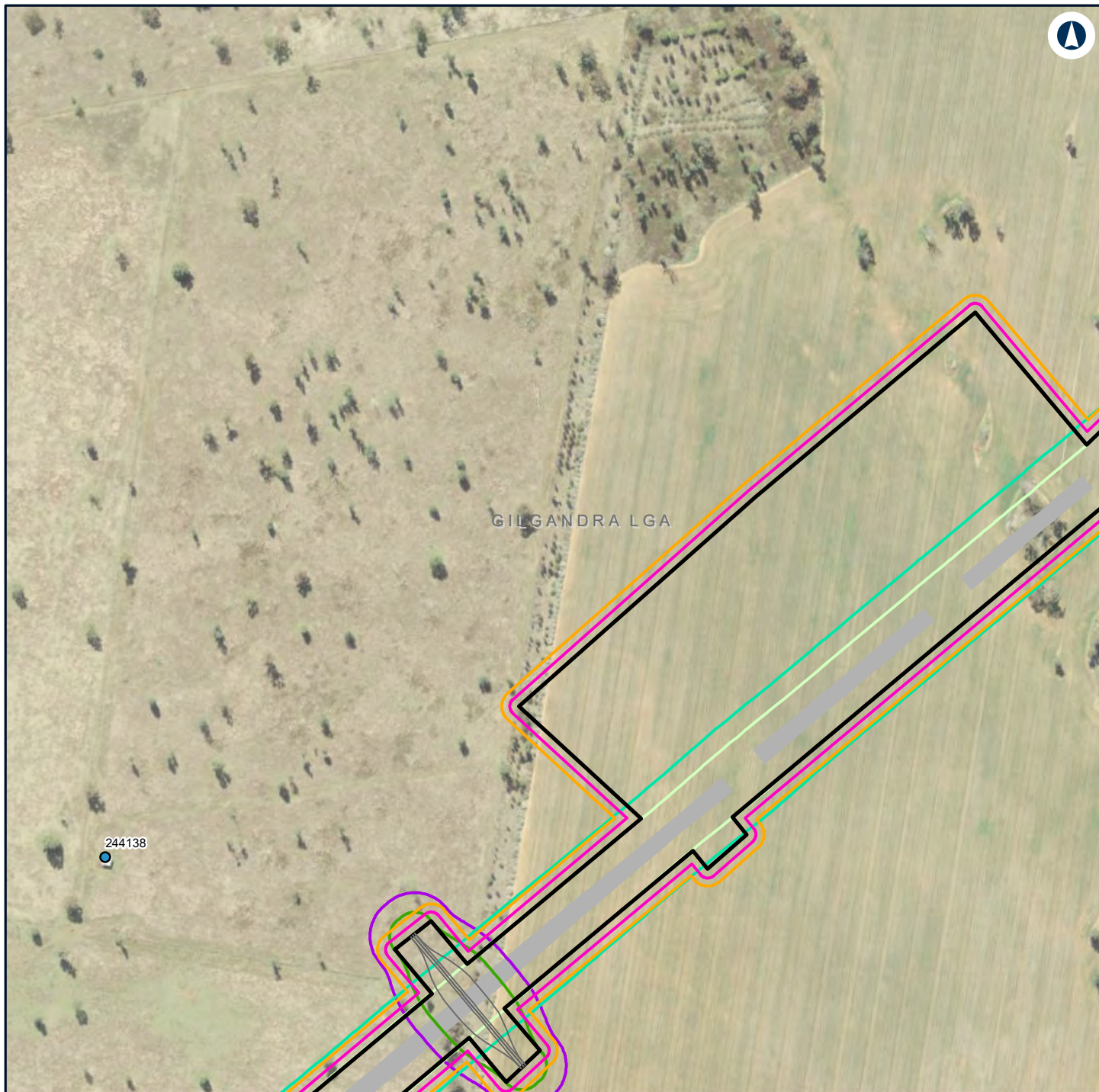
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 61 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

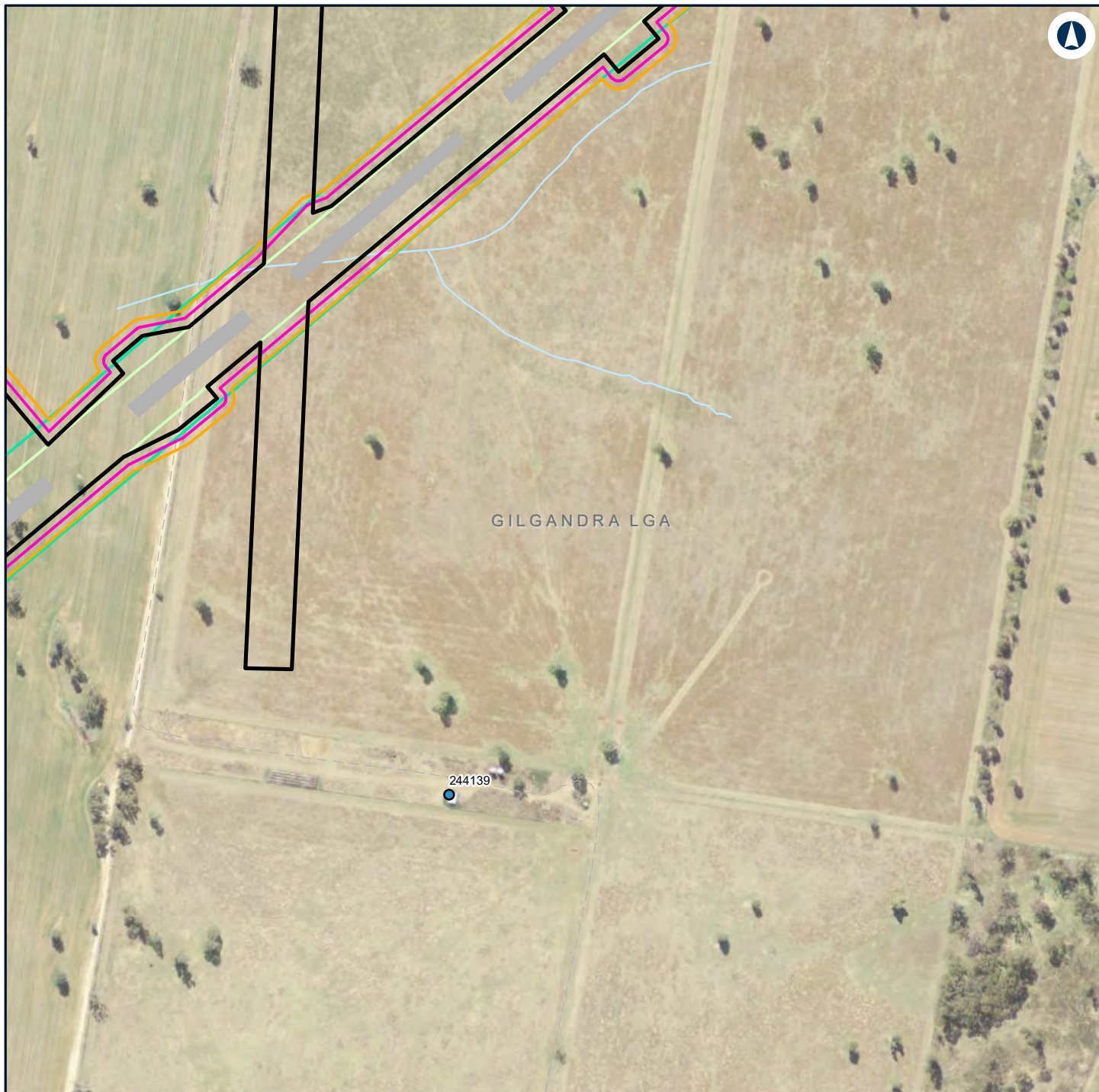
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 62 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

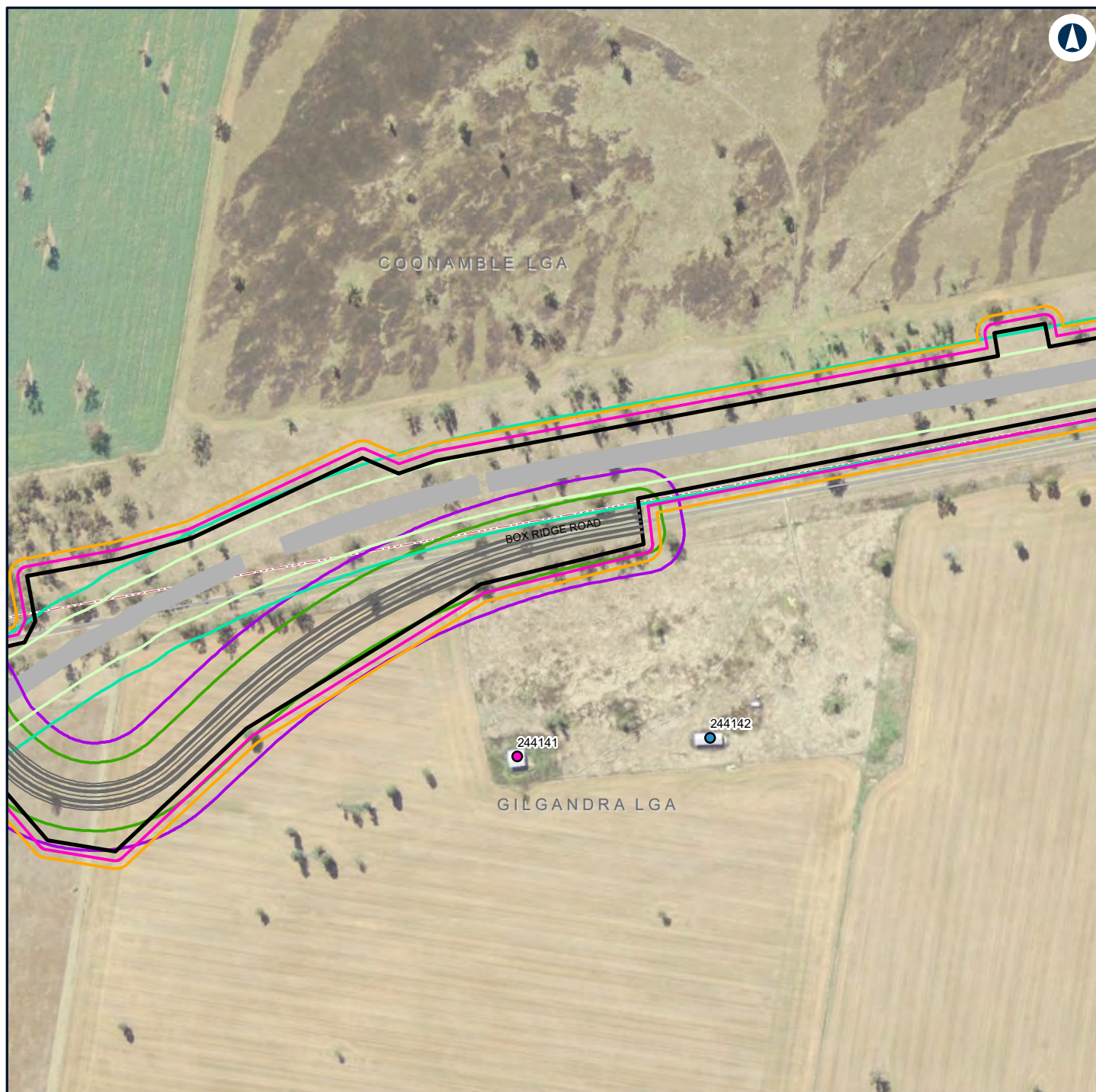
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 63 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

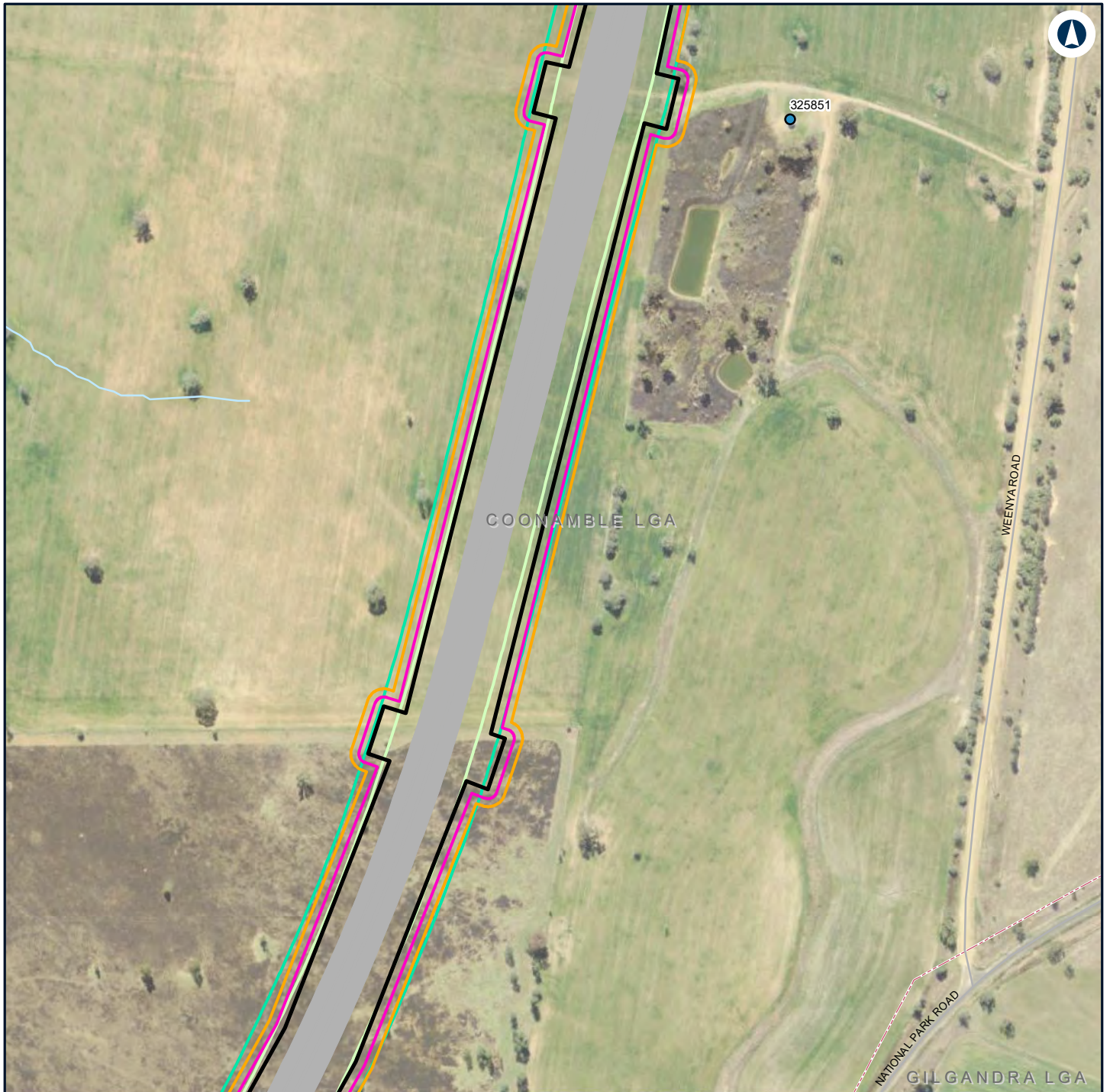
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

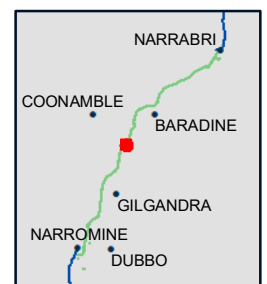
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 64 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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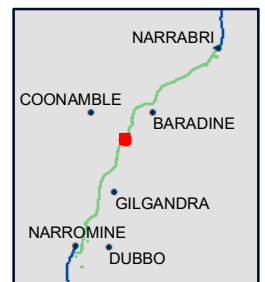




#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 65 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

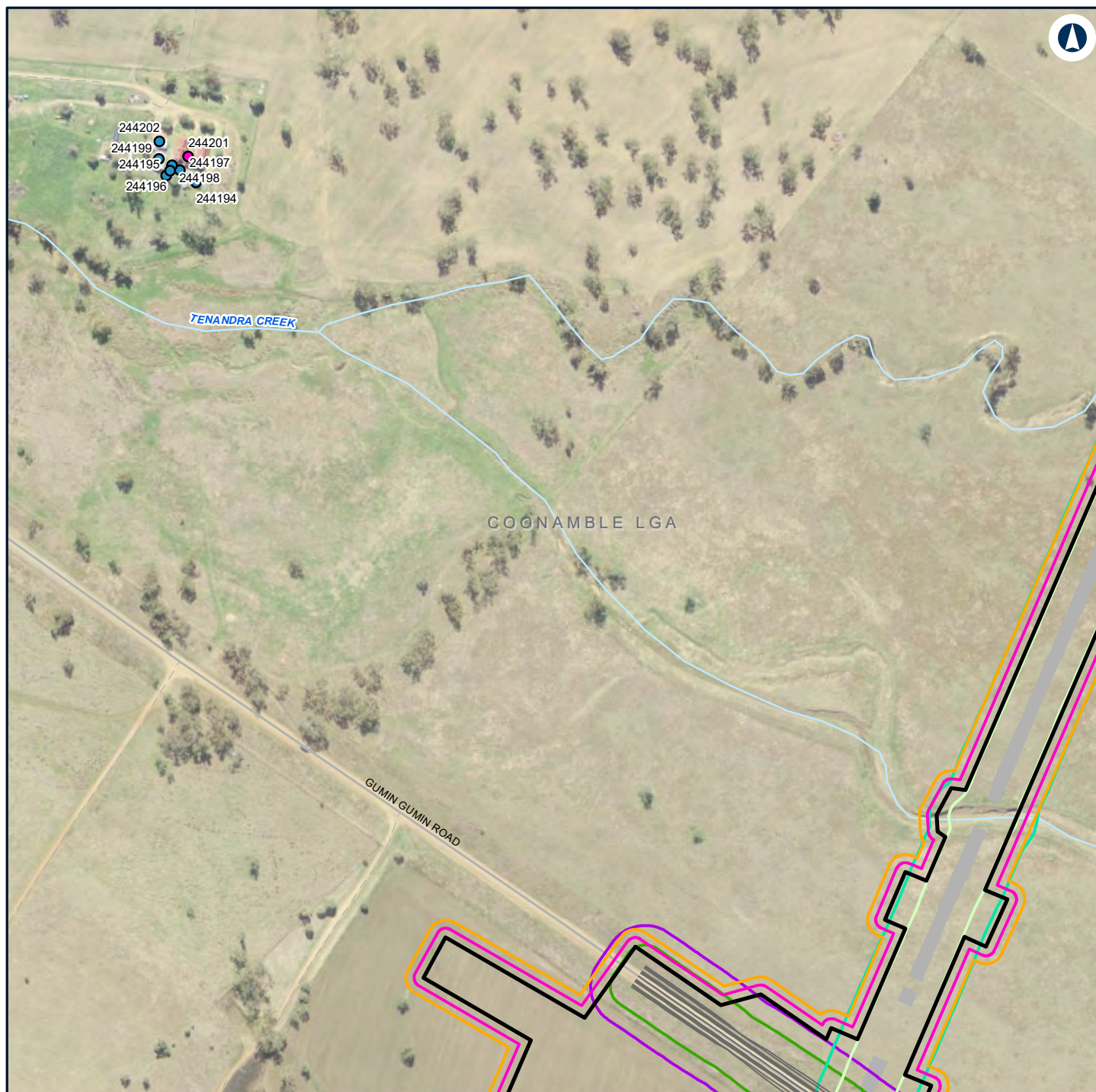
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

— Road design

▬ Construction footprint

▬ Rail earthworks extent

▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m

▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Other

● Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 66 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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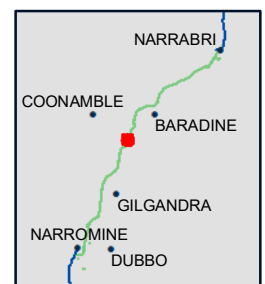
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 67 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

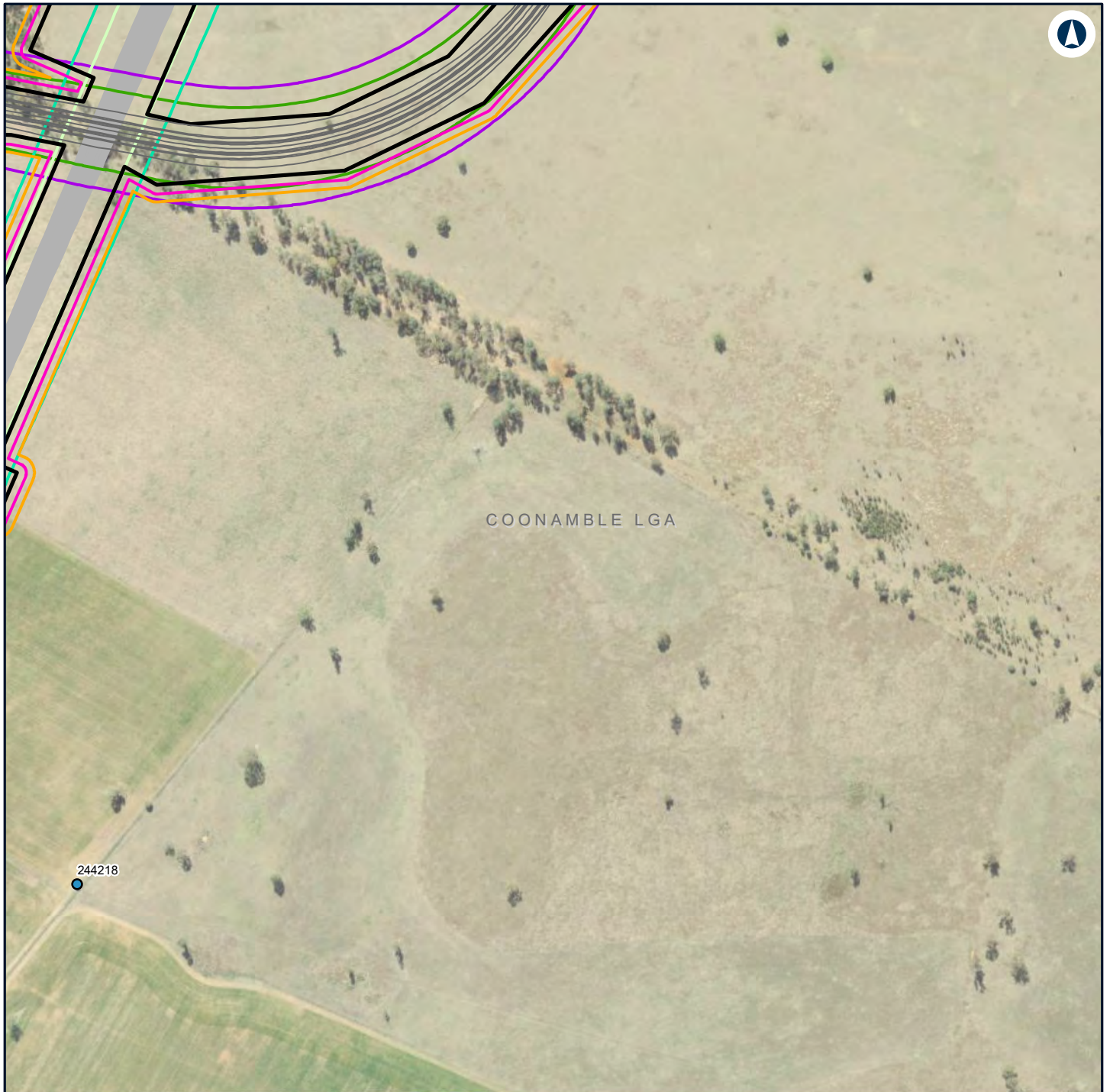
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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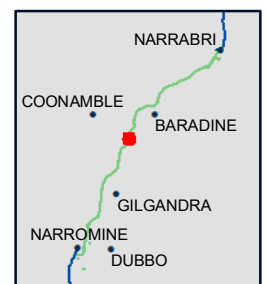


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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 68 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

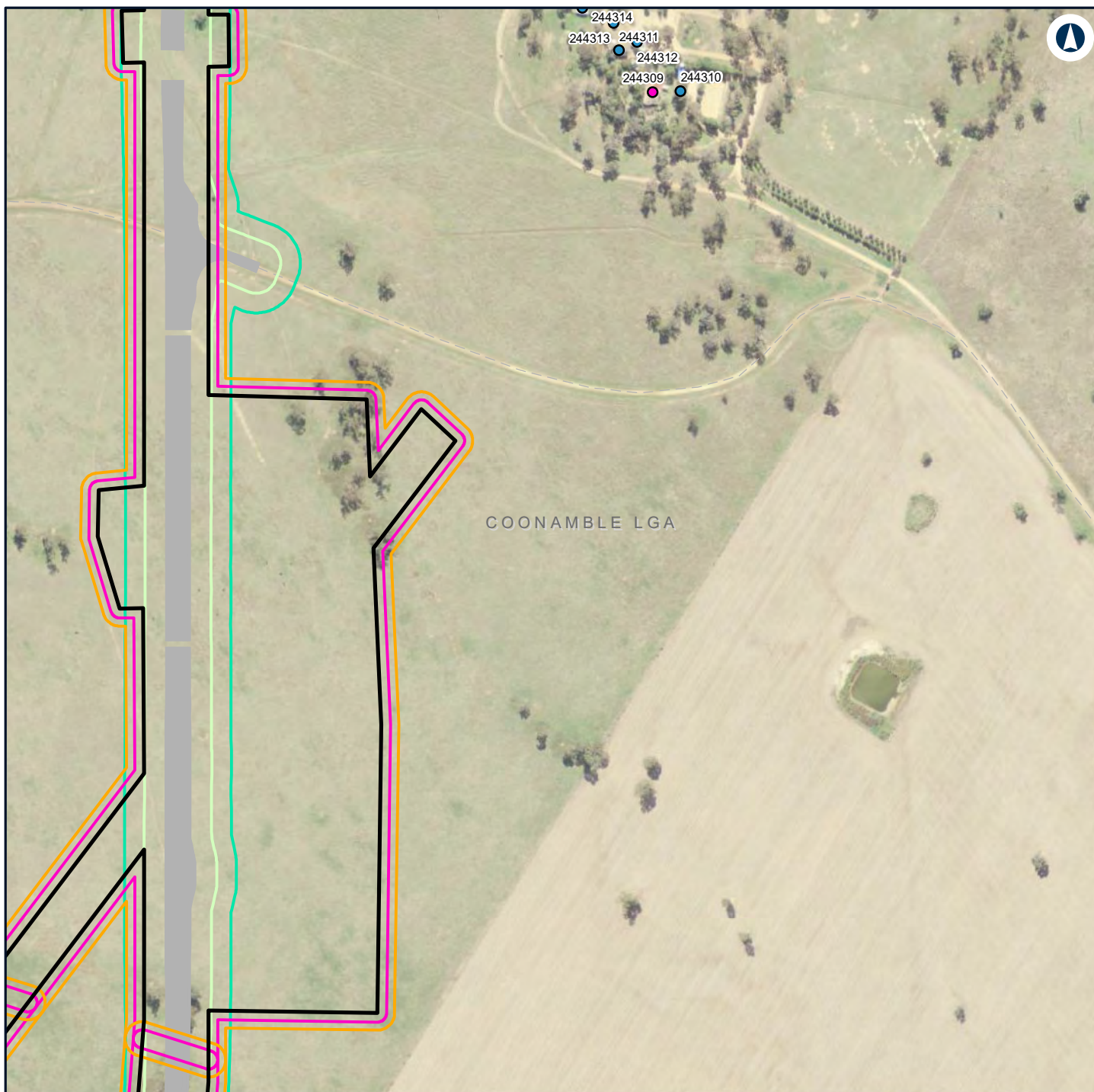
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 69 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

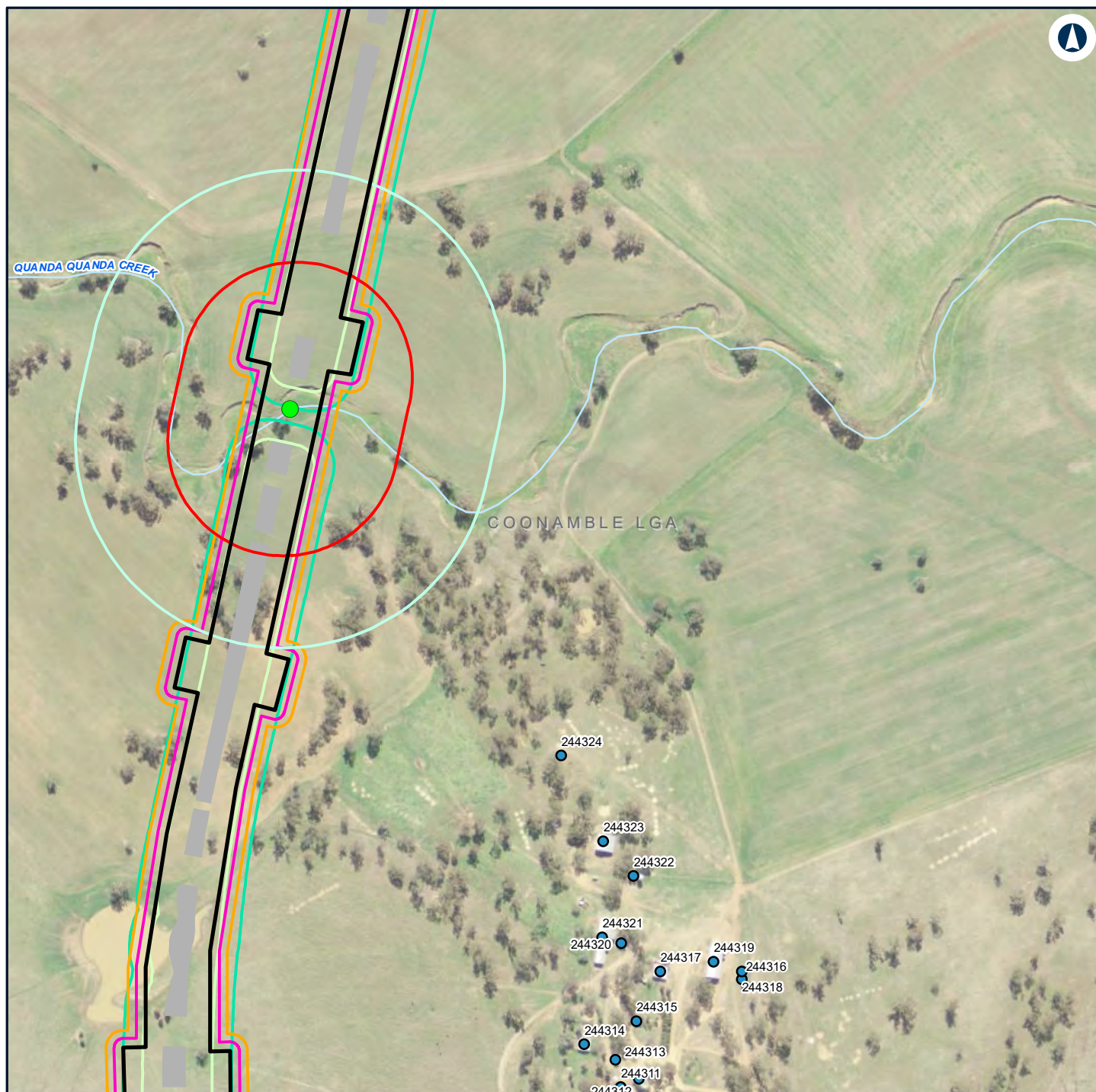
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 70 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

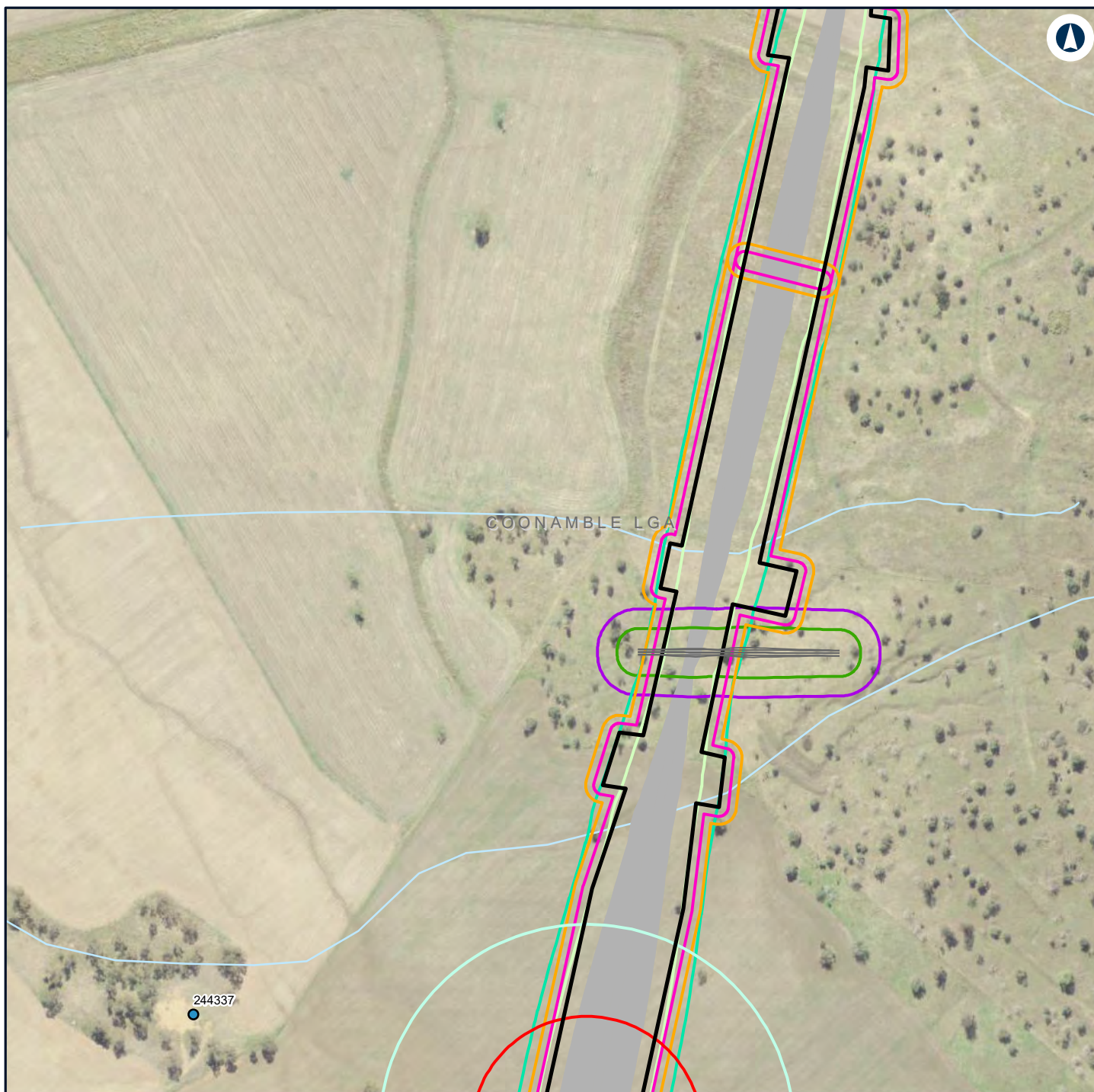
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- ▬ Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 71 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

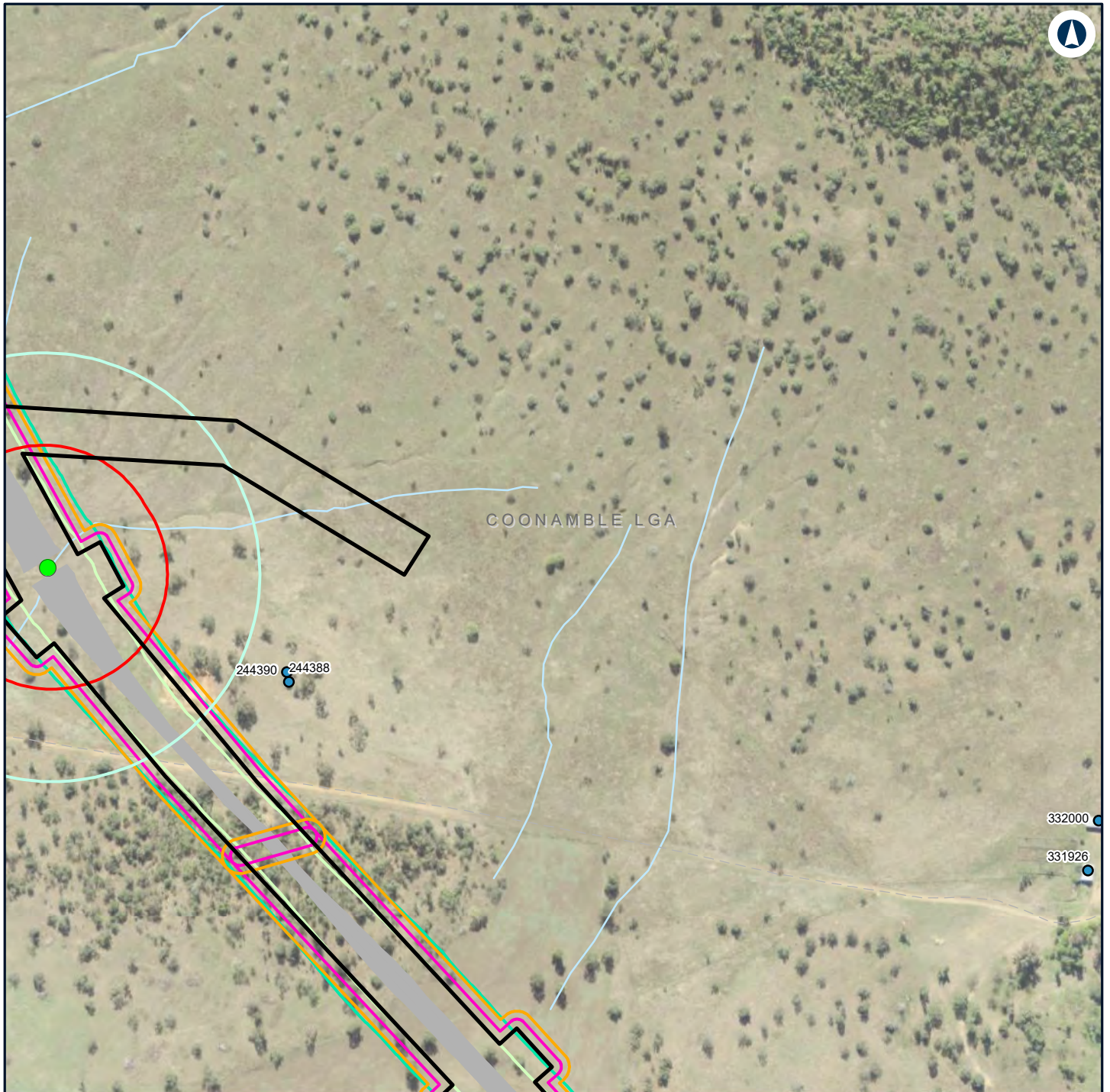
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

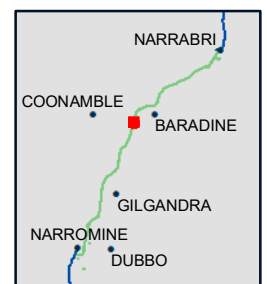
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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 72 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

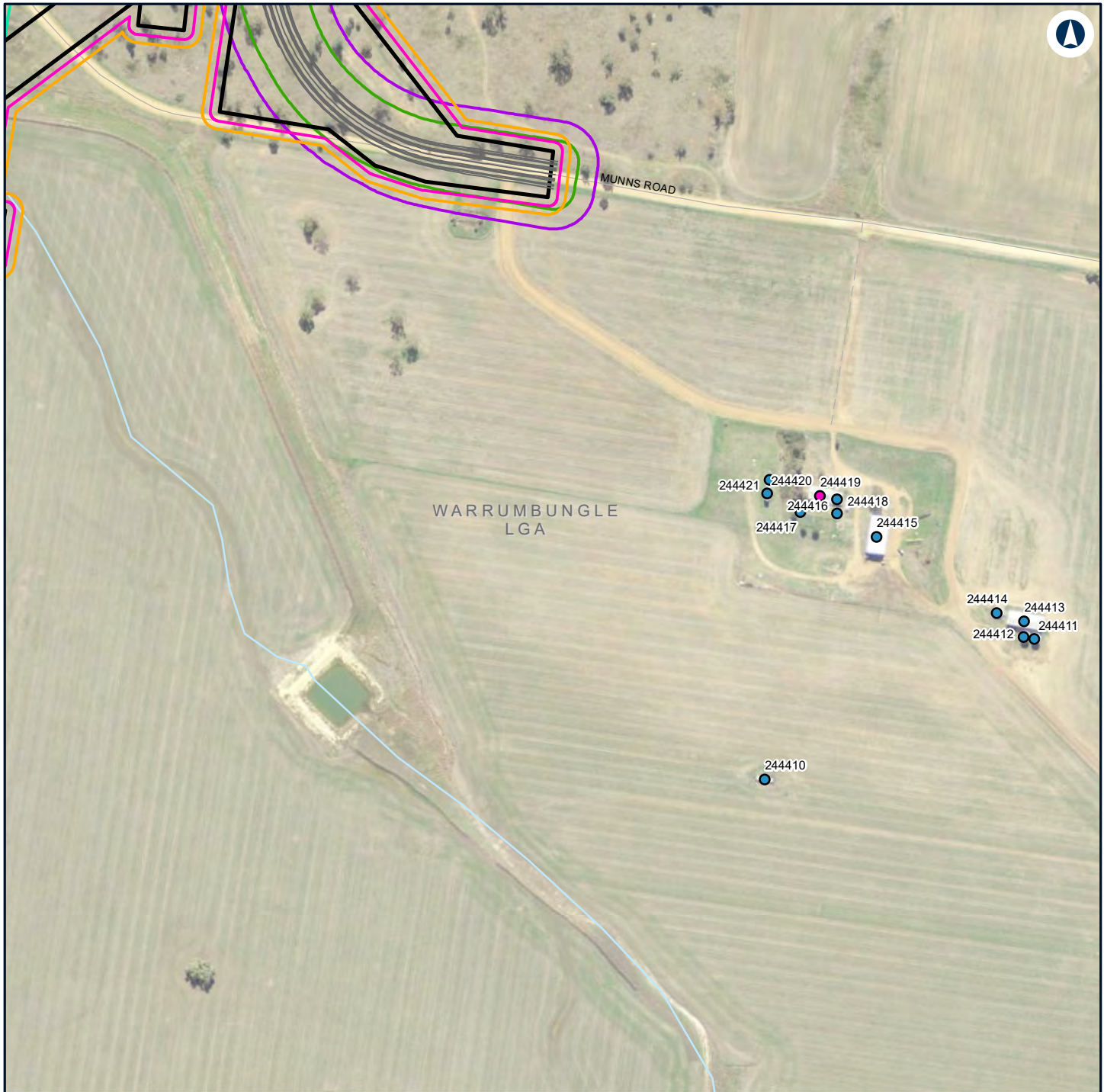
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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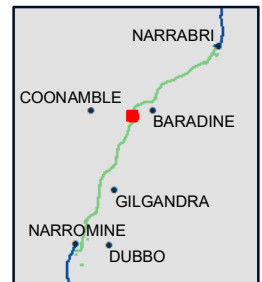
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#### LEGEND

- Road design
- Construction footprint
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 73 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

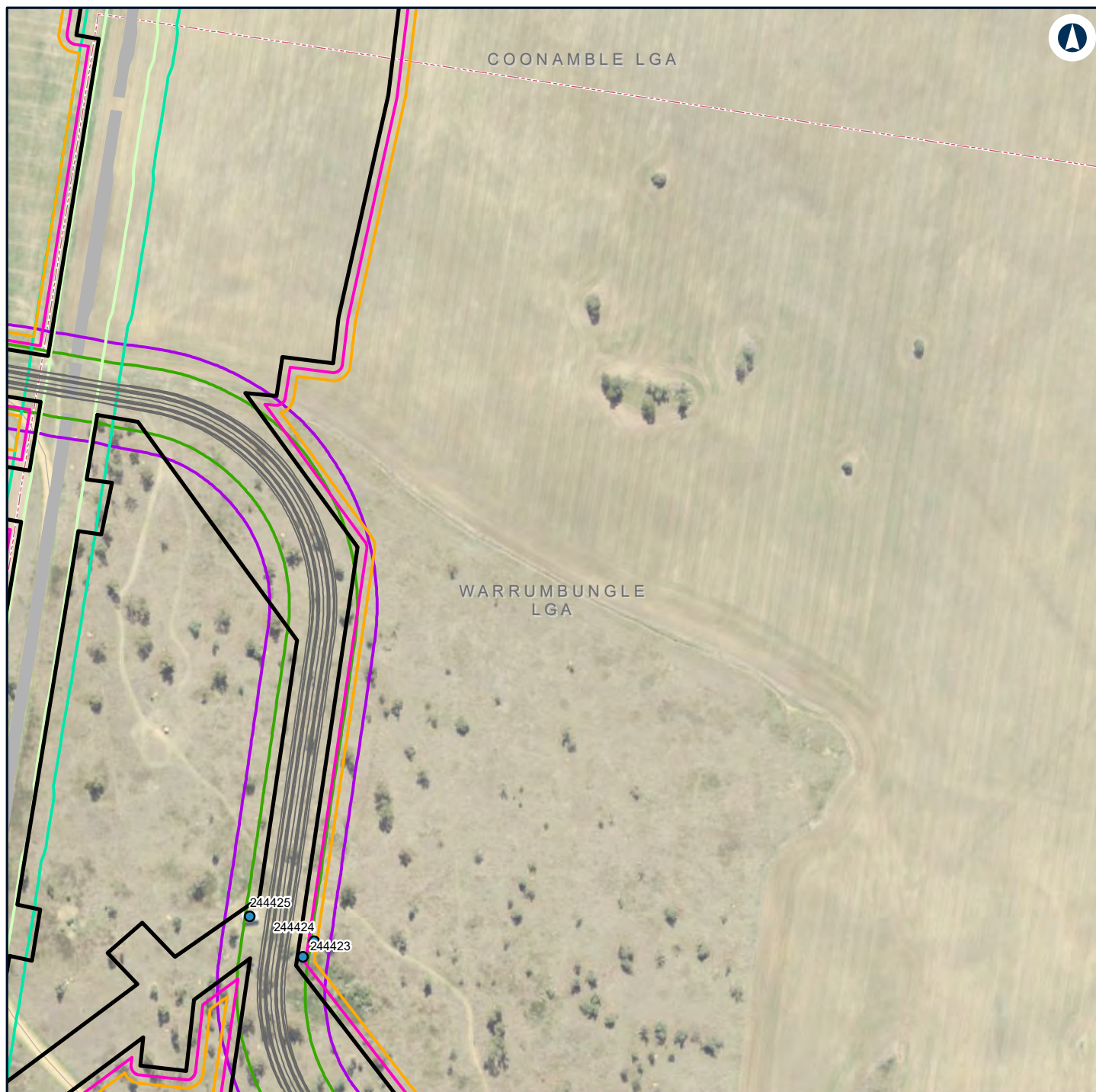
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 74 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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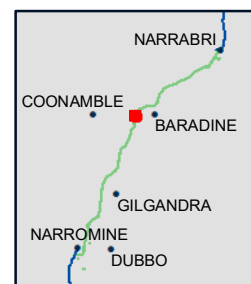
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 75 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

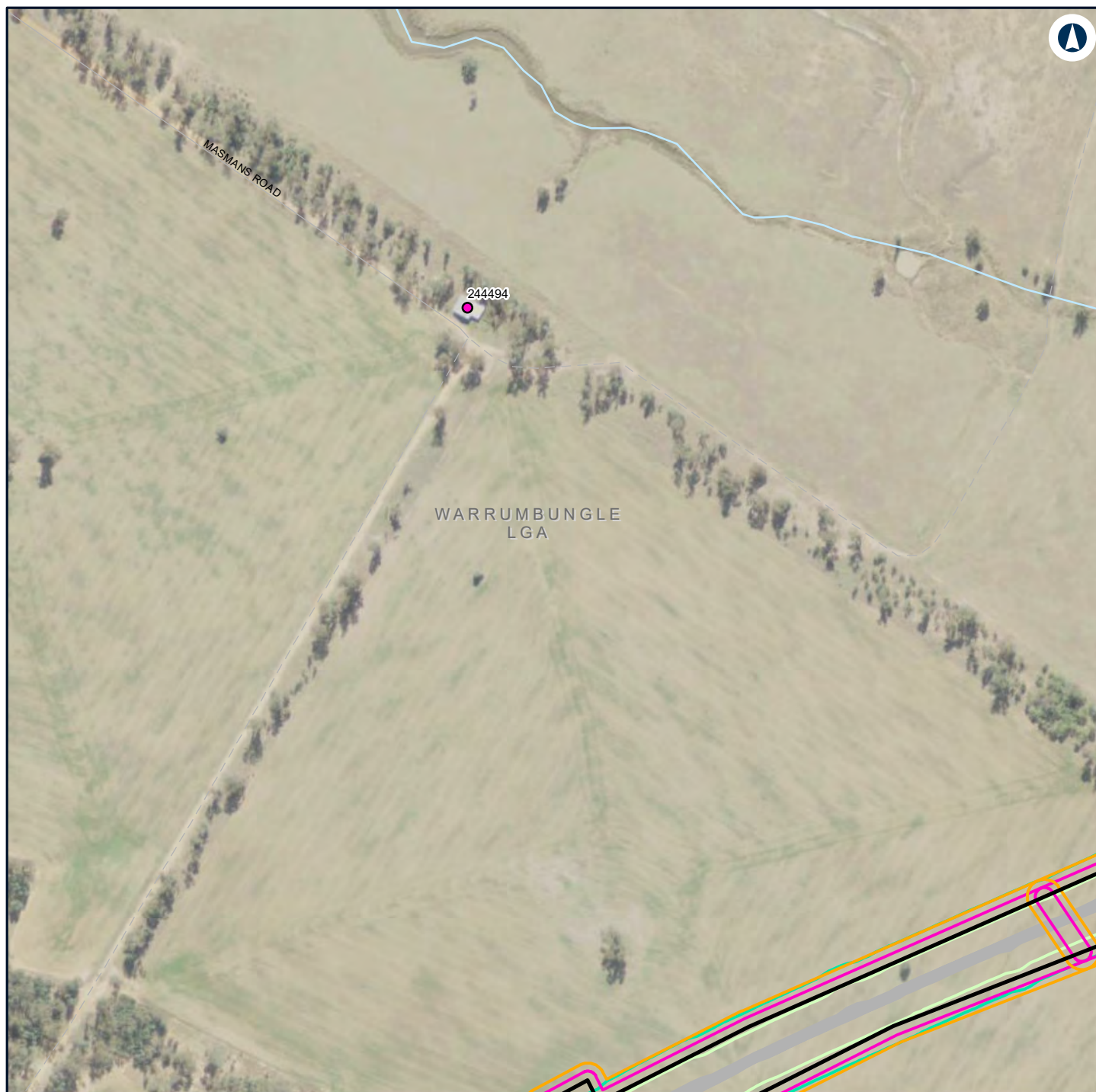
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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





#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 76 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

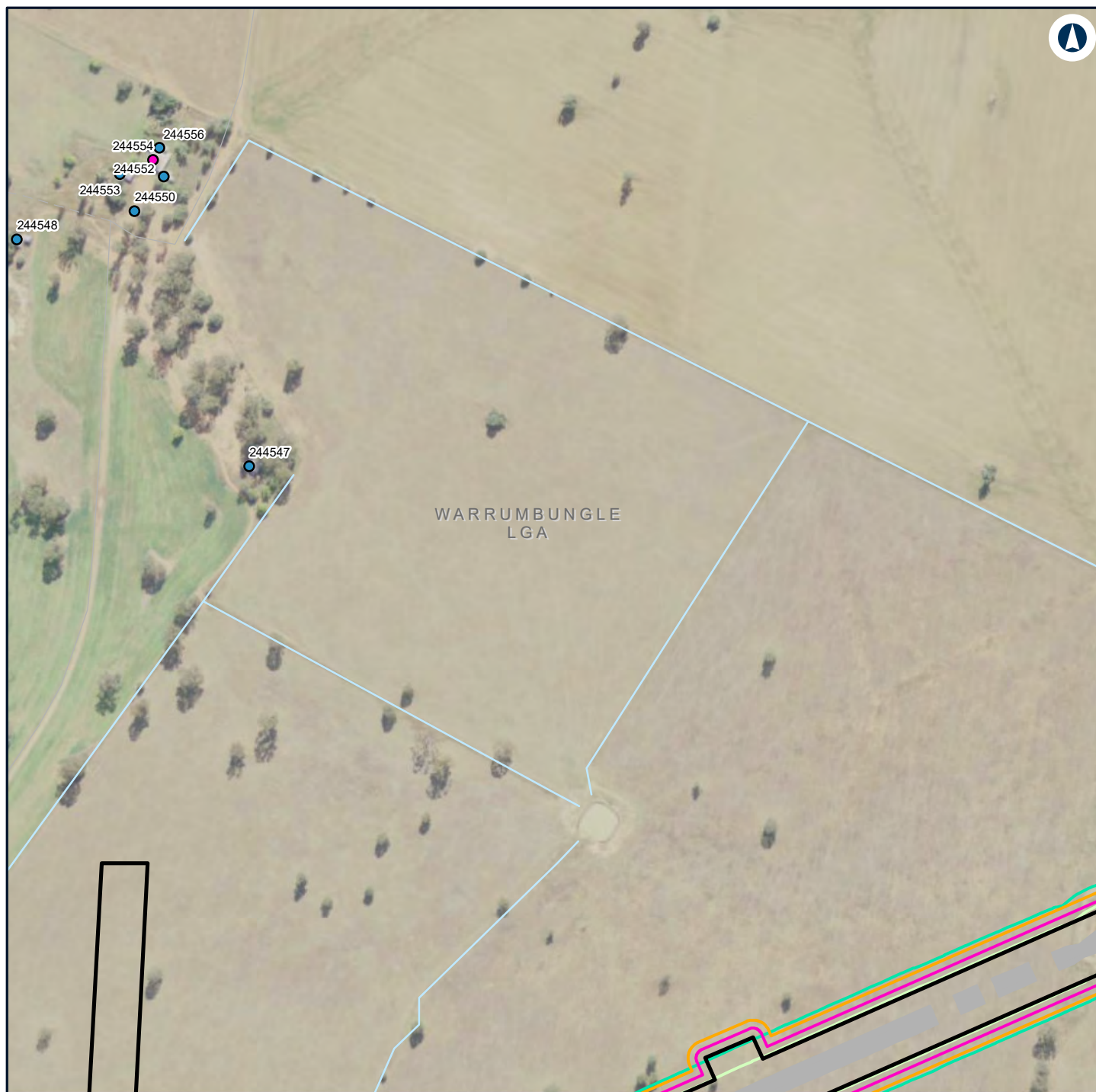
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 77 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 78 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

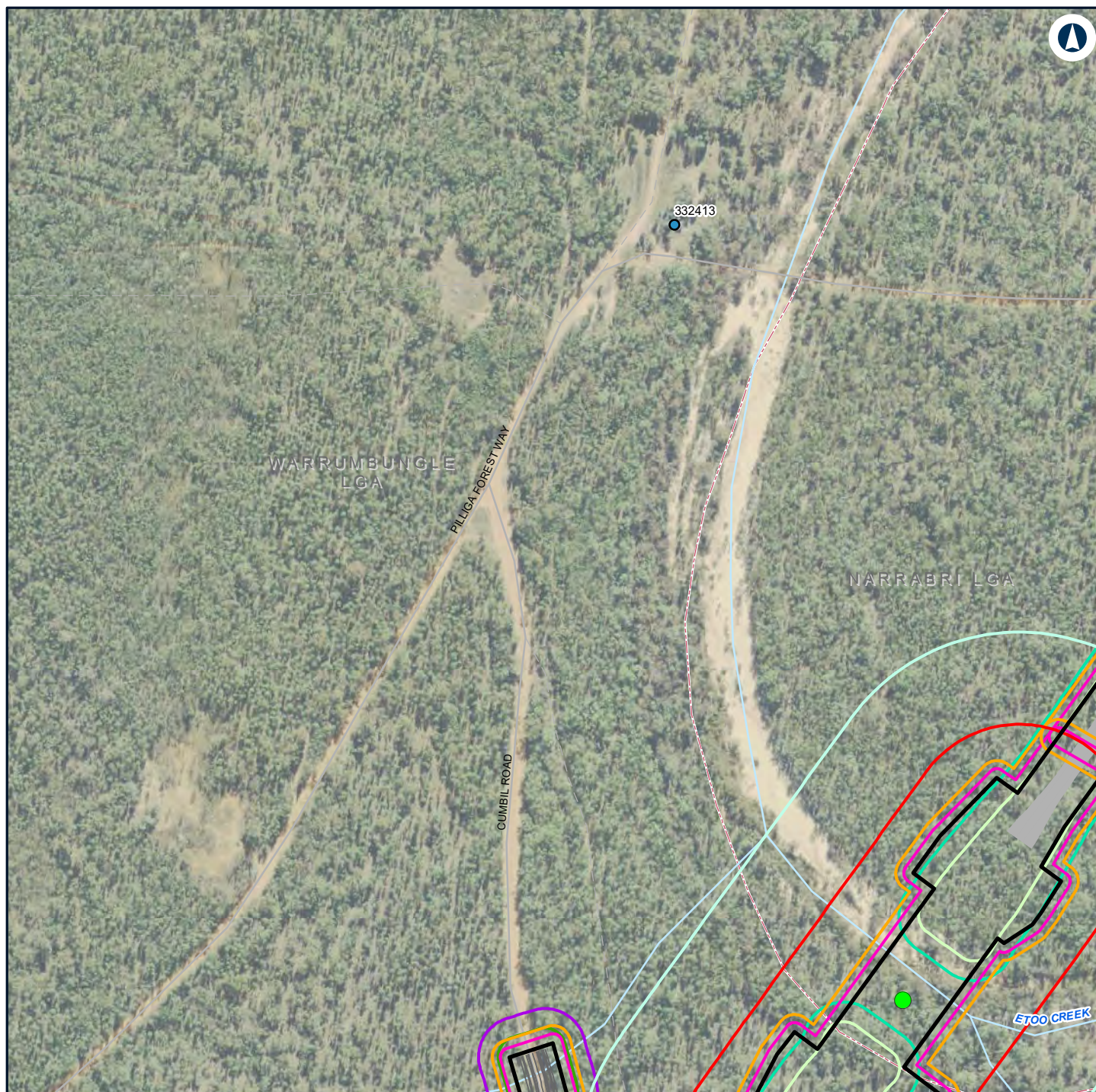
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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#### LEGEND

- Bridge centre
- Road design
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 79 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

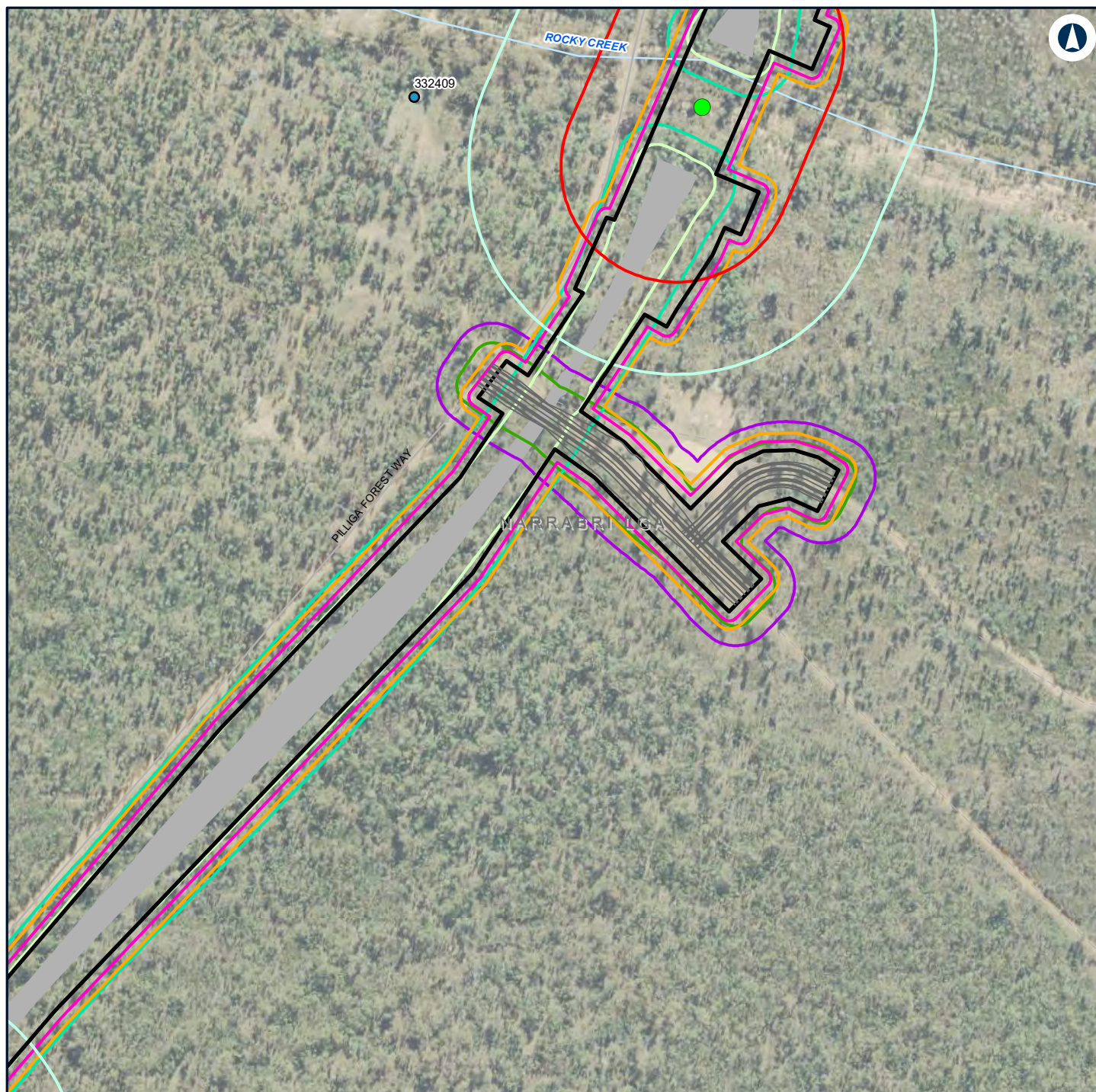
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Road design
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 80 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

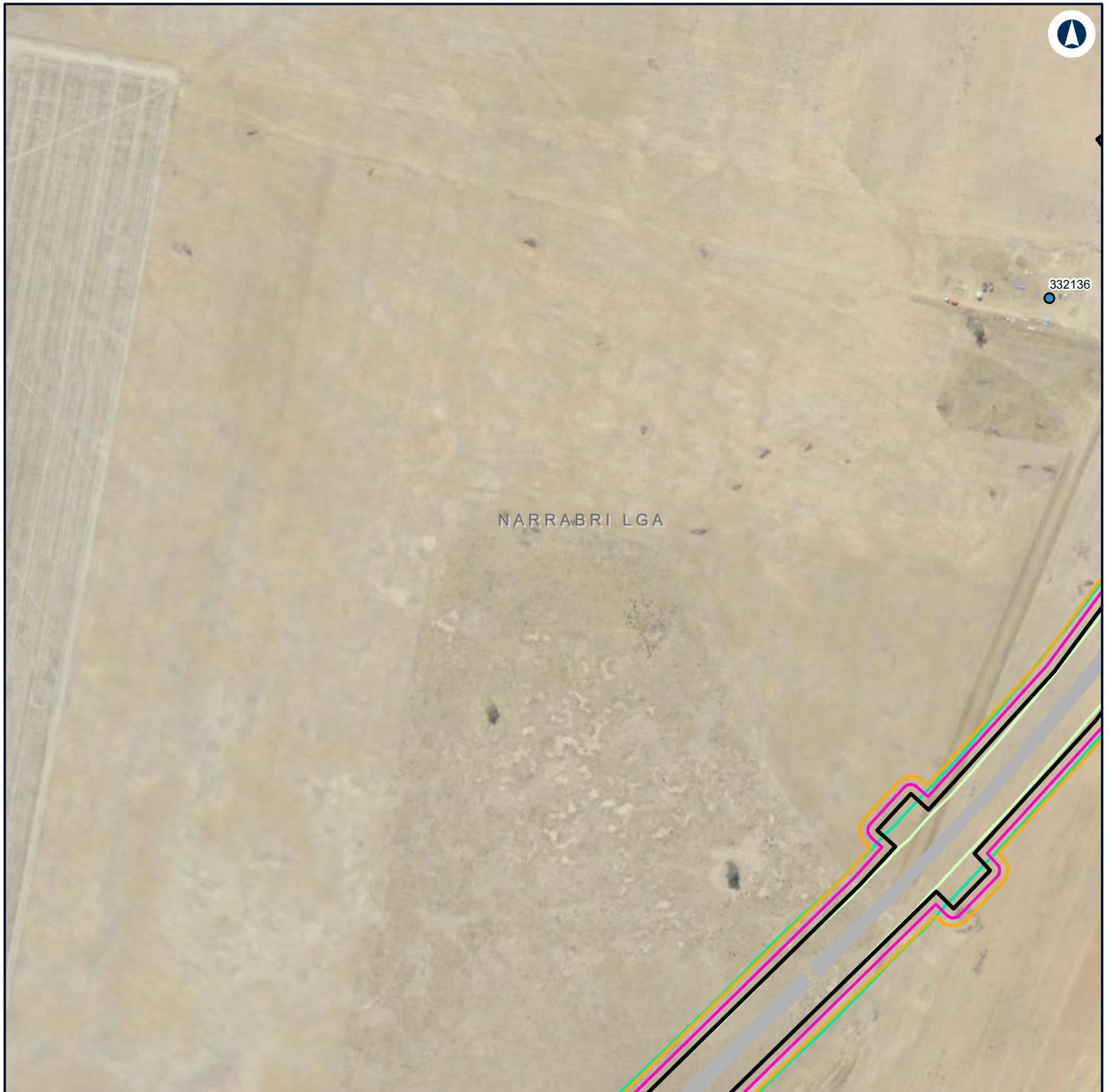
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

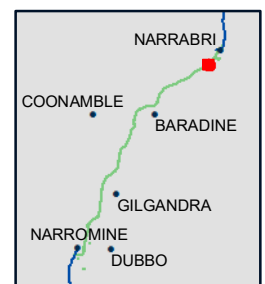
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 81 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

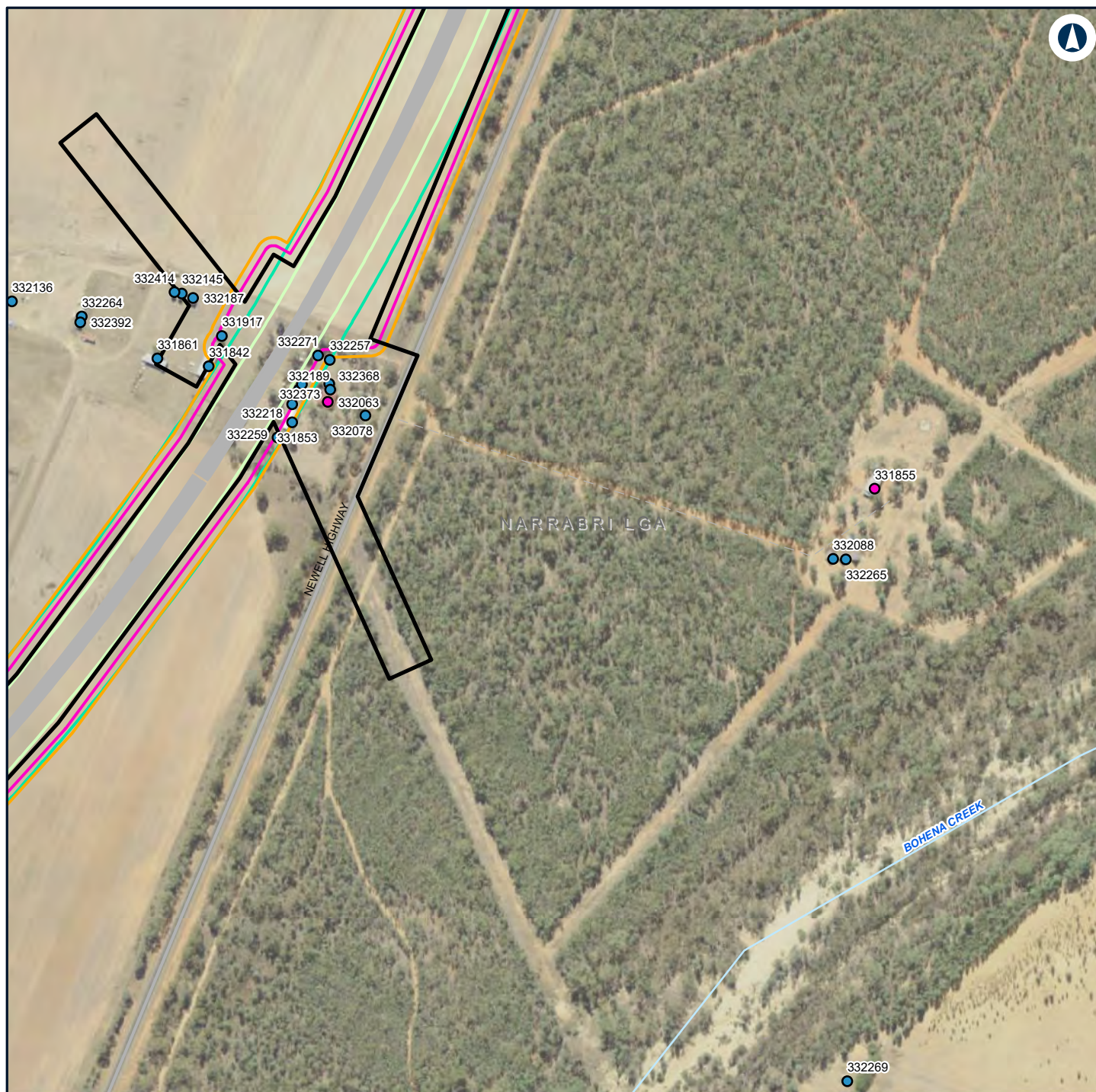
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 82 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

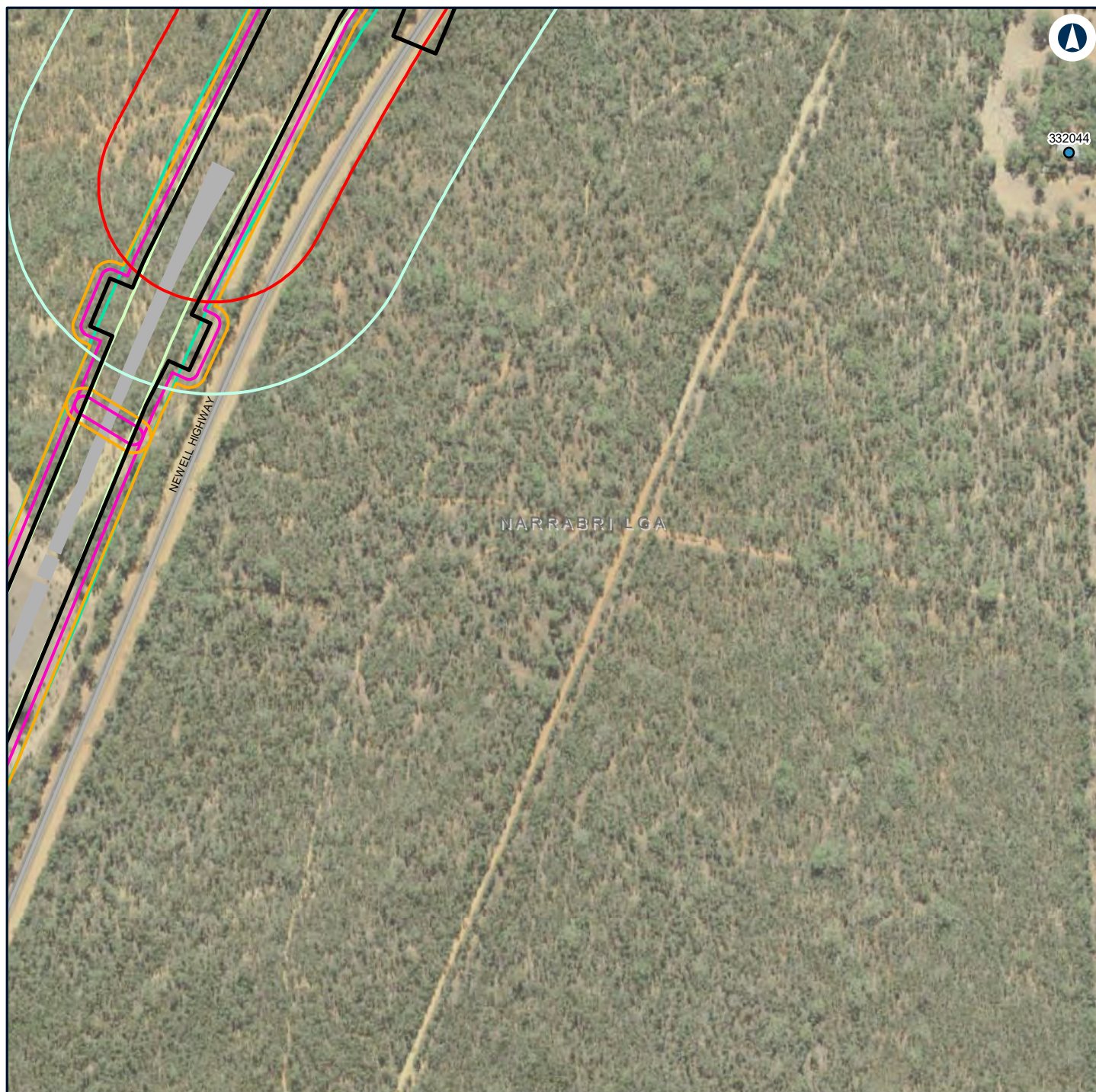
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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## LEGEND

- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

● Other



## NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 83 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

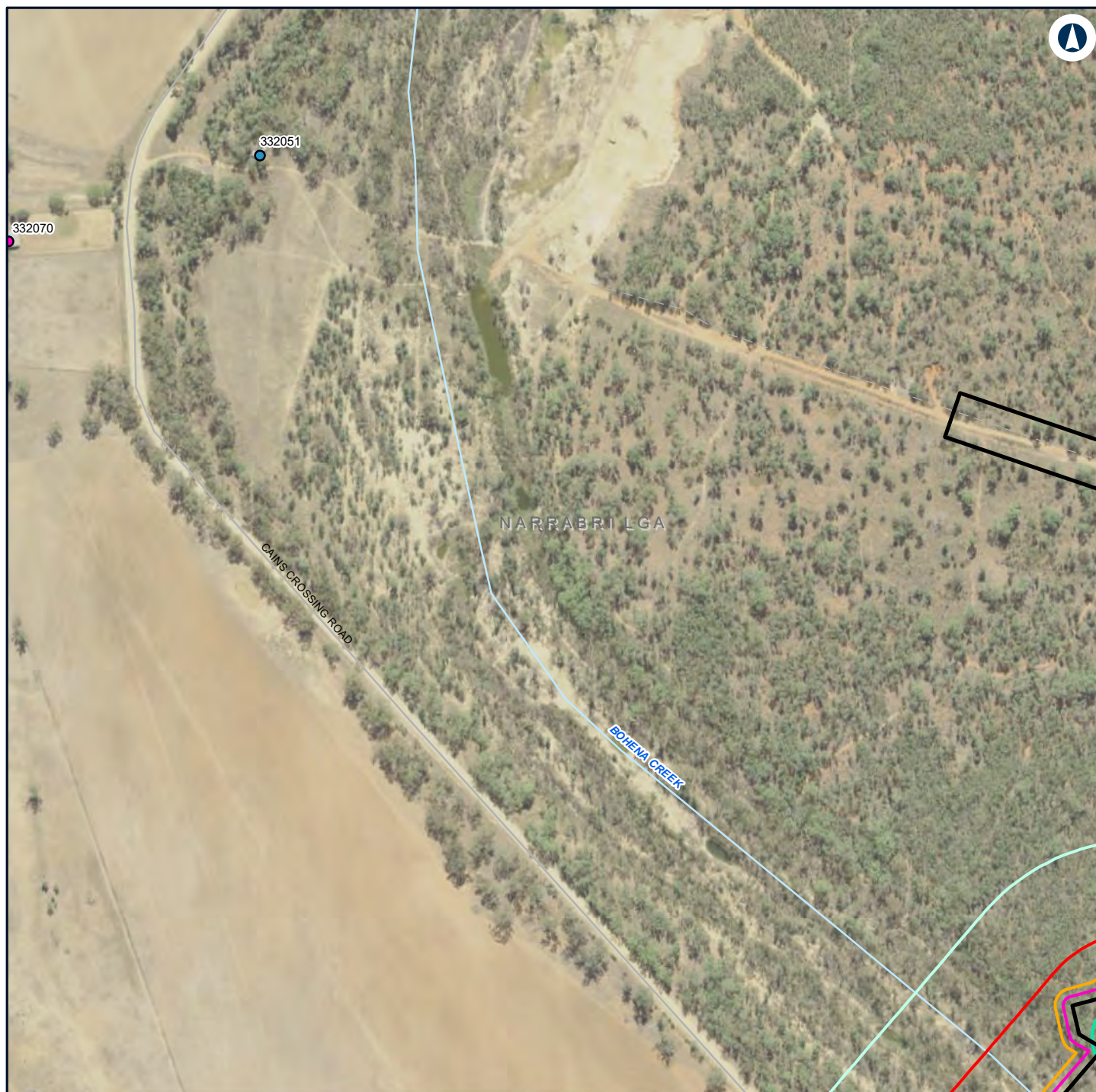
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 84 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

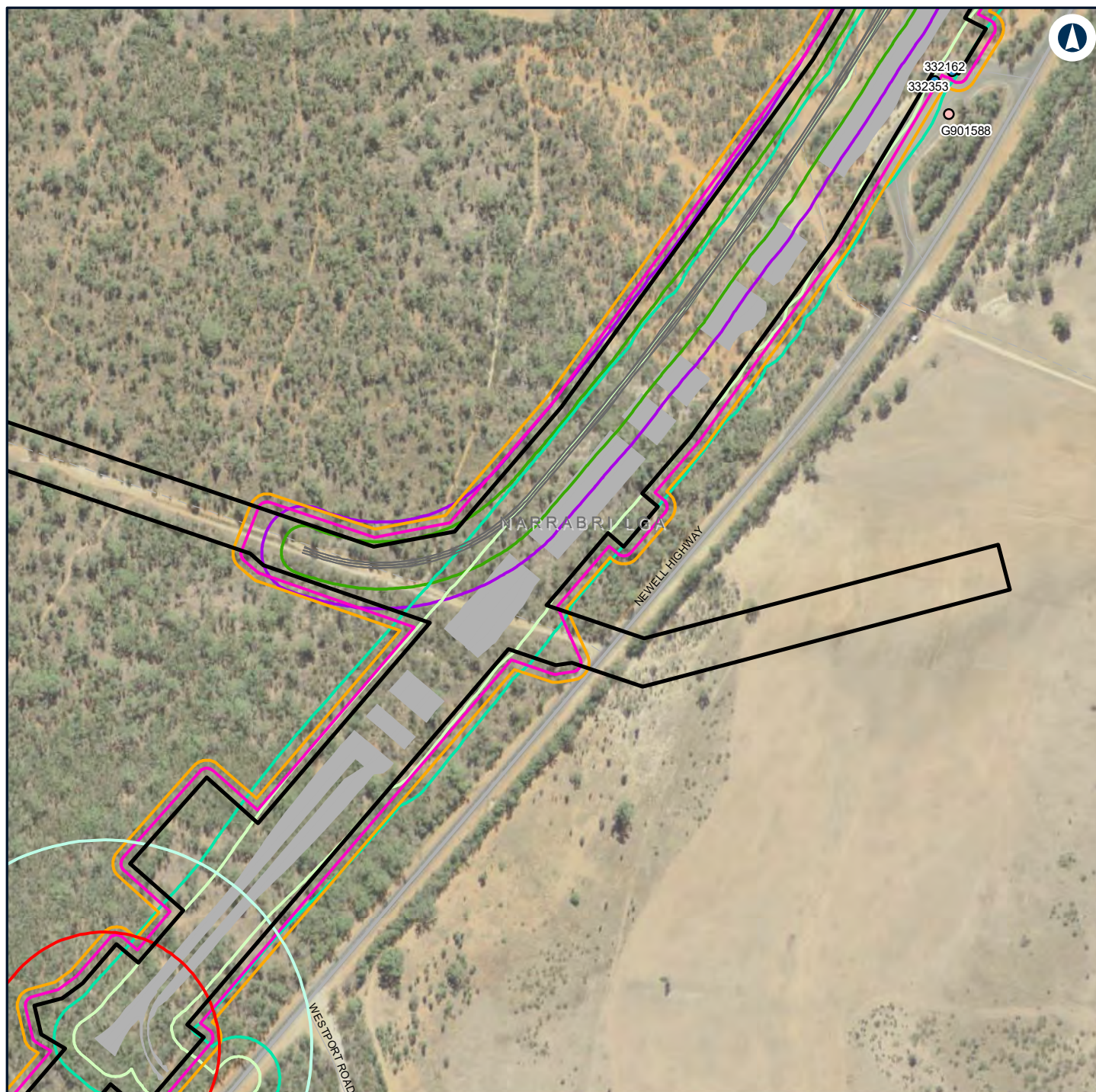
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- ▬ Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Passive recreation



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 85 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

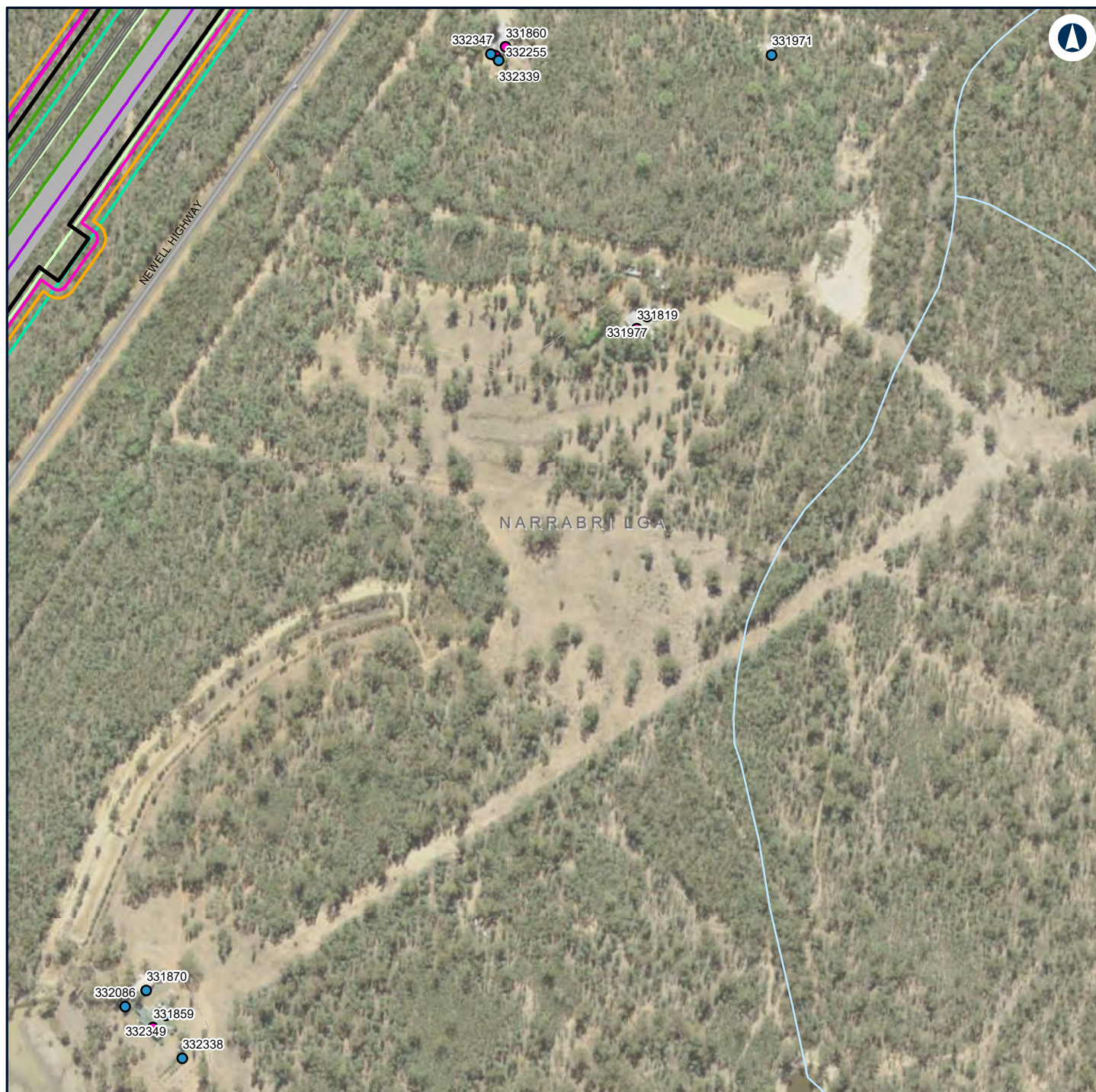
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 86 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

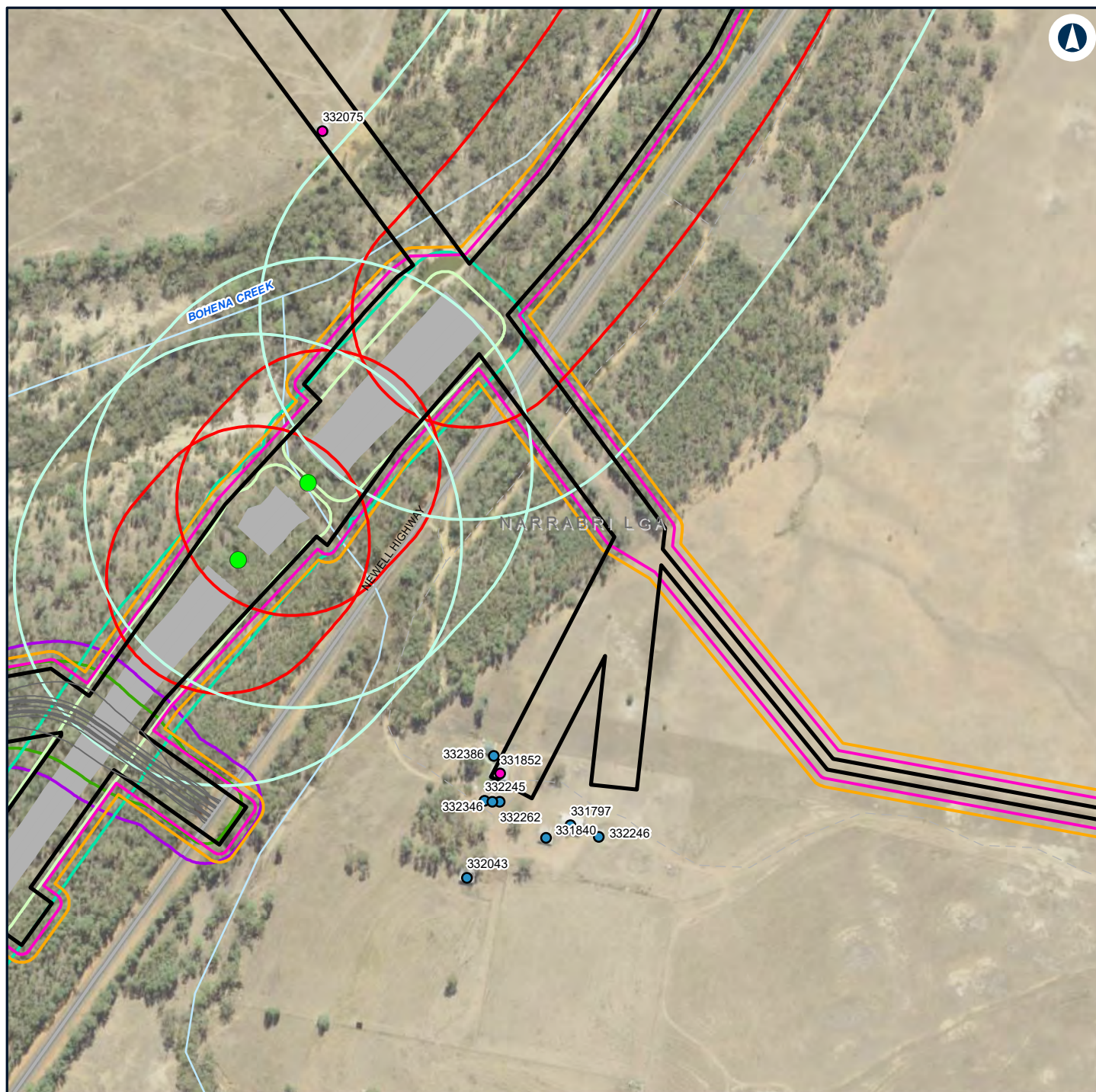
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- Bridge centre
- Road design
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 87 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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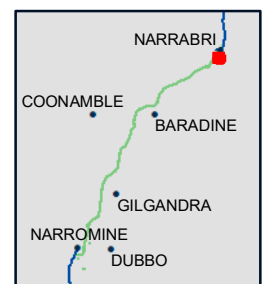
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#### LEGEND

- Construction footprint
- Borrow pits (Dozer) – Heritage structures: 3mm/s, 15m
- Borrow pits (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Borrow pits (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Borrow pits (Dozer) – Standard buildings: 5mm/s, 8m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARRABRI TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 88 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

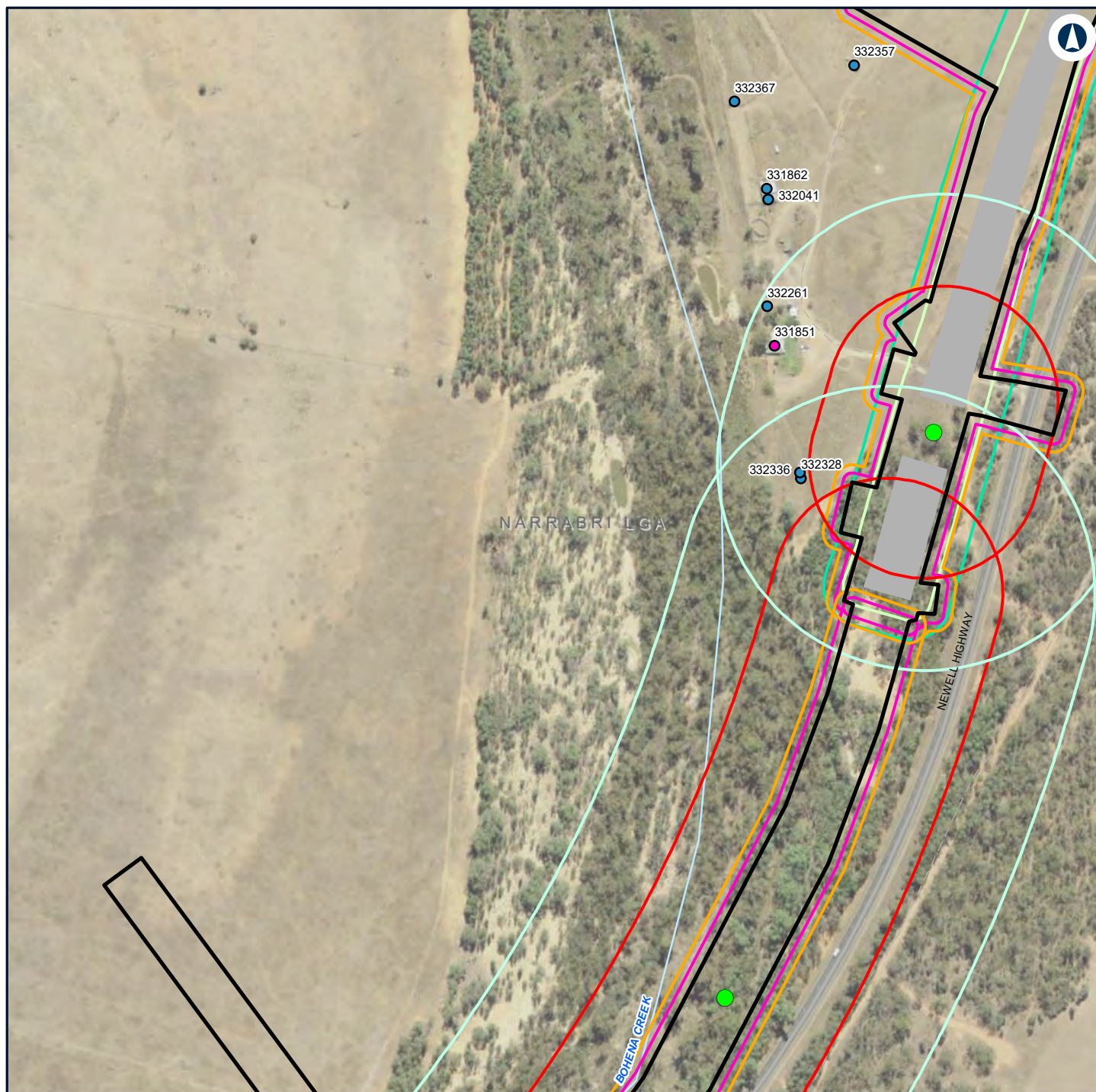
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 89 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 90 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

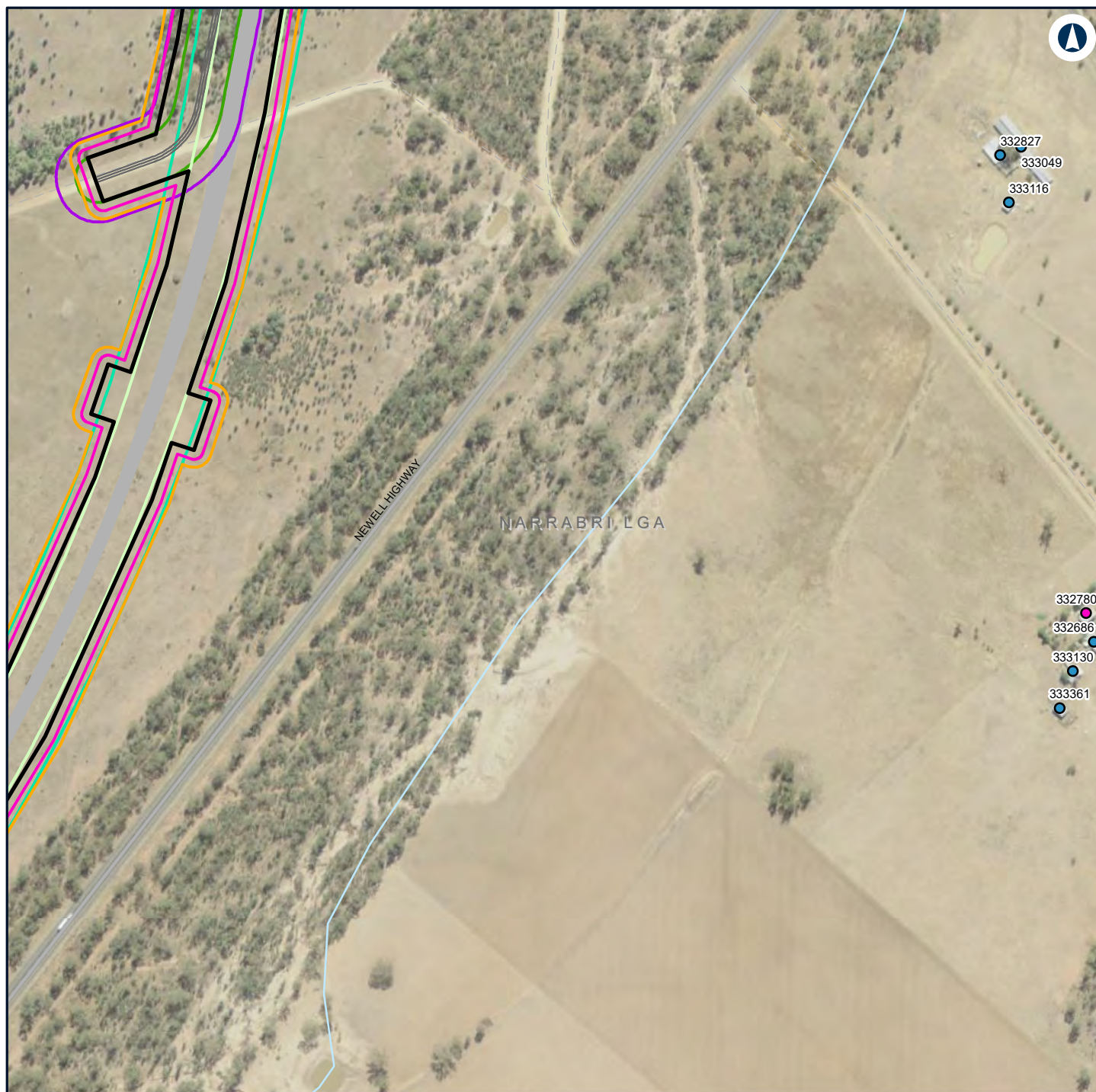
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent

- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 91 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

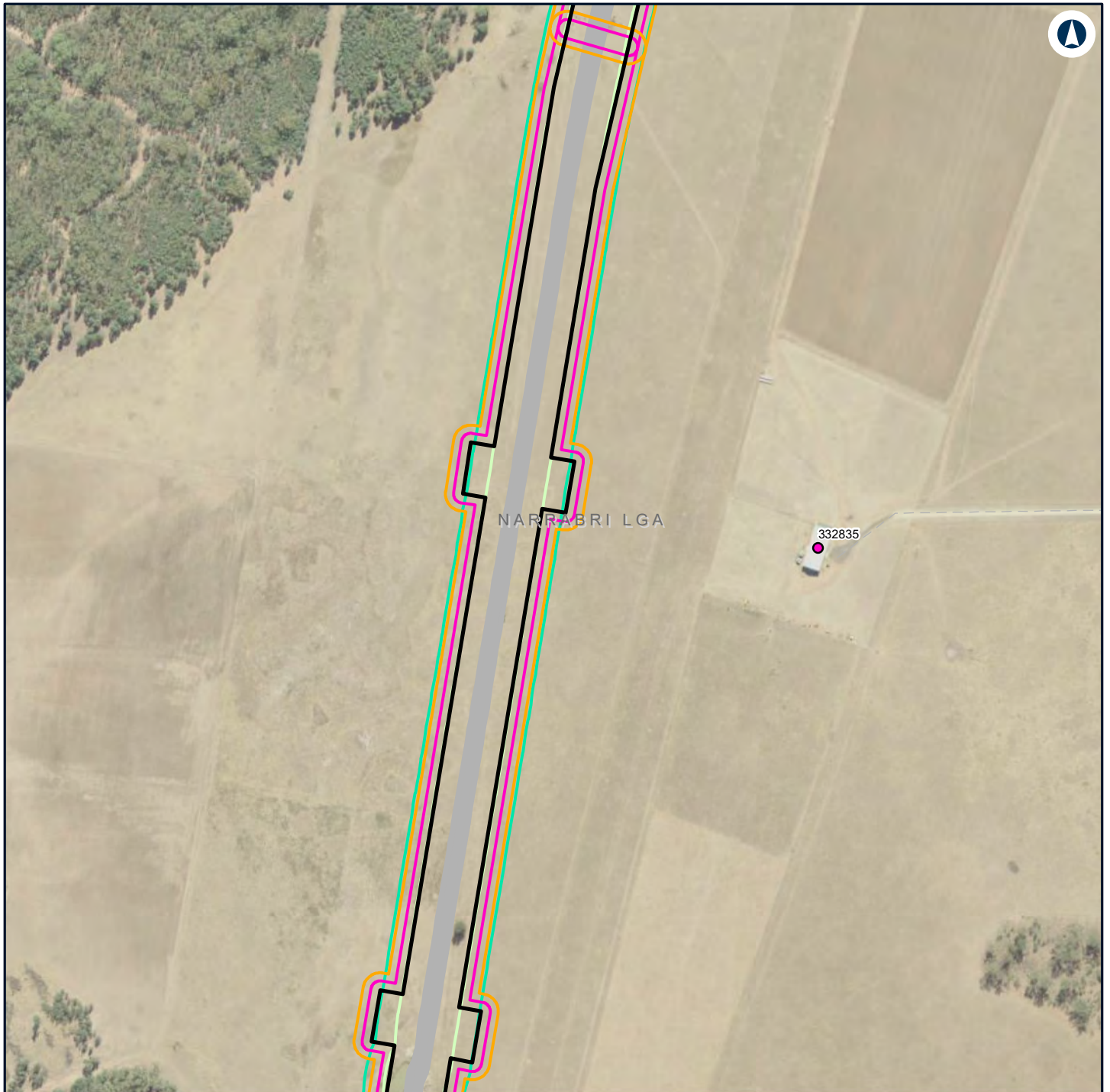
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

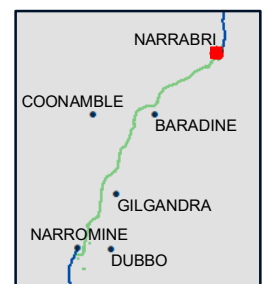
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 92 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

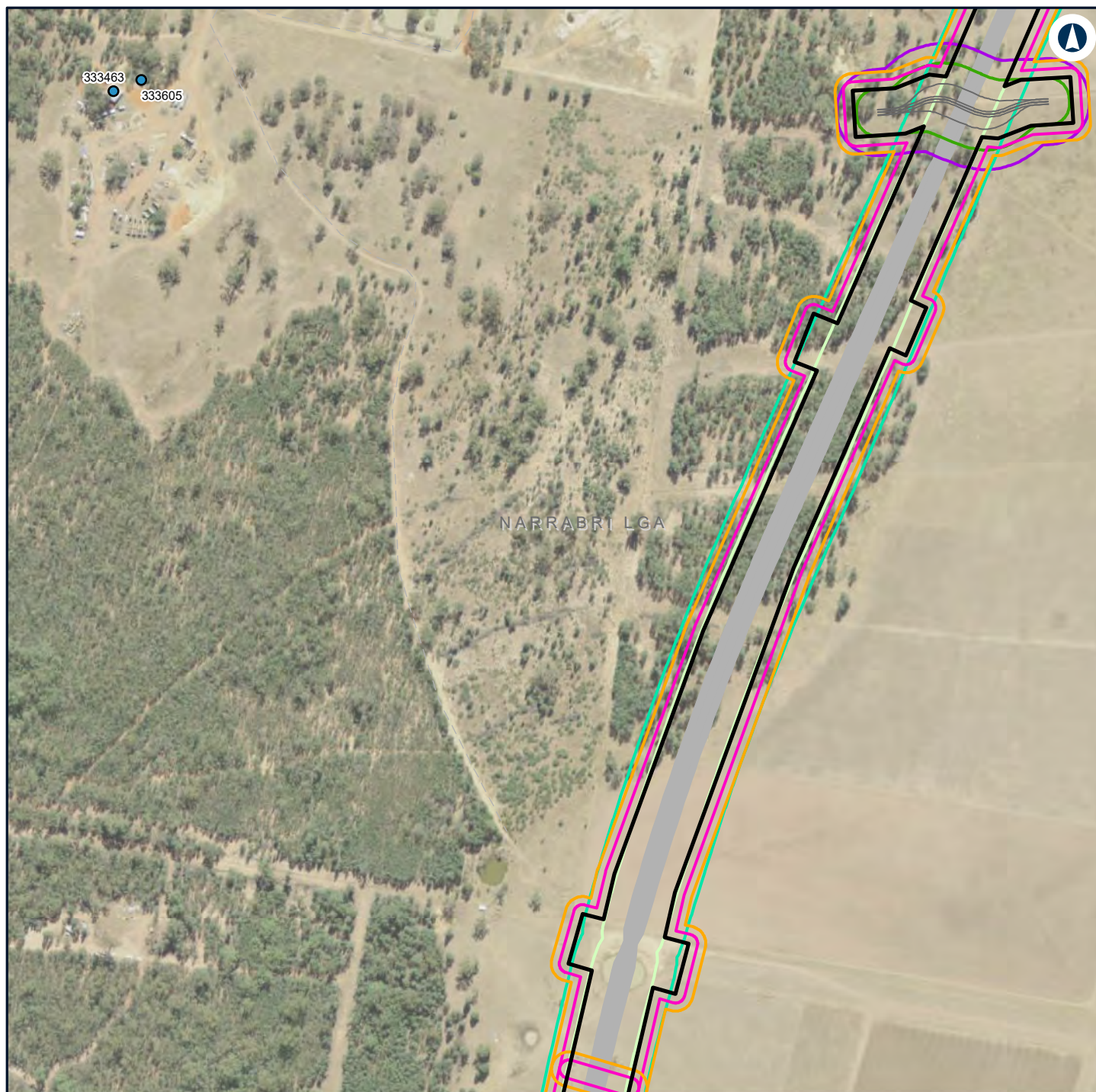
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

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





#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 93 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

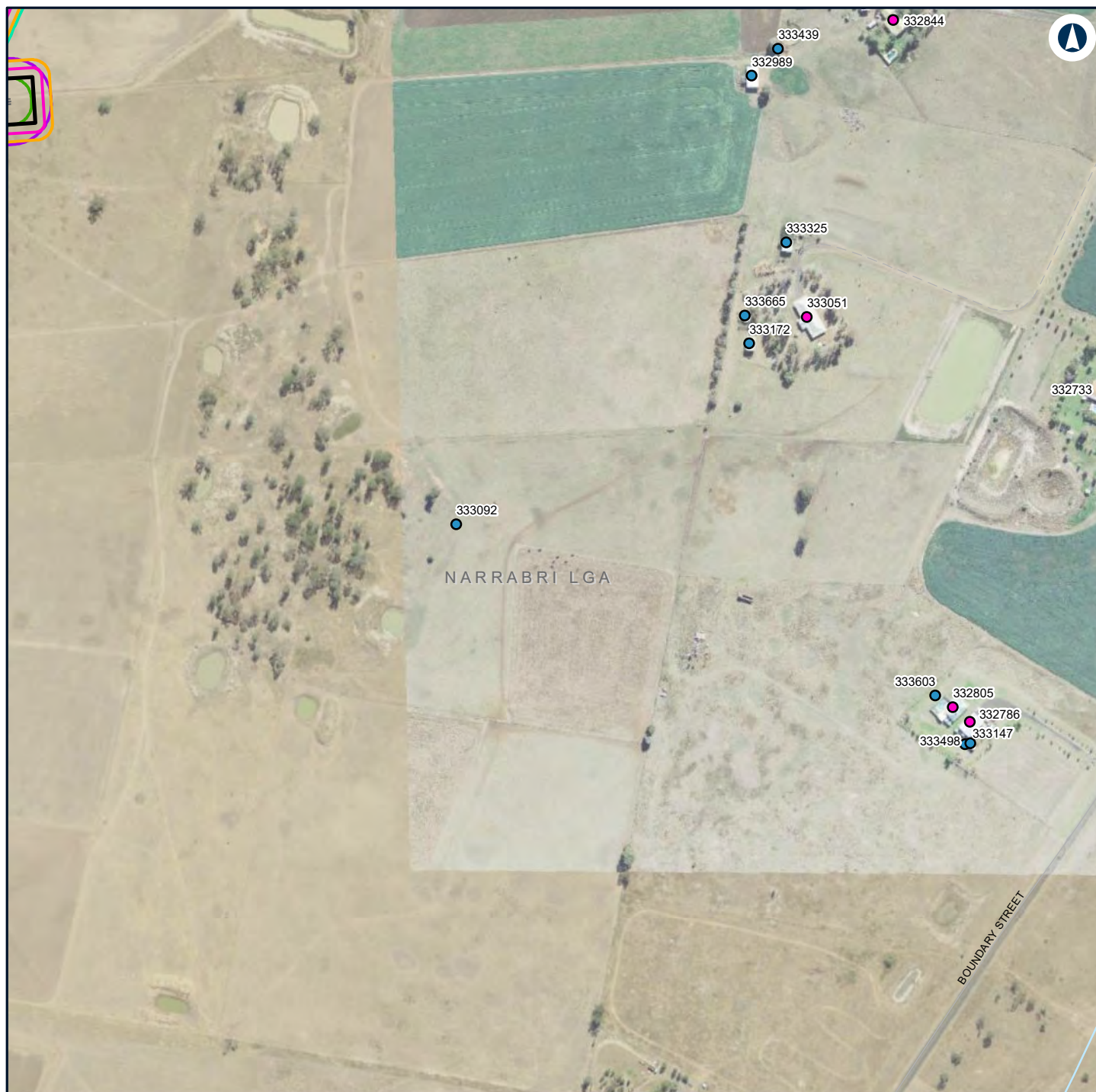
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- Road design
- Construction footprint
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



## NARROMINE TO NARRABRI

## Construction vibration buffers, Structural damage

Appendix N - MAP 94 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

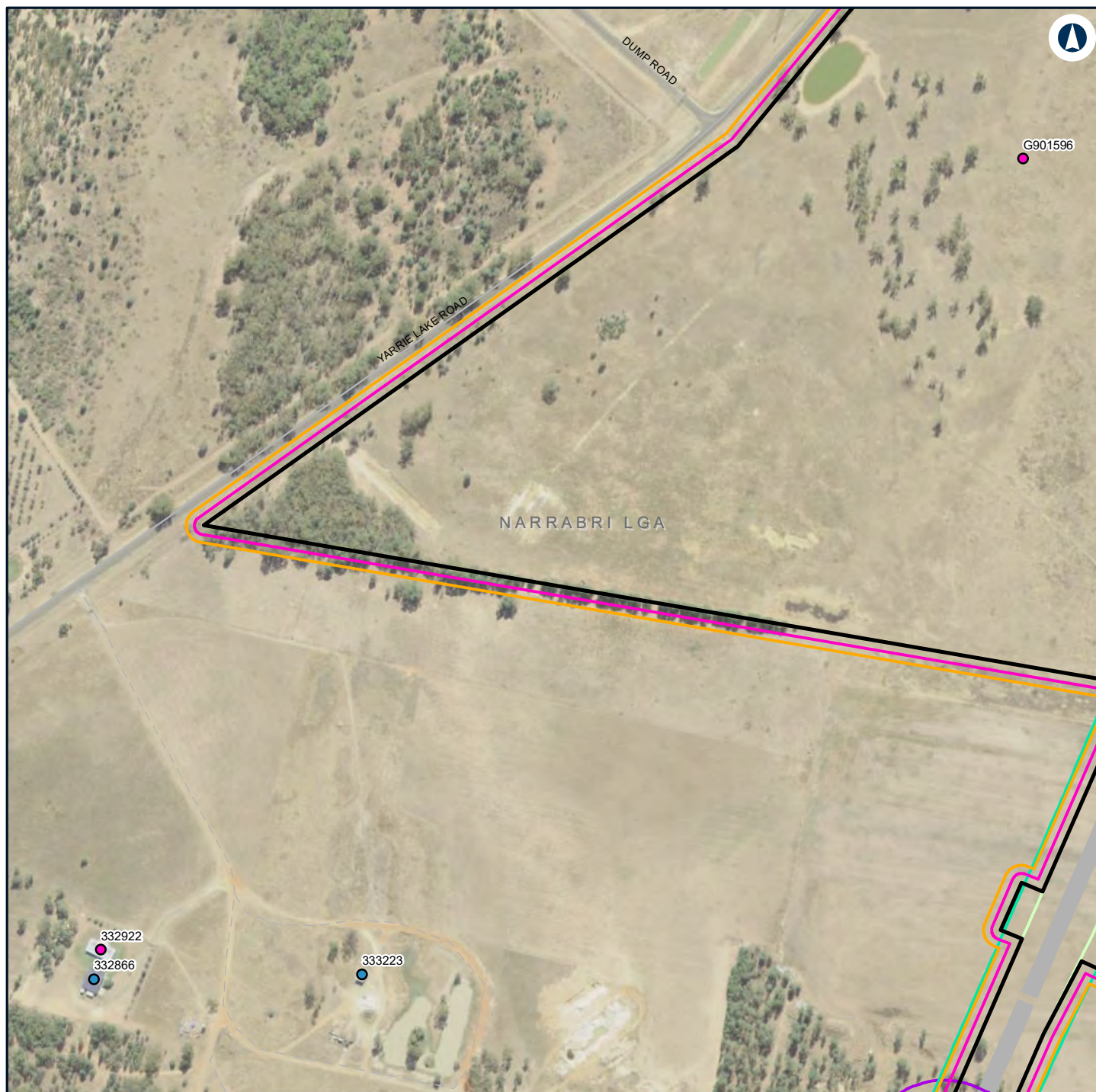
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 95 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

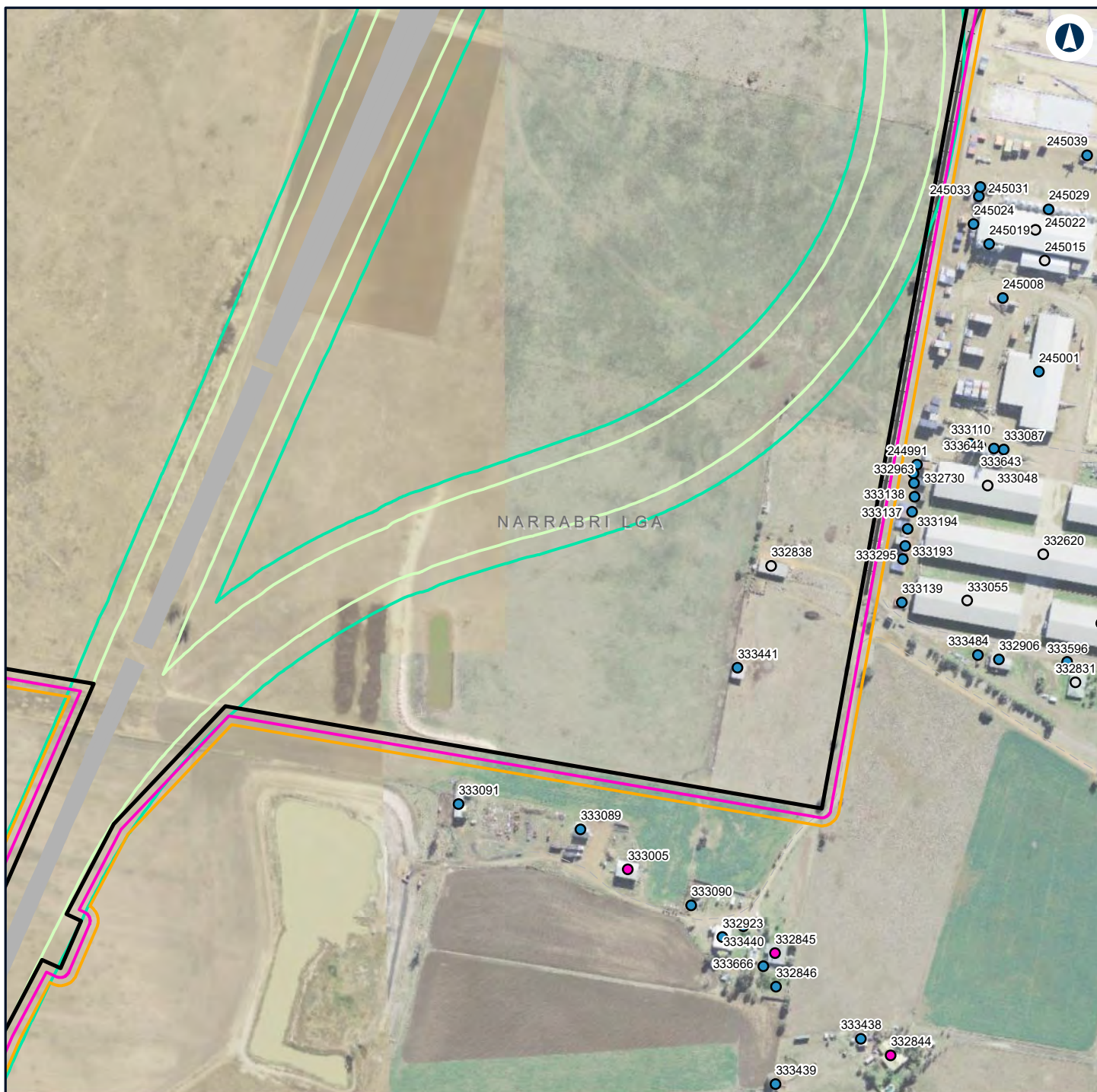
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Commercial/Industrial

- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 96 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

Scale: 1:5,000

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# LEGEND

- Construction footprint
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Commercial/Industrial
- Other



## NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 97 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

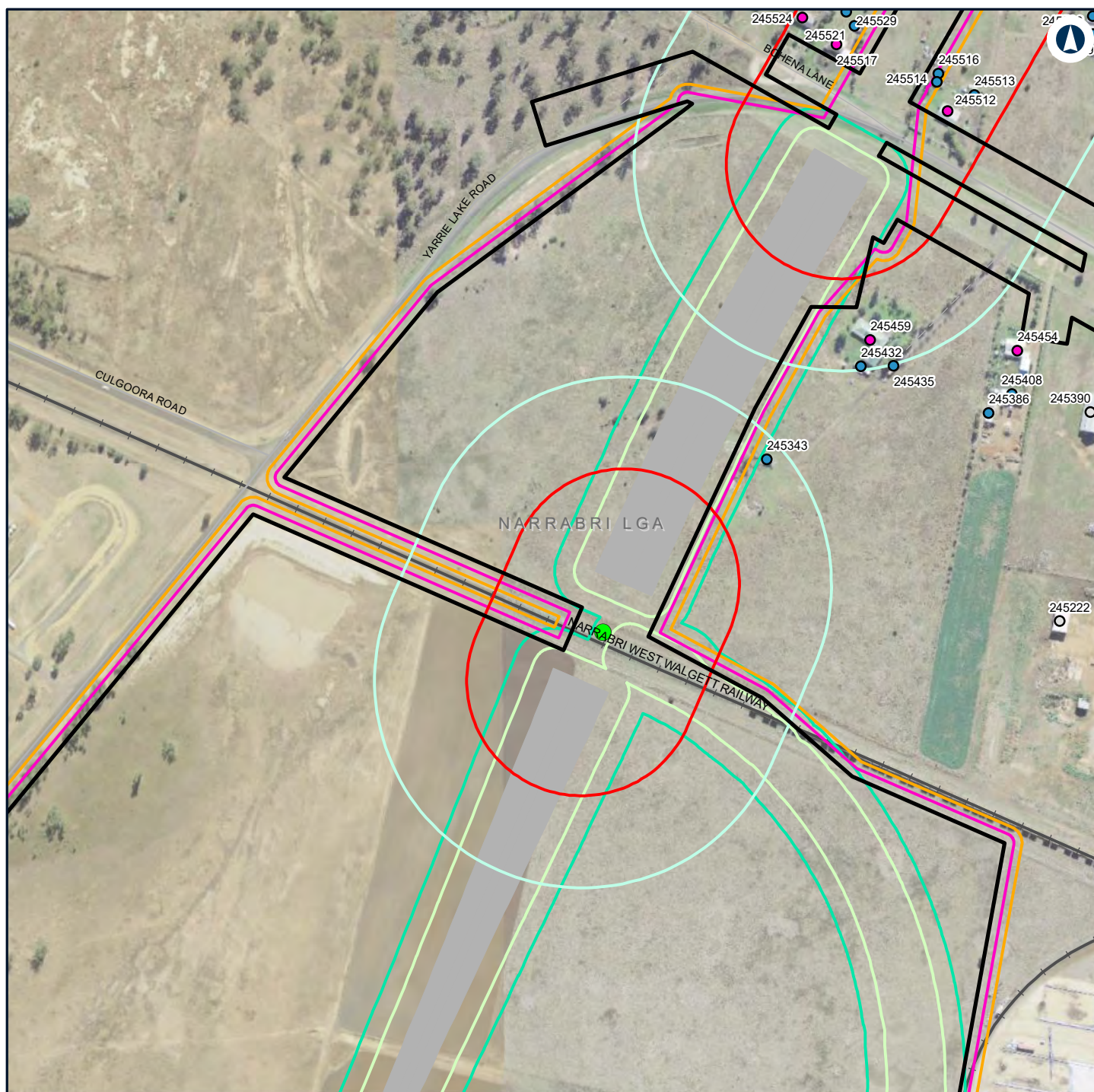
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Bridge centre
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Commercial/Industrial
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 98 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

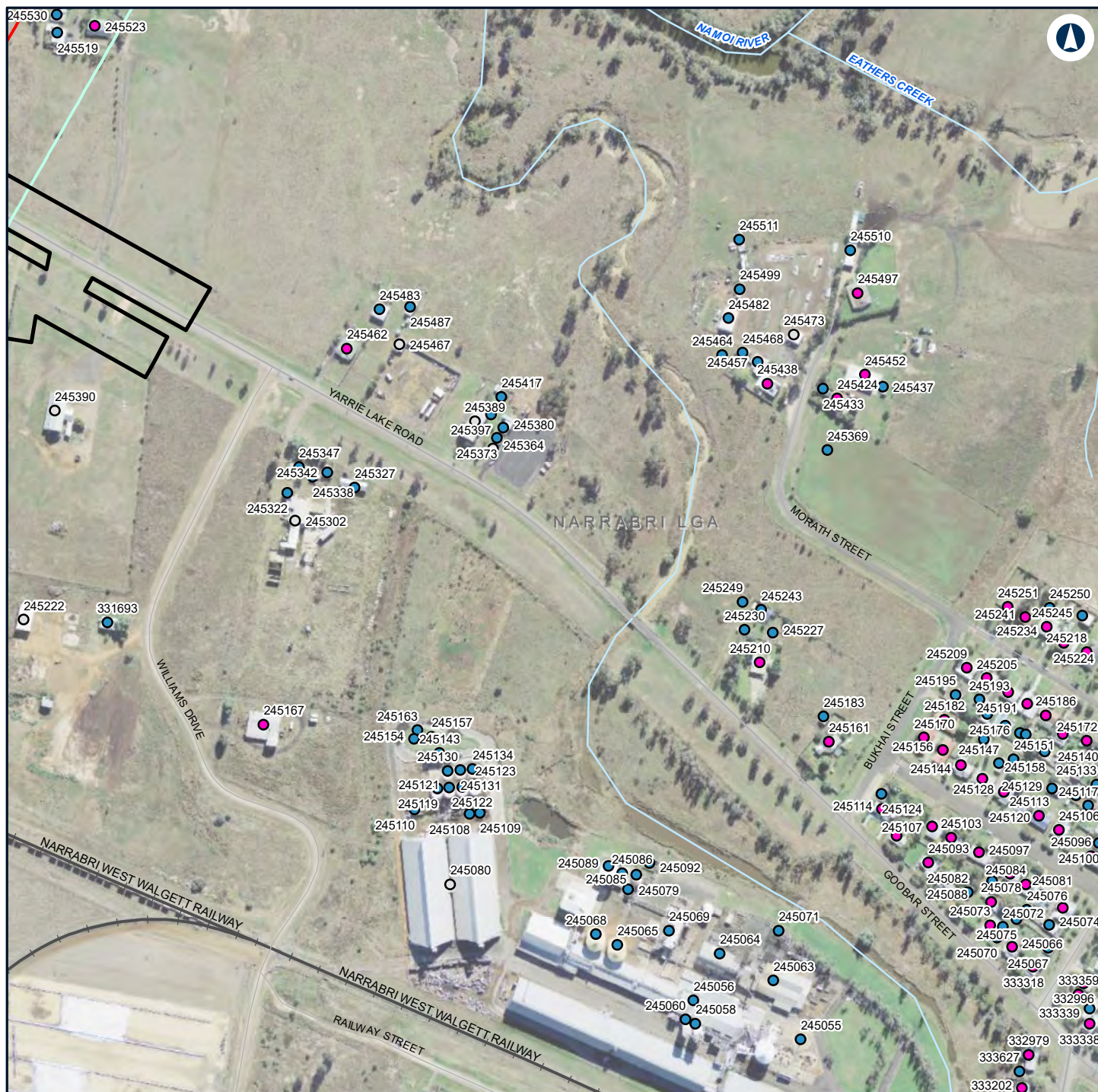
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Commercial/Industrial
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 99 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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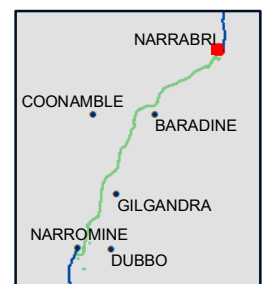
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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Commercial/Industrial
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 100 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

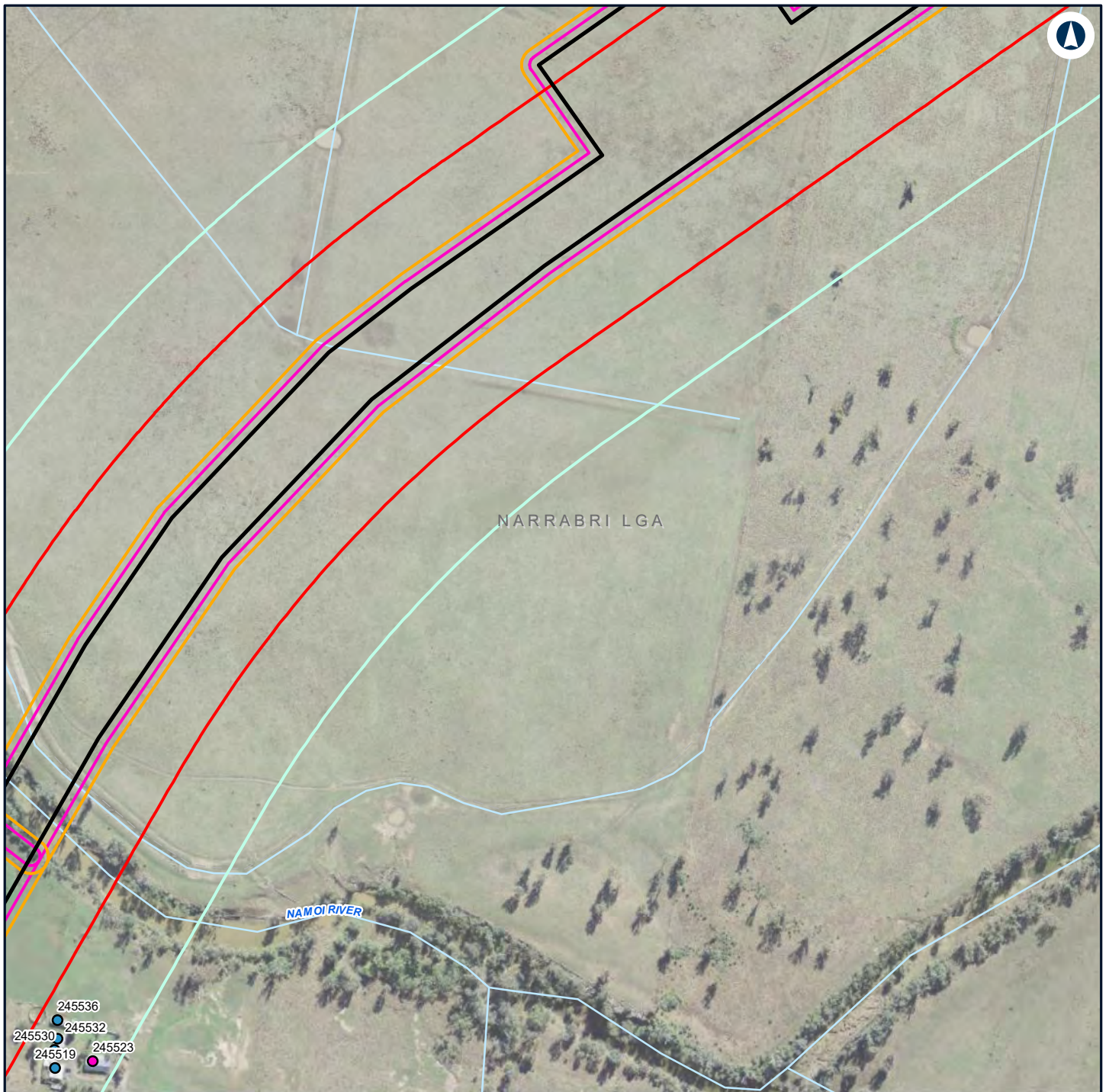
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

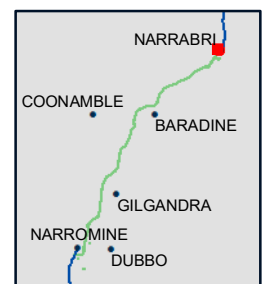
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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 101 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

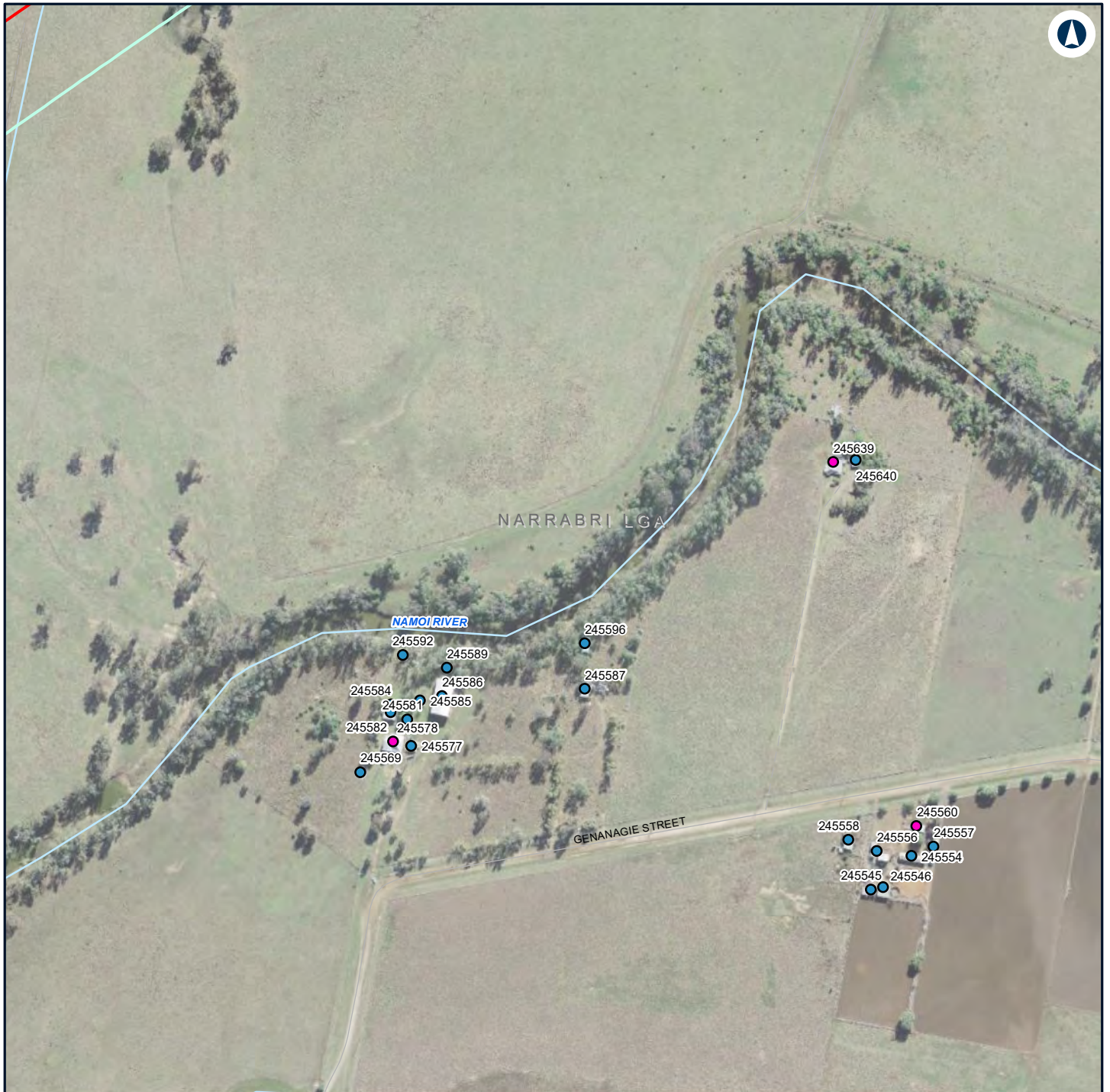
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

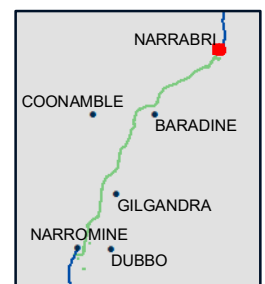
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#### LEGEND

- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 102 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

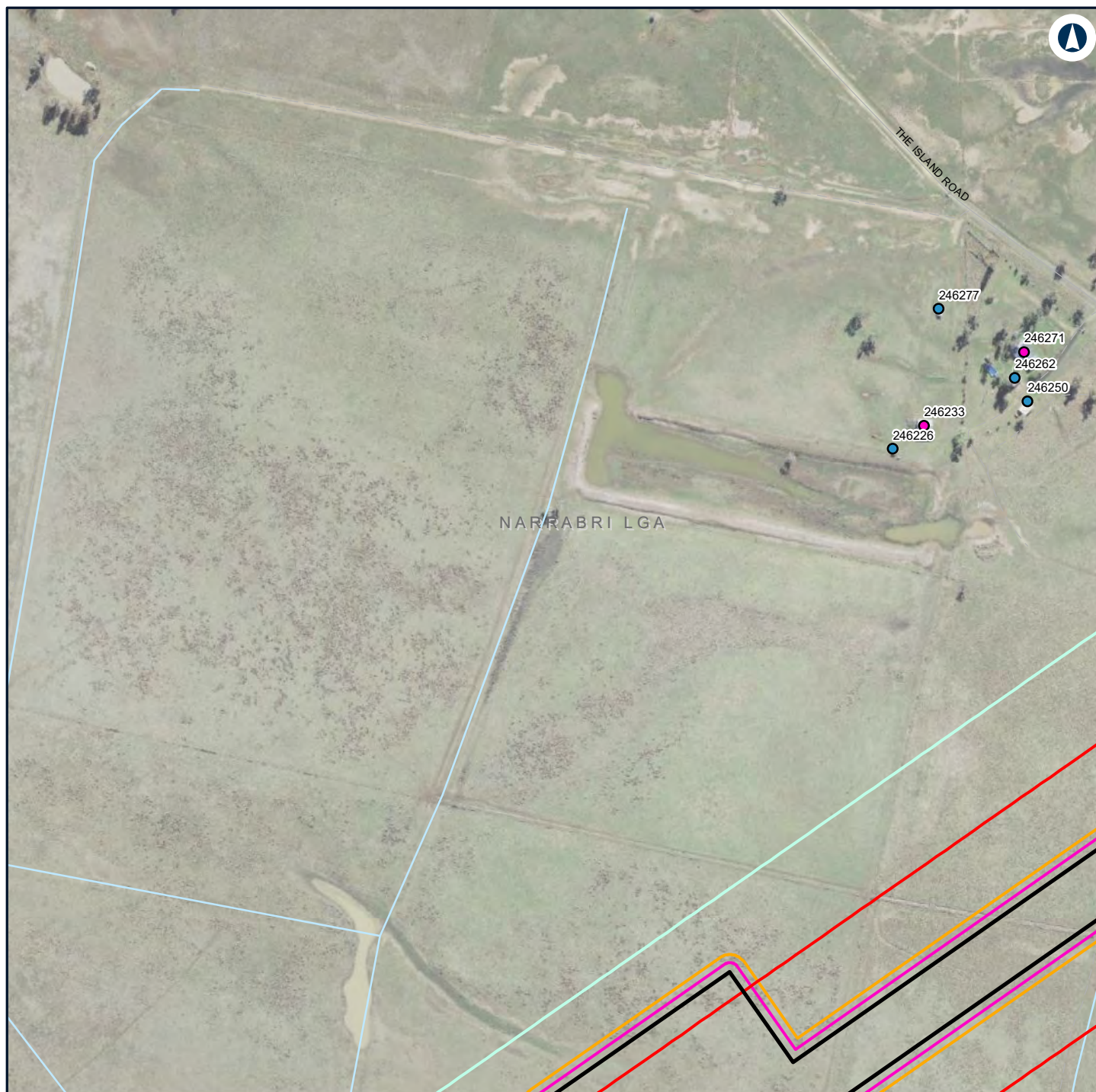
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 103 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

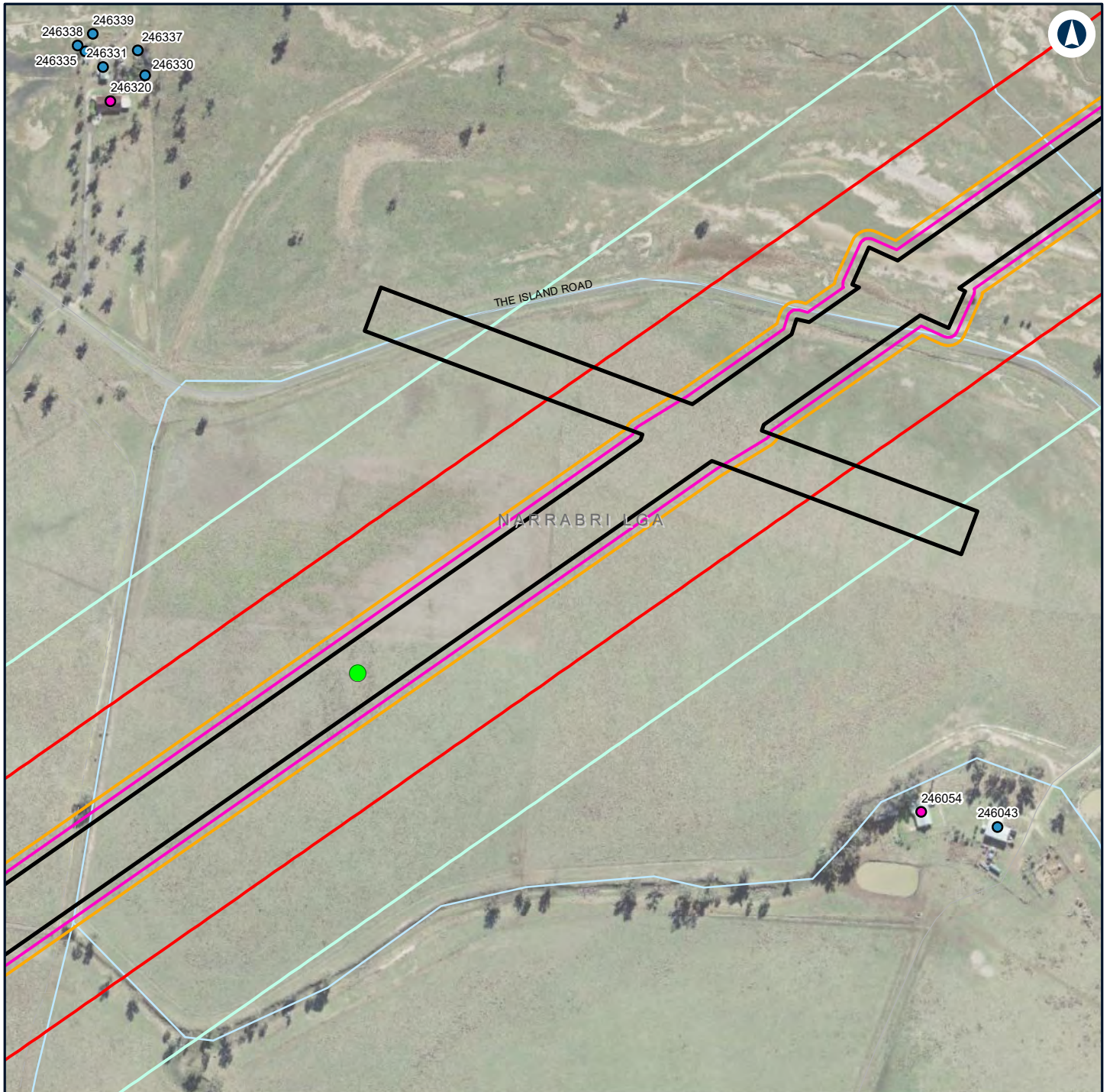
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

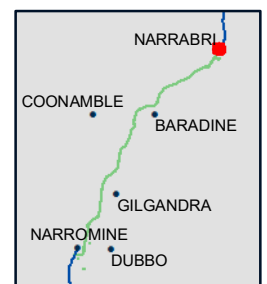
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#### LEGEND

- Bridge centre
- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 104 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

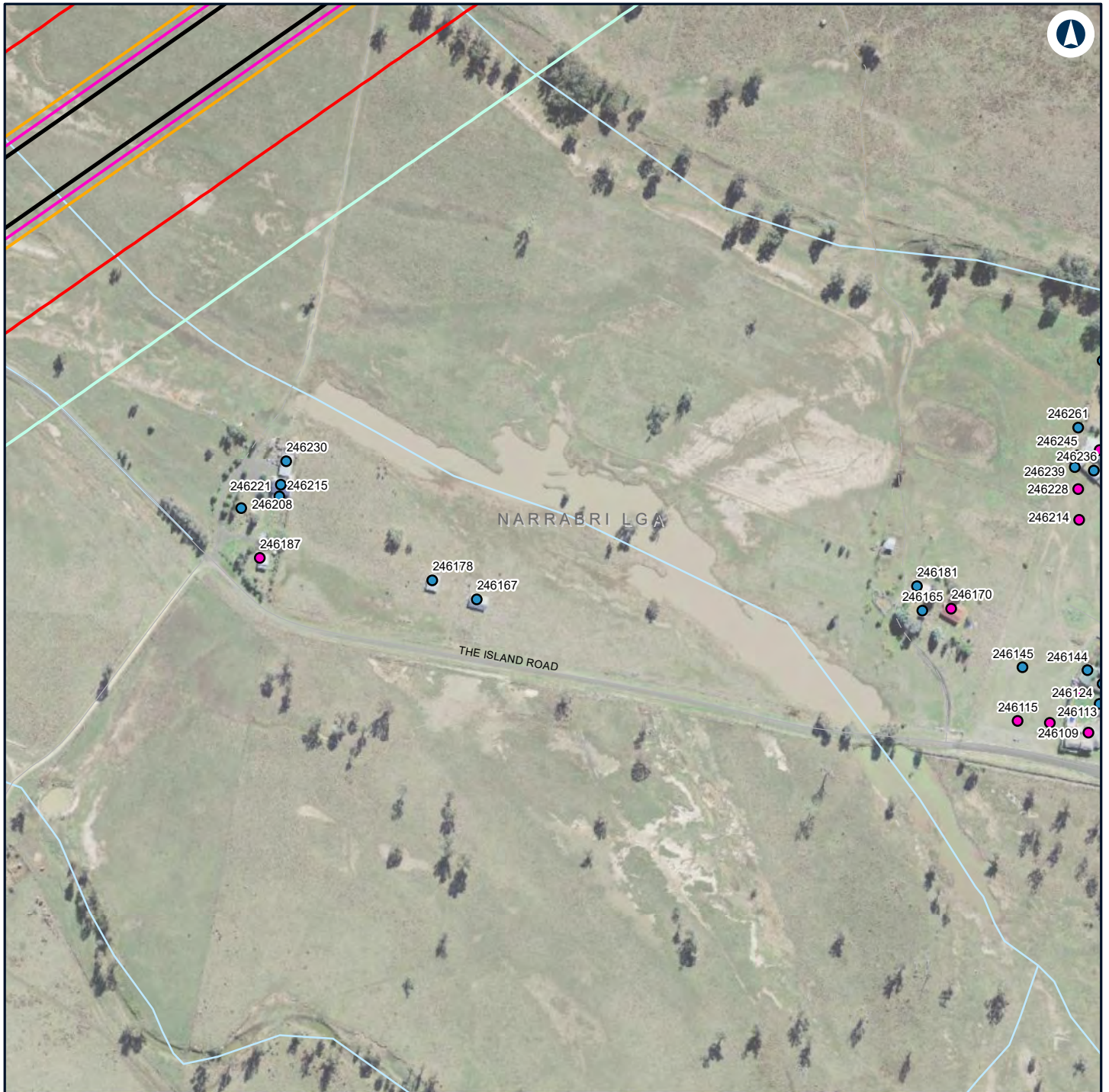
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

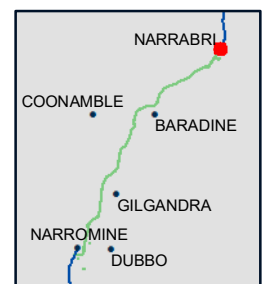
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#### LEGEND

- Construction footprint
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Other
- Residential



#### NARRABINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 105 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

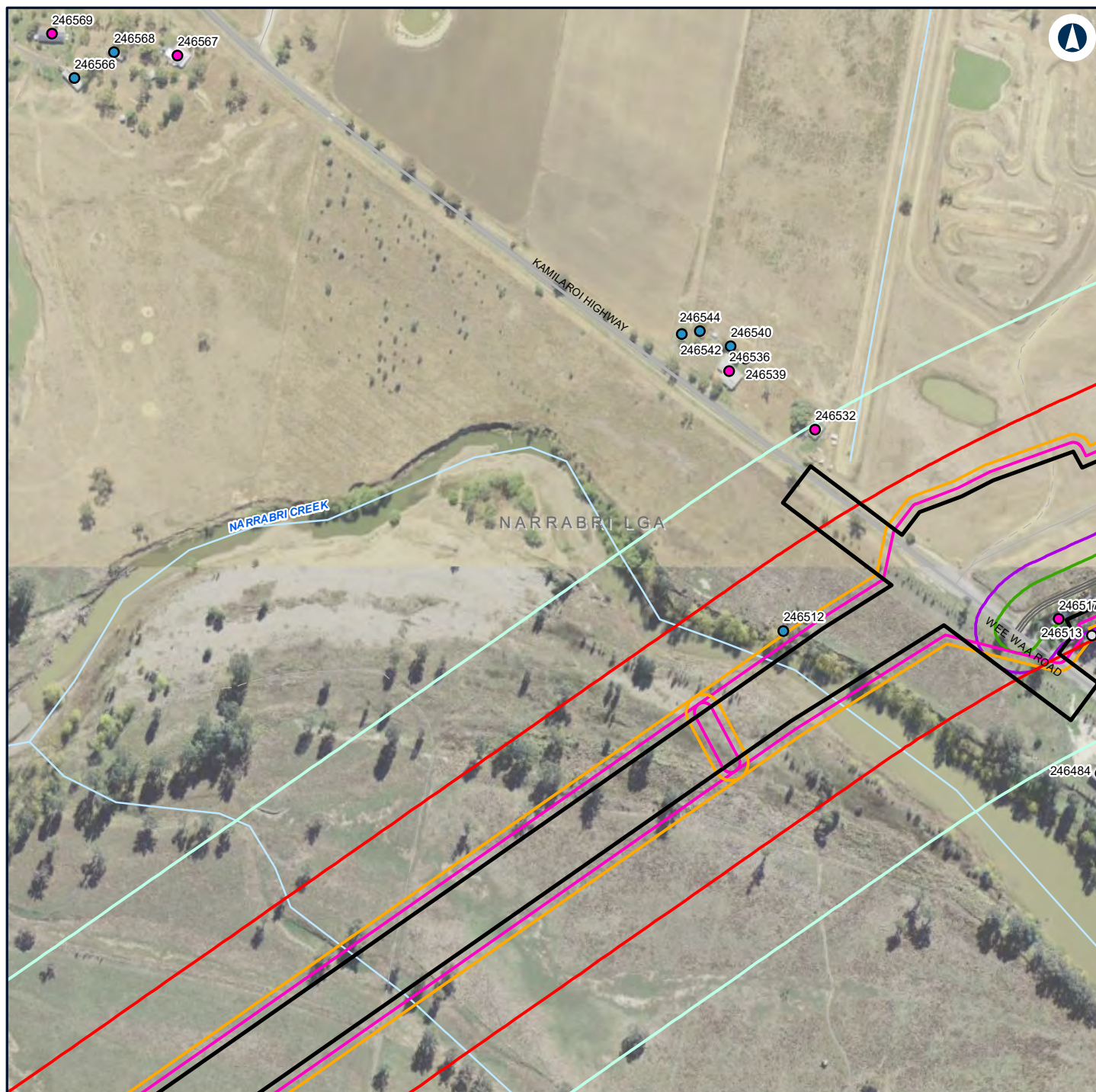
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- ▬ Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

- Commercial/Industrial
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 106 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

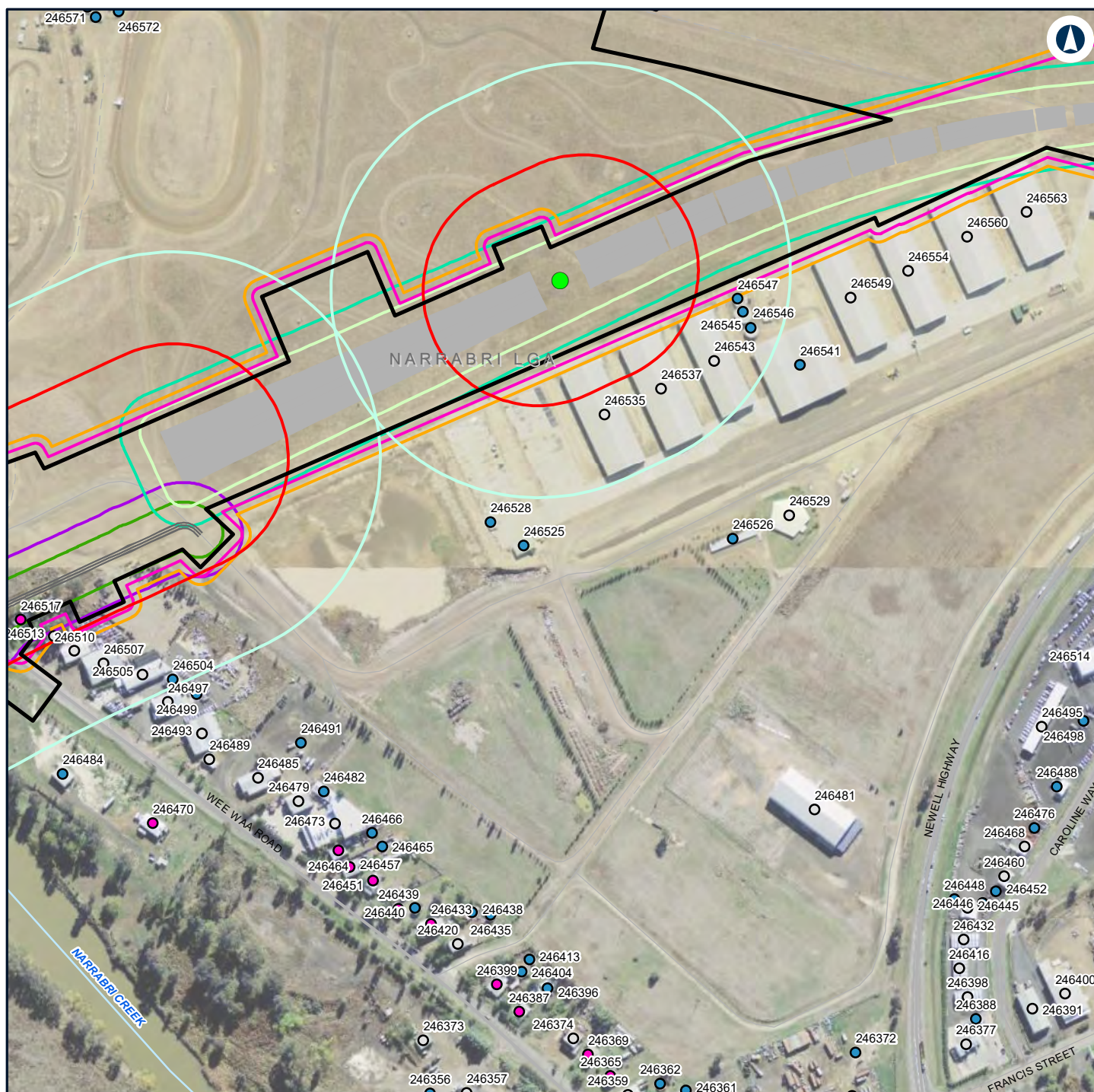
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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## LEGEND

- Bridge centre
- Road design
- Construction footprint
- Rail earthworks extent
- Bridges (Impact piling) – Heritage structures: 3mm/s, 180m
- Bridges (Impact piling) – Standard buildings: 5mm/s, 100m
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Active recreation
- Commercial/Industrial
- Other
- Residential



## NARROMINE TO NARRABRI

Construction vibration buffers, Structural damage

Appendix N - MAP 107 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

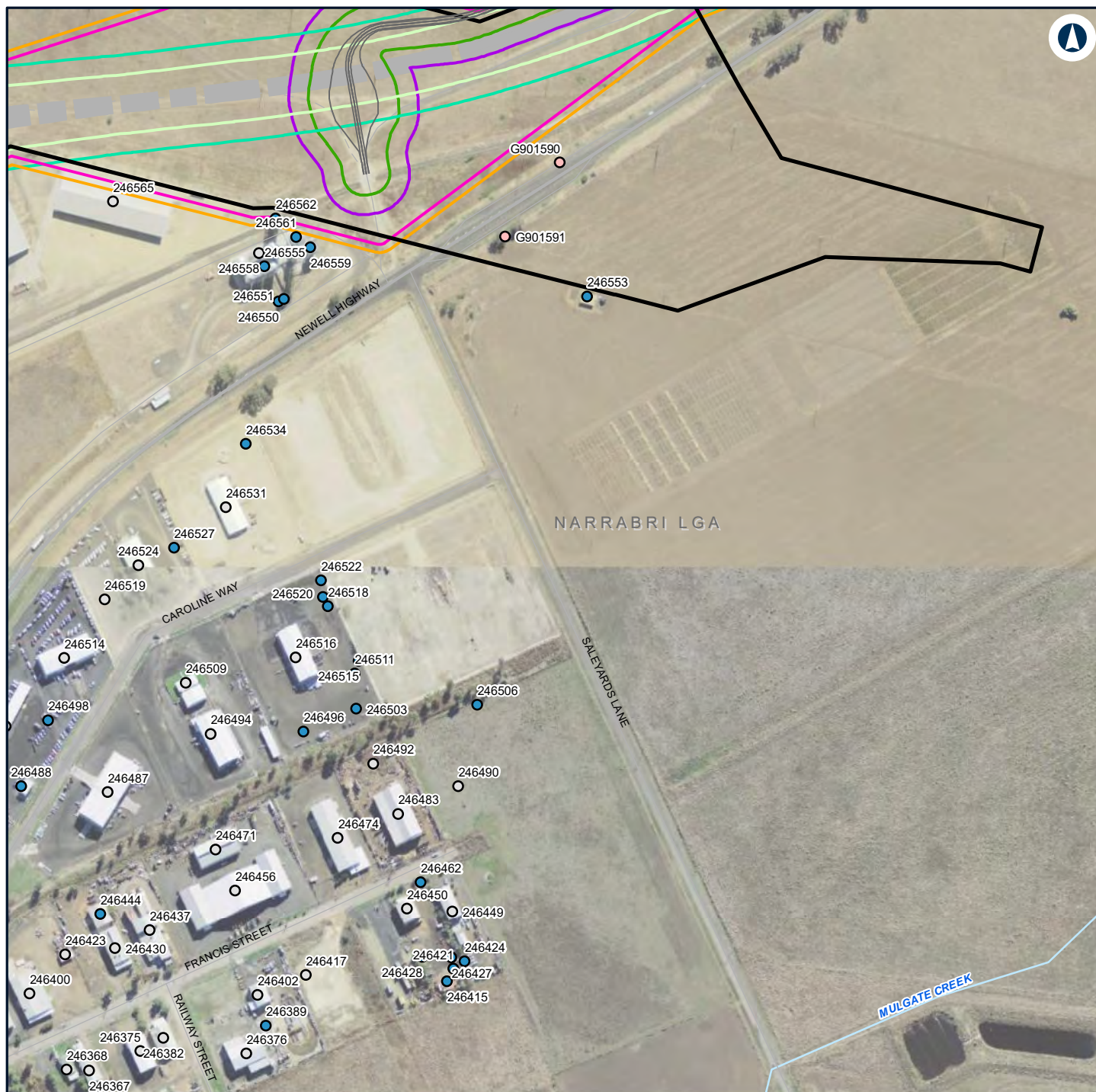
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Commercial/Industrial
- Other
- Passive recreation



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 108 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Paper: A4

Author: GHD

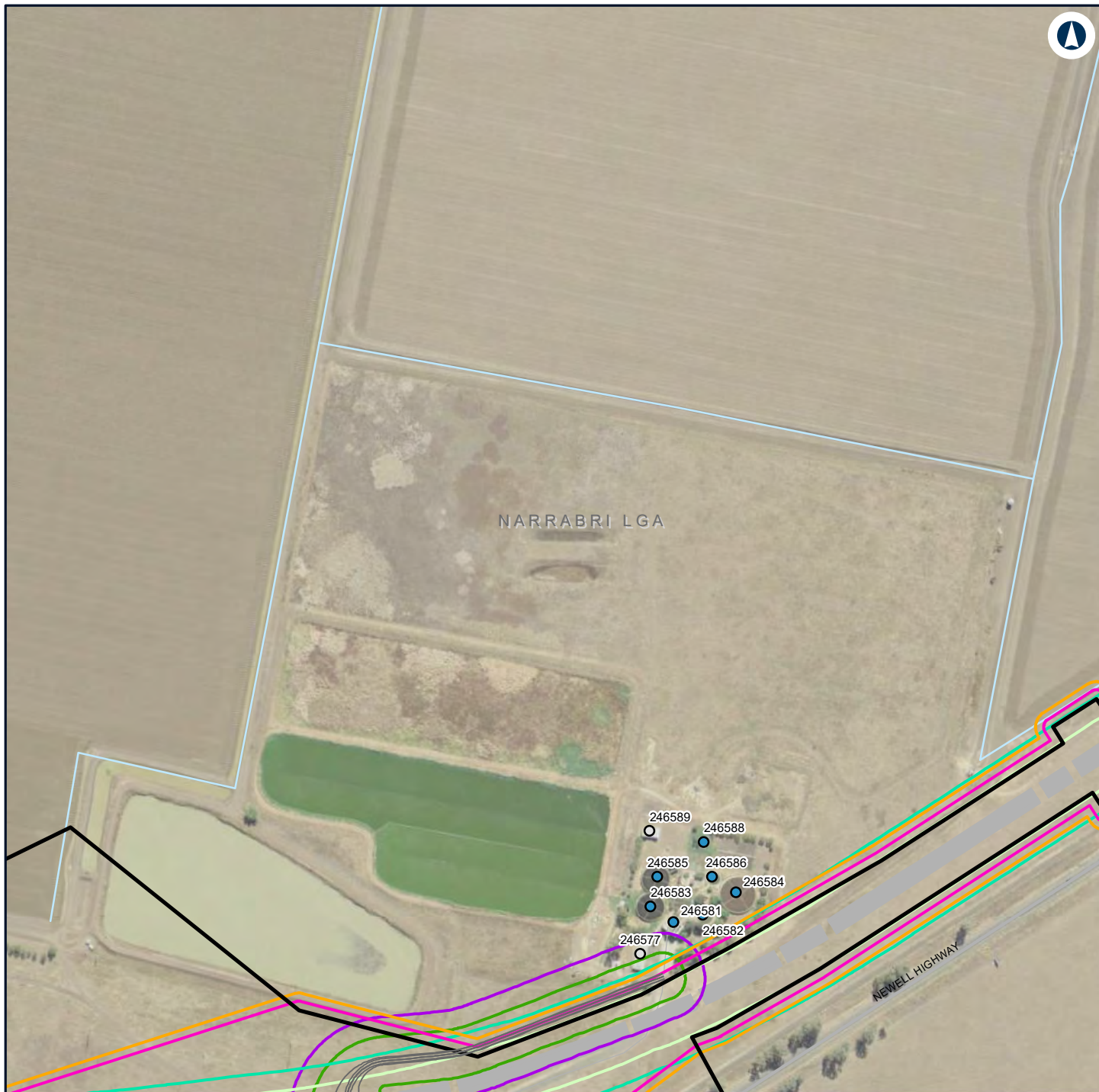
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

— Road design

▬ Construction footprint

▬ Rail earthworks extent

▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m

▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m

▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m

▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

○ Commercial/Industrial

● Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 109 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

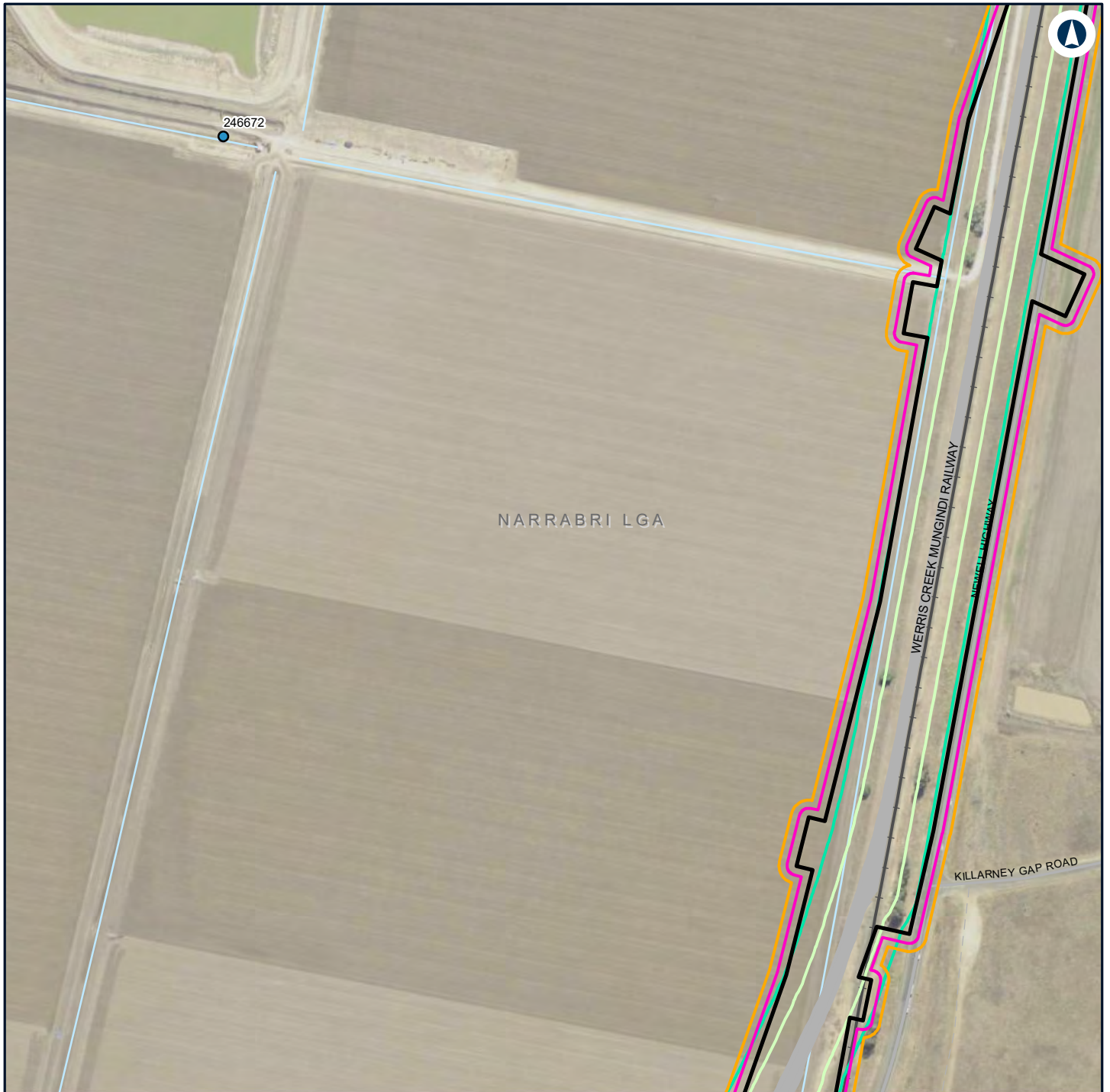
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

**INLAND RAIL** **ARTC**

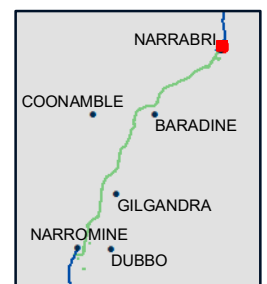
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 110 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

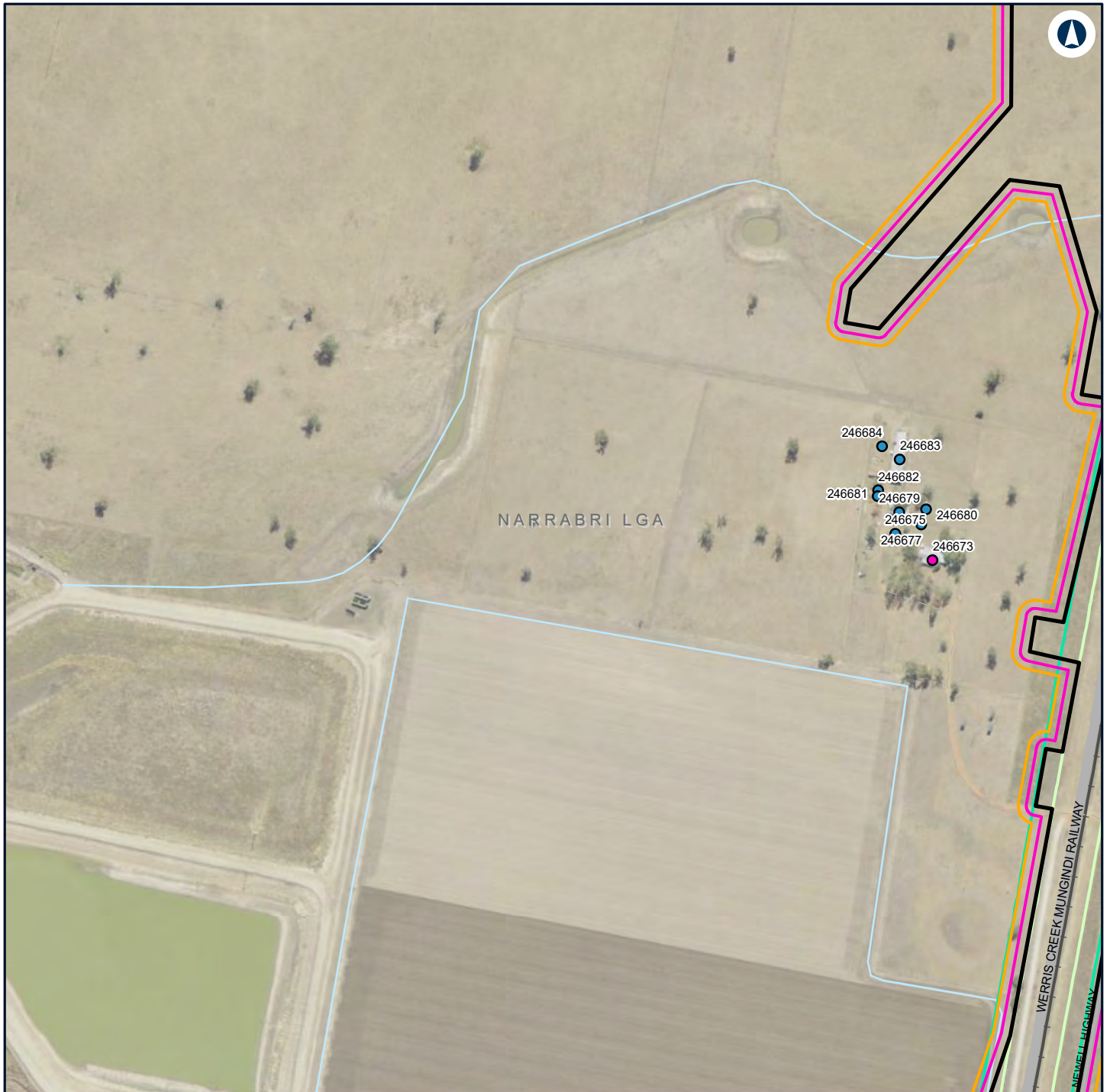
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Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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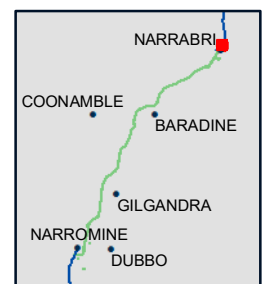
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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other
- Residential



#### NARRABINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 111 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Date: 16/07/2020

Paper: A4

Author: GHD

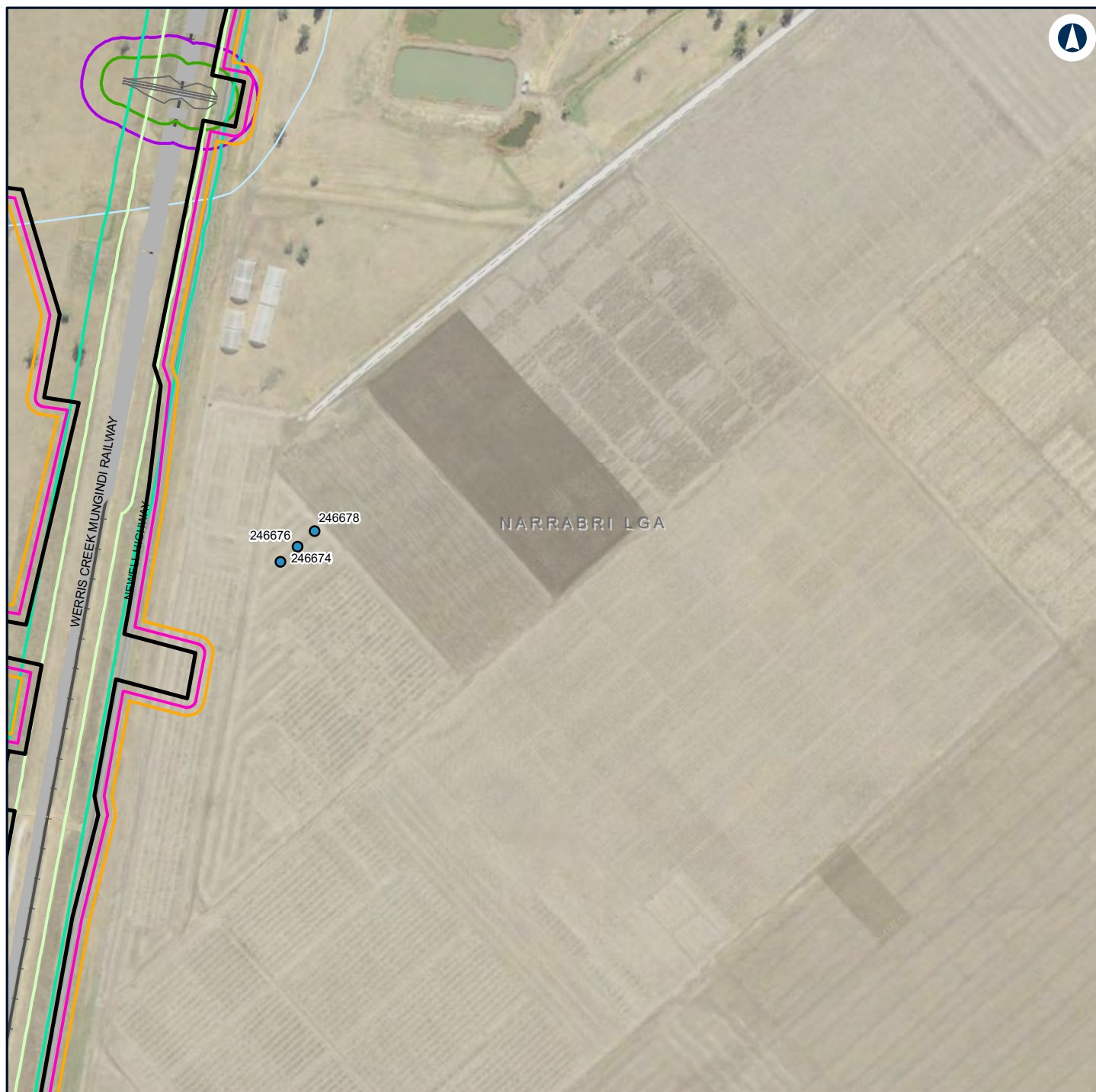
Scale: 1:5,000

Data Sources: Basemap layers: NSWSS; All other layers: JacobsGHD

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#### LEGEND

- Road design
- ▬ Construction footprint
- ▬ Rail earthworks extent
- ▬ Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- ▬ Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- ▬ Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- ▬ Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- ▬ Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Other



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 112 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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Author: GHD

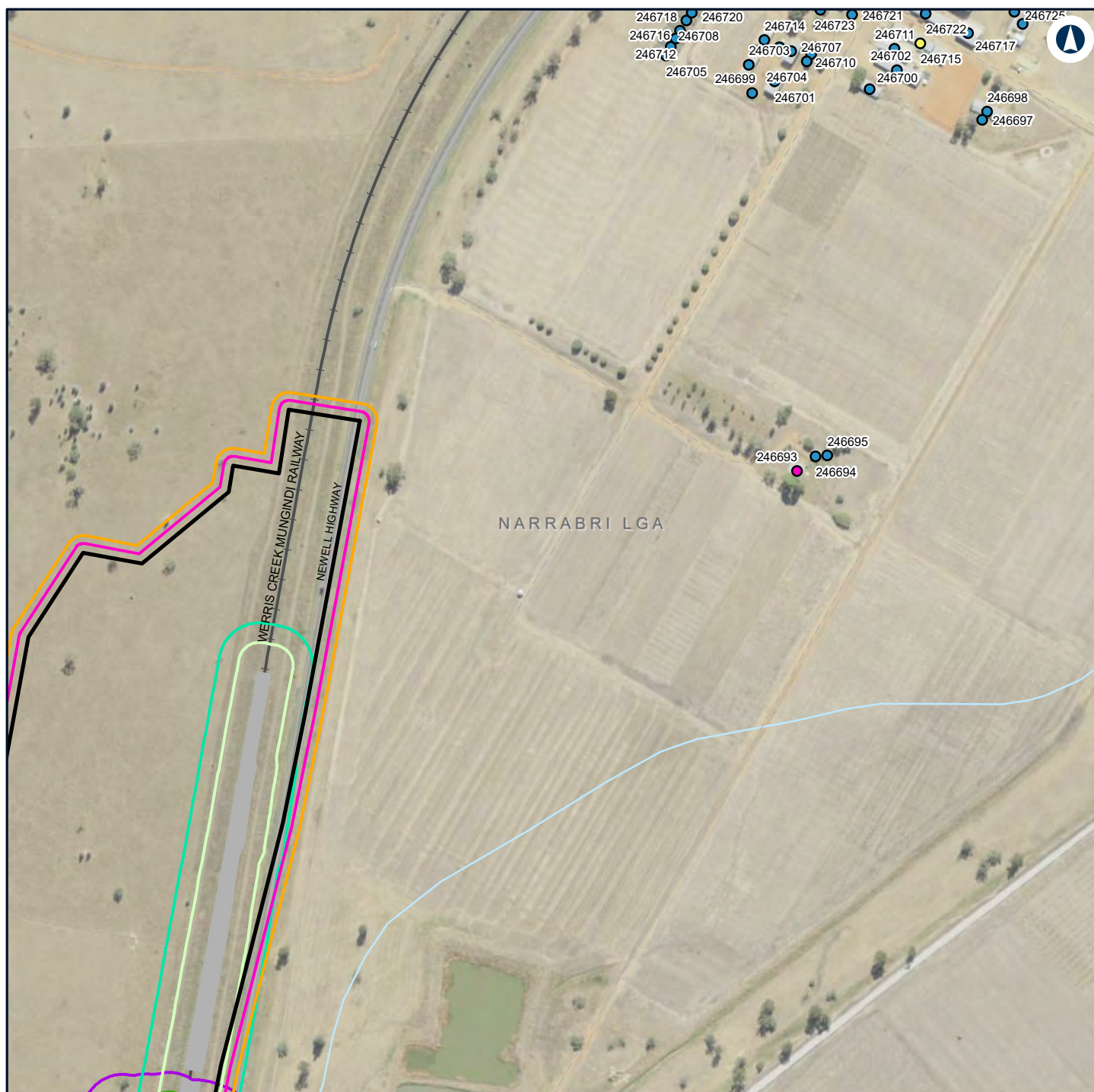
Scale: 1:5,000

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#### LEGEND

- Construction footprint
- Rail earthworks extent
- Clearing (Dozer) – Heritage structures: 3mm/s, 15m
- Clearing (Dozer) – Standard buildings: 5mm/s, 8m
- Rail earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Rail earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m
- Road earthworks (Vibratory roller) – Heritage structures: 3mm/s, 35m
- Road earthworks (Vibratory roller) – Standard buildings: 5mm/s, 18m

- Community
- Other
- Residential



#### NARROMINE TO NARRABRI

#### Construction vibration buffers, Structural damage

Appendix N - MAP 113 OF 113

0 0.1 0.2  
Km

Coordinate System: GDA 1994 MGA Zone 55

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JacobsGHD

Level 3, 24 Honeysuckle Drive, Newcastle NSW 2300

PO Box 5403, Hunter Region Mail Centre NSW 2310

T: +61 2 4979 9999 F: +61 2 4979 9988 E: [ntlmail@ghd.com](mailto:ntlmail@ghd.com)

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