Australian Rail Track Corporation

Maitland to Minimbah Third Track Project

Submissions Report including Preferred Project Report

September 2010

H8R-REP-S2G-ENV-0019-0

Part C Preferred Project

BELFORD

Jump Up Creek

BELL RD

LINDSAY ST

BULL ST

BUEL ST

BELL ST

JUMP UP CREEK

MITCHELL ST

HERMITAGE RD

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Impact Radius for Bridgeworks (Including Culverts)
- Impact Radius for Drainage and Capping
- Impact Radius for Cut and Fill
- Impact Radius for Topsoiling and Landscaping
- Impact Radius for Crushing Plant
- Impact Radius for Site Compounds
- Site Compounds
- Impact Radius for Clearing and Stripping
- Watercourse Area
- Proposed Culvert Extensions
- Proposed Third Track
- Proposed Crushing Plant
- Watercourse
- Proposed New Underbridge

Maitland To Minimbah Third Track Submissions Report

Job Number 22-14471
Revision A
Date August 2010

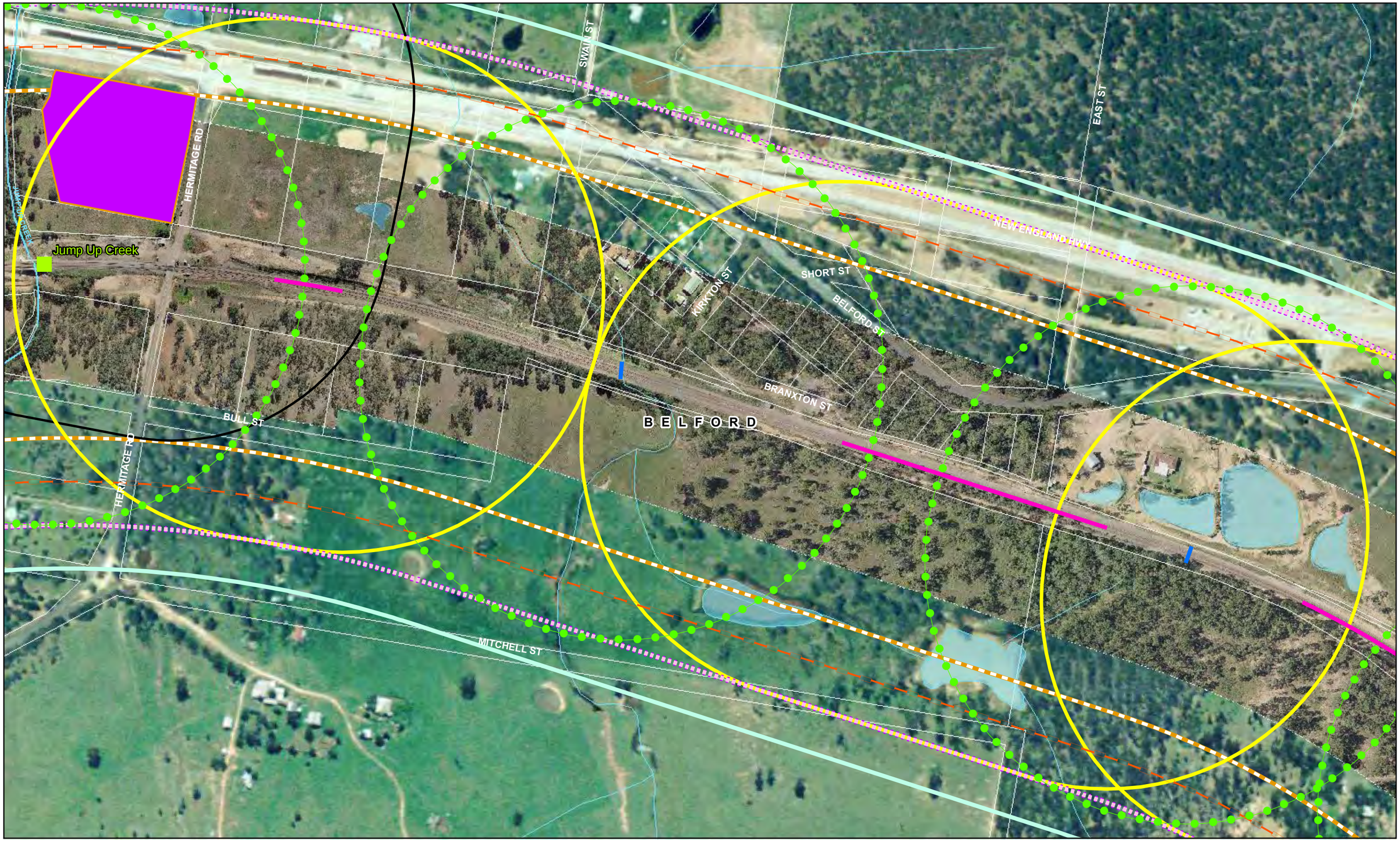
Revised Construction Impact Zones

Figure 6.6a

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au



1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track Submissions Report

Job Number	22-14471
Revision	A
Date	August 2010

Revised Construction Impact Zones

Figure 6.6b

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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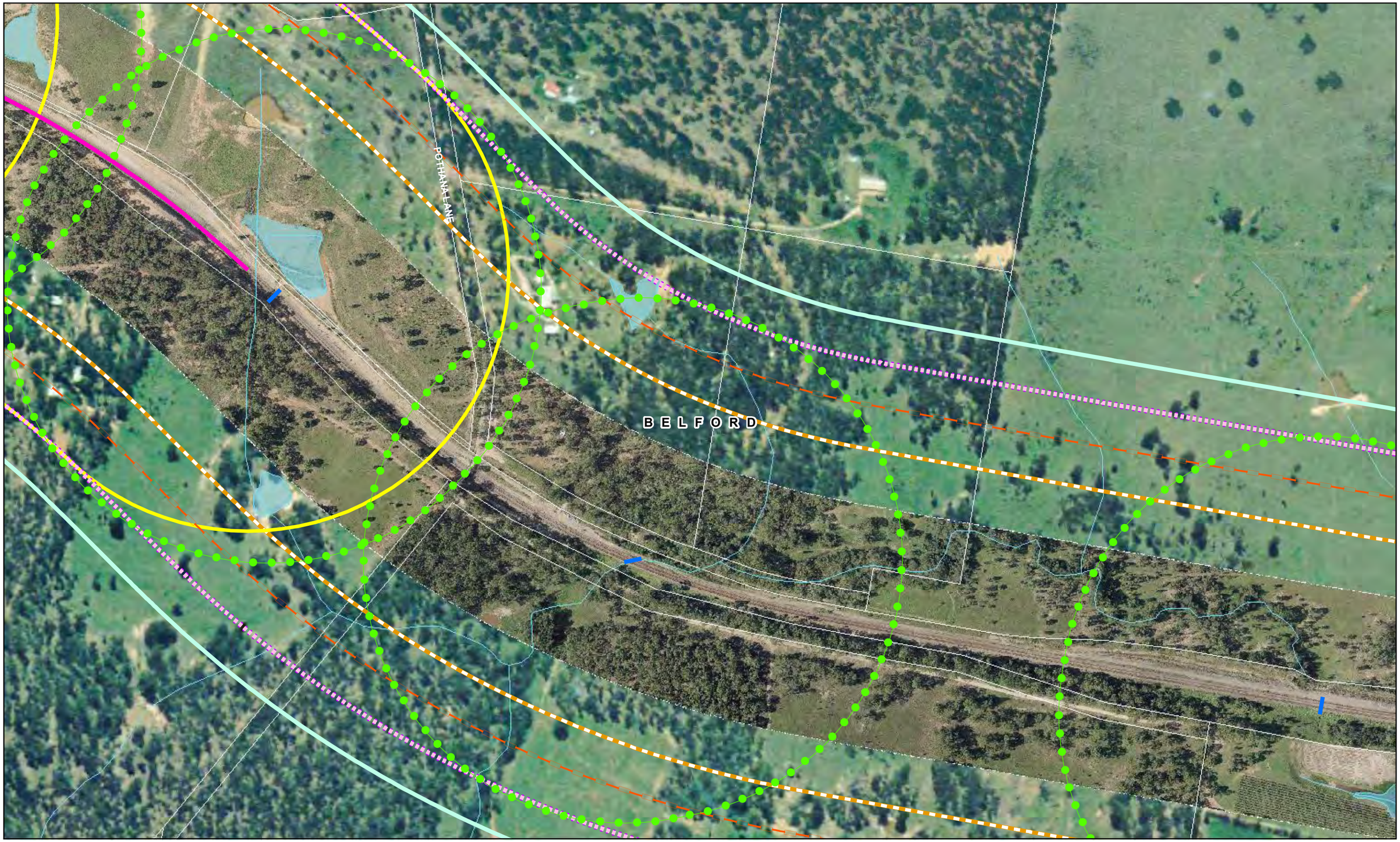

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track
Submissions Report

Job Number	22-14471
Revision	A
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Revised Construction Impact Zones

Figure 6.6c

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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BELFORD

BRANXTON

SWEETWATER CREEK

RIXS ROAD

BLACK CREEK

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6d

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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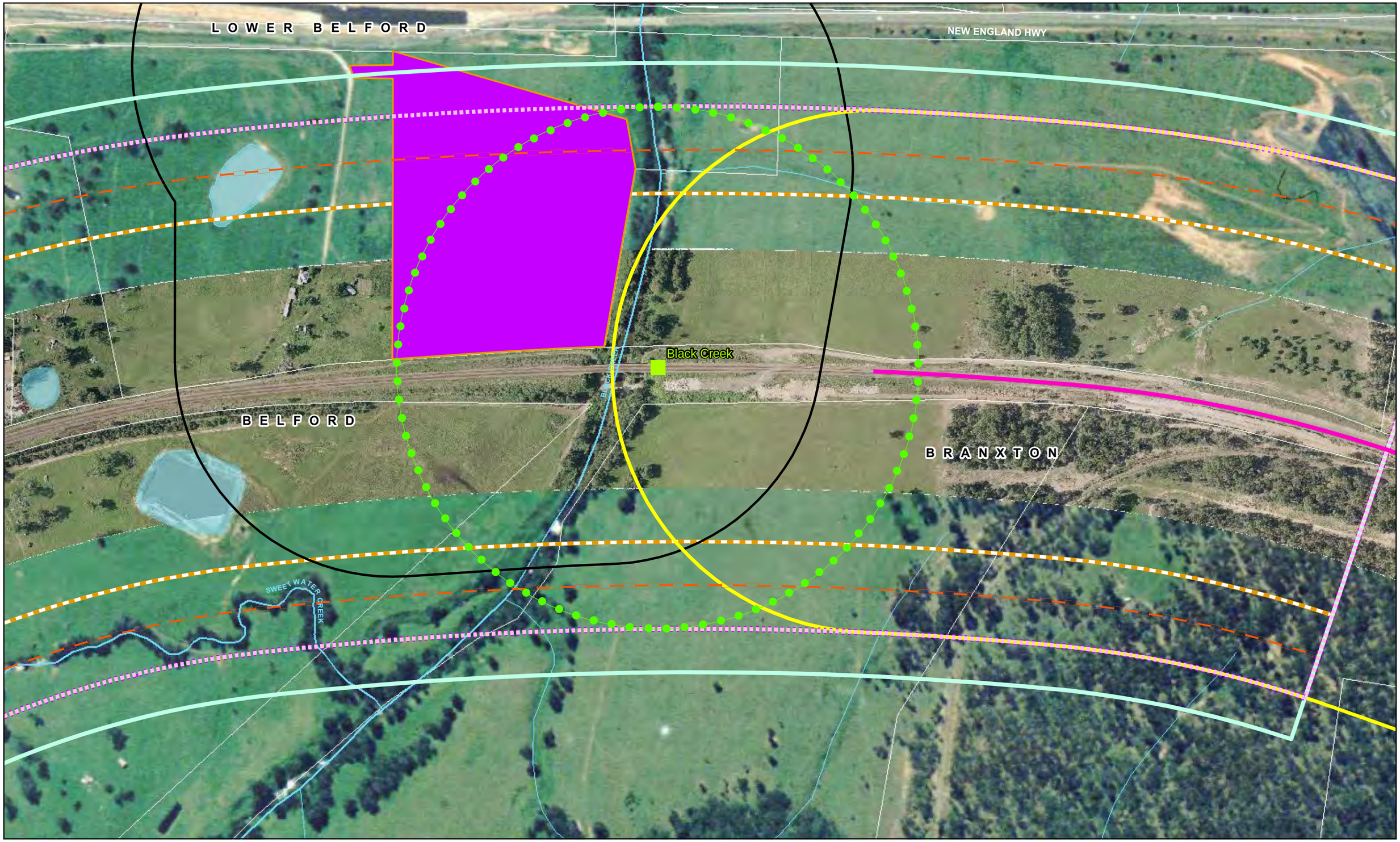

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6e

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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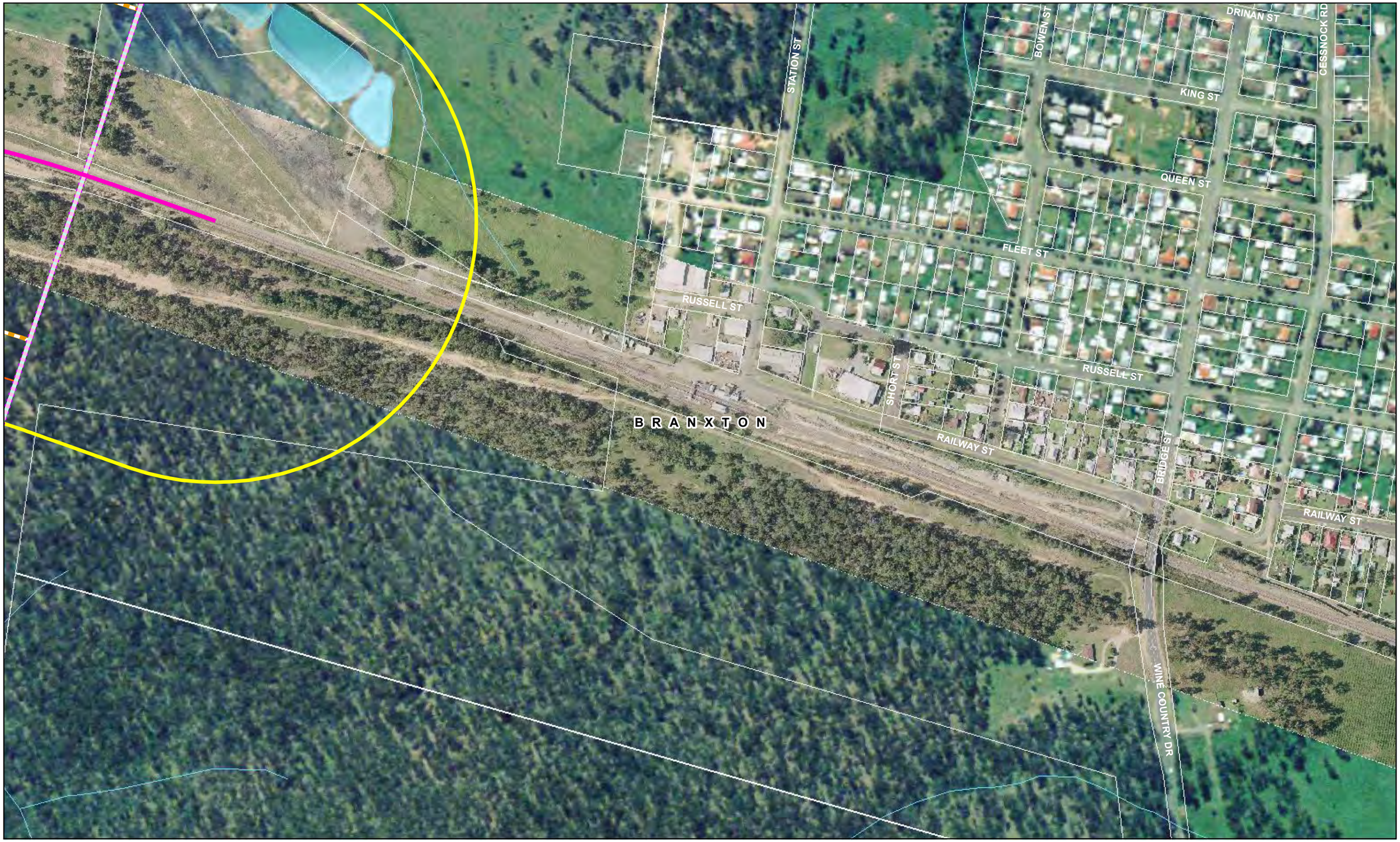
Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton



1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track
Submissions Report

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Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6f

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1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track
Submissions Report

Revised Construction Impact Zones

Job Number	22-14471
Revision	A
Date	August 2010

Figure 6.6g

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
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Revised Construction Impact Zones

Figure 6.6h

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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GRETA

WATER ST
HIGH ST
ANVIL ST
ANVIL CREEK
SALE ST
WYNDHAM ST
PRICE ST
HUNTER ST
CLIFT ST
SAWYER'S CREEK
NELSON ST

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Maitland To Minimbah Third Track Submissions Report

Revised Construction Impact Zones

Job Number	22-14471
Revision	A
Date	August 2010

Figure 6.6i

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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SAWYERS CREEK
NELSON ST
NELSON ST
ANVIL CREEK
CLIFT ST
FILEY ST
SALE ST
ANVIL ST
WHITE ST
FLORENCE ST
AUSTRAL ST
FARTHING ST
GRETA
GORDON ST
CUTHBERT ST
USHER ST
LLOYD ST
FLORENCE ST
JOHN ST
MACAFEE ST
RAILWAY ST
MANSFIELD ST
MAITLAND ST
TUCKERS LANE
MARY ST
BELL ST
JANE ST

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

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Hunter ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number	22-14471
Revision	A
Date	August 2010

Revised Construction Impact Zones

Figure 6.6j

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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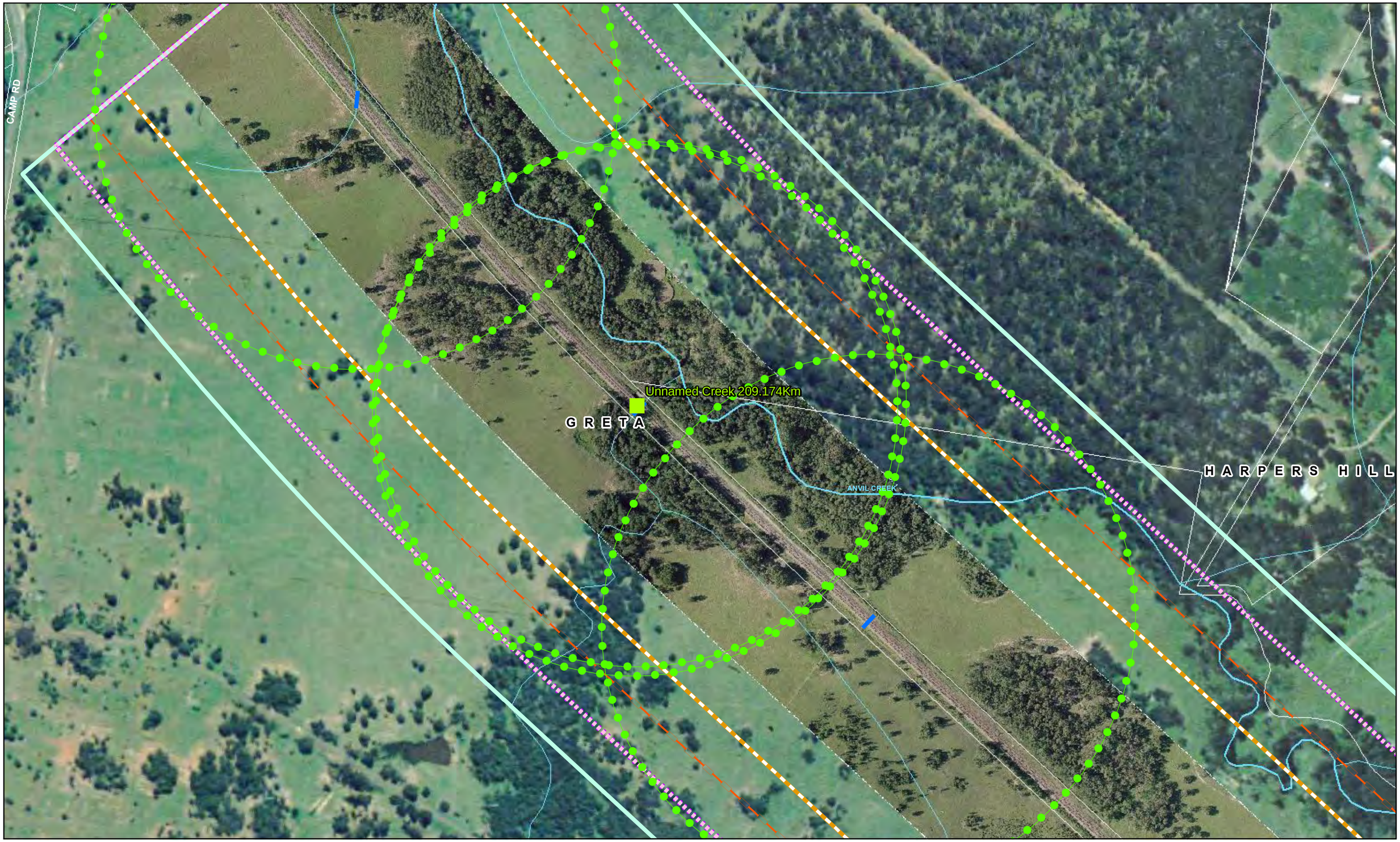

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

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Hunter ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6k

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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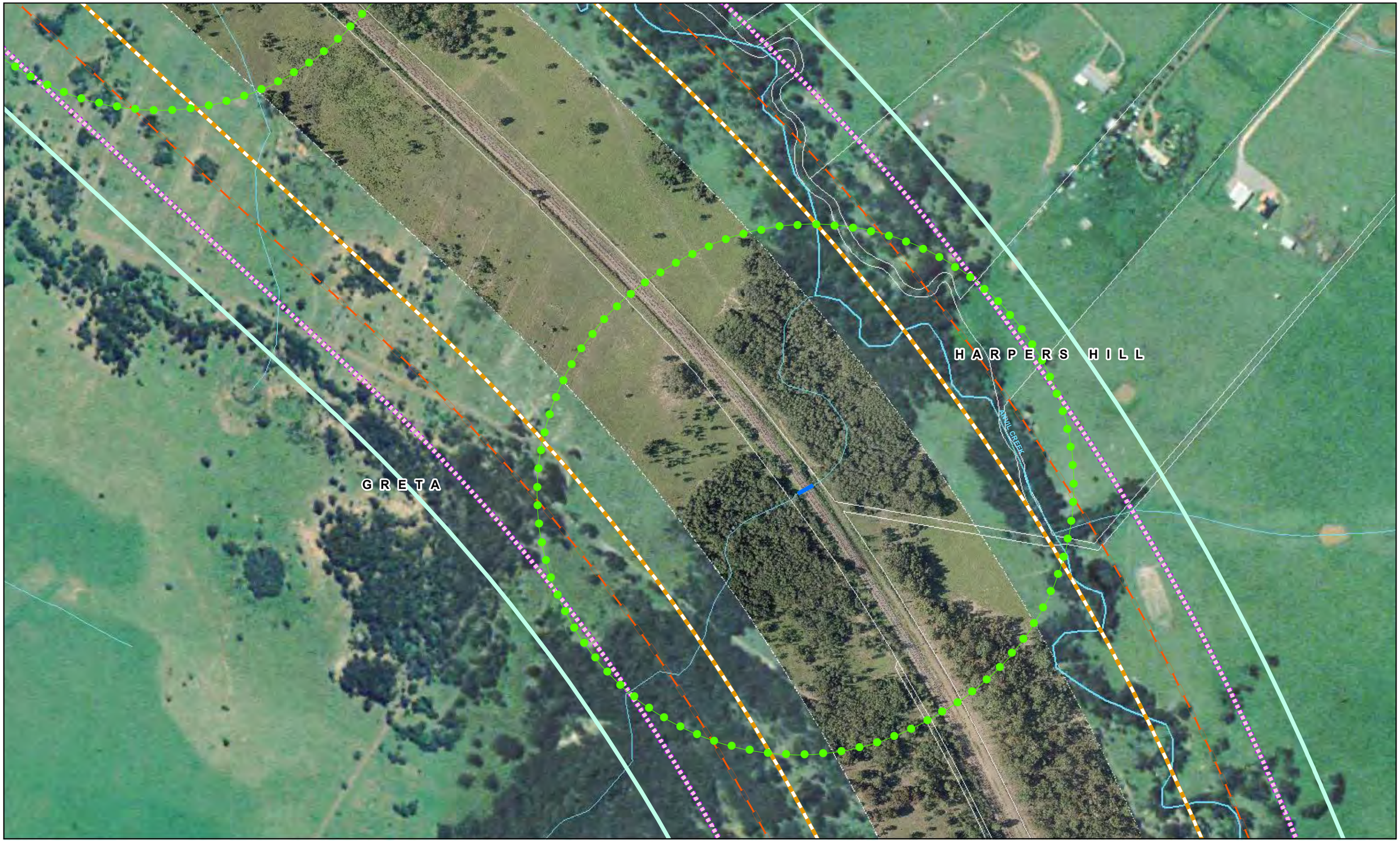

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
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N

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Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number	22-14471
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Revised Construction Impact Zones

Figure 6.6l

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1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
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N

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Hunter Alliance

Maitland To Minimbah Third Track
Submissions Report

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Revised Construction Impact Zones

Figure 6.6m

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

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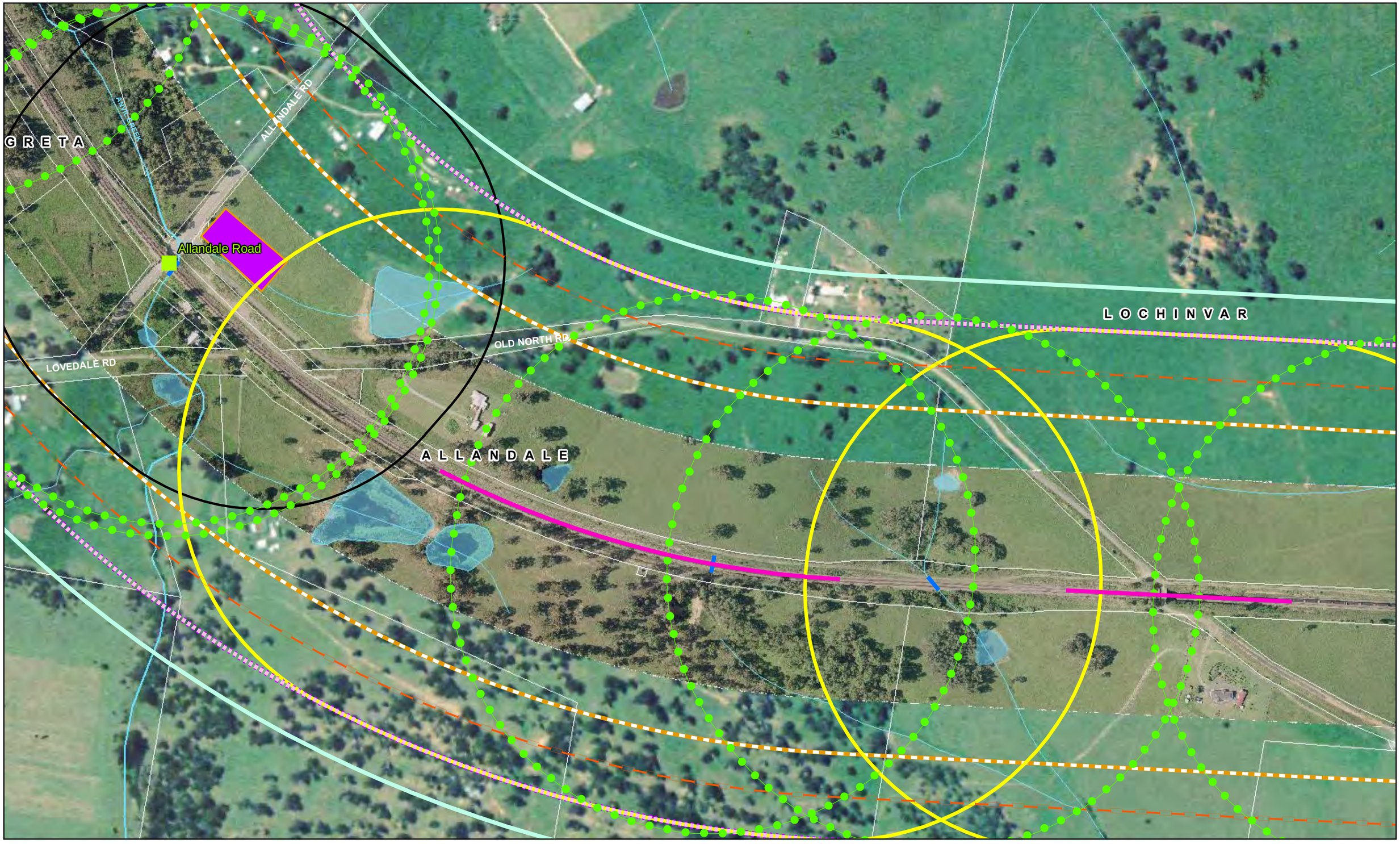

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
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Maitland To Minimbah Third Track
Submissions Report

Revised Construction Impact Zones

Job Number	22-14471
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Figure 6.6n

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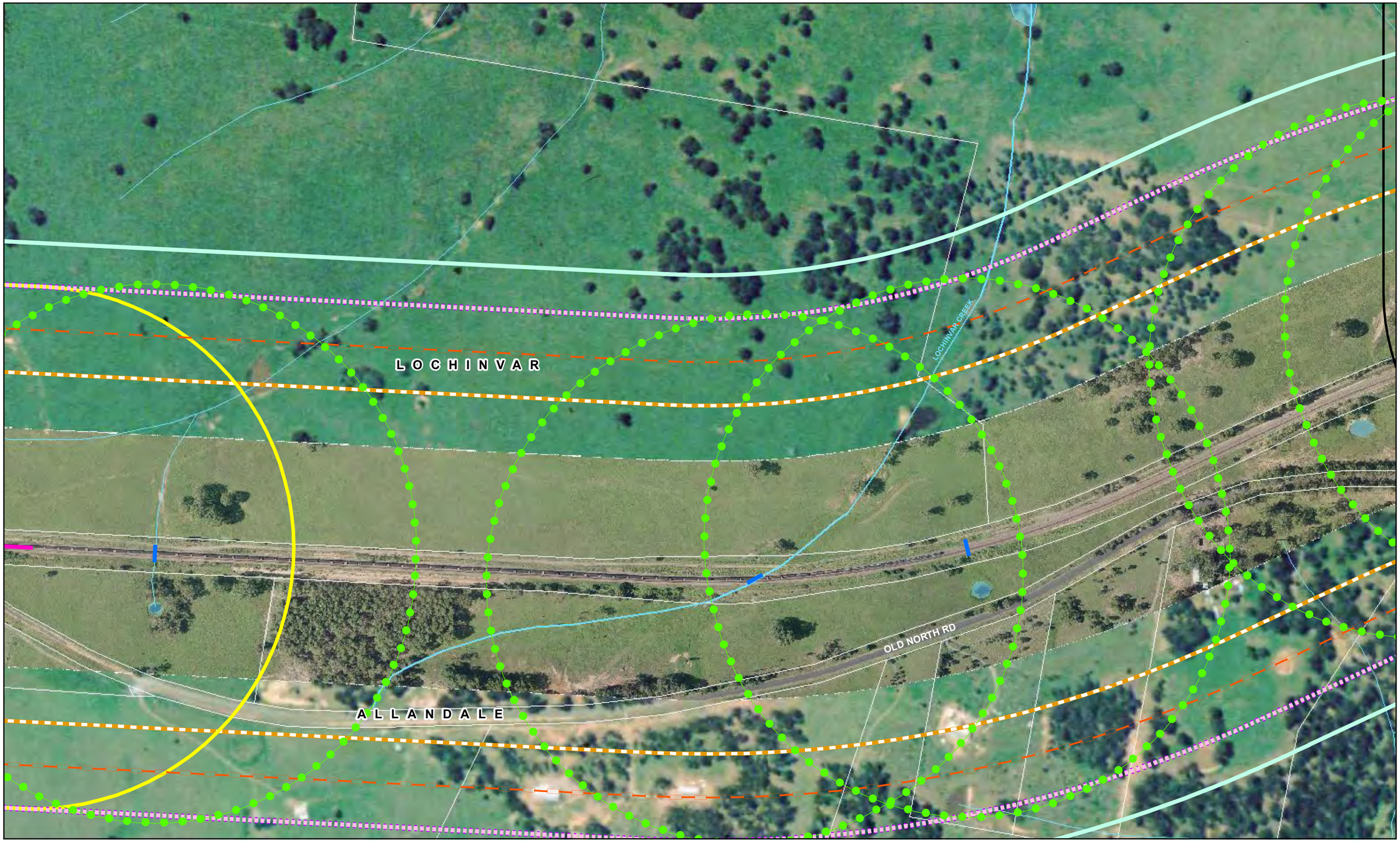

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
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Hunt8r ALLIANCE

Maitland To Minimbah Third Track
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Revised Construction Impact Zones

Figure 6.6o

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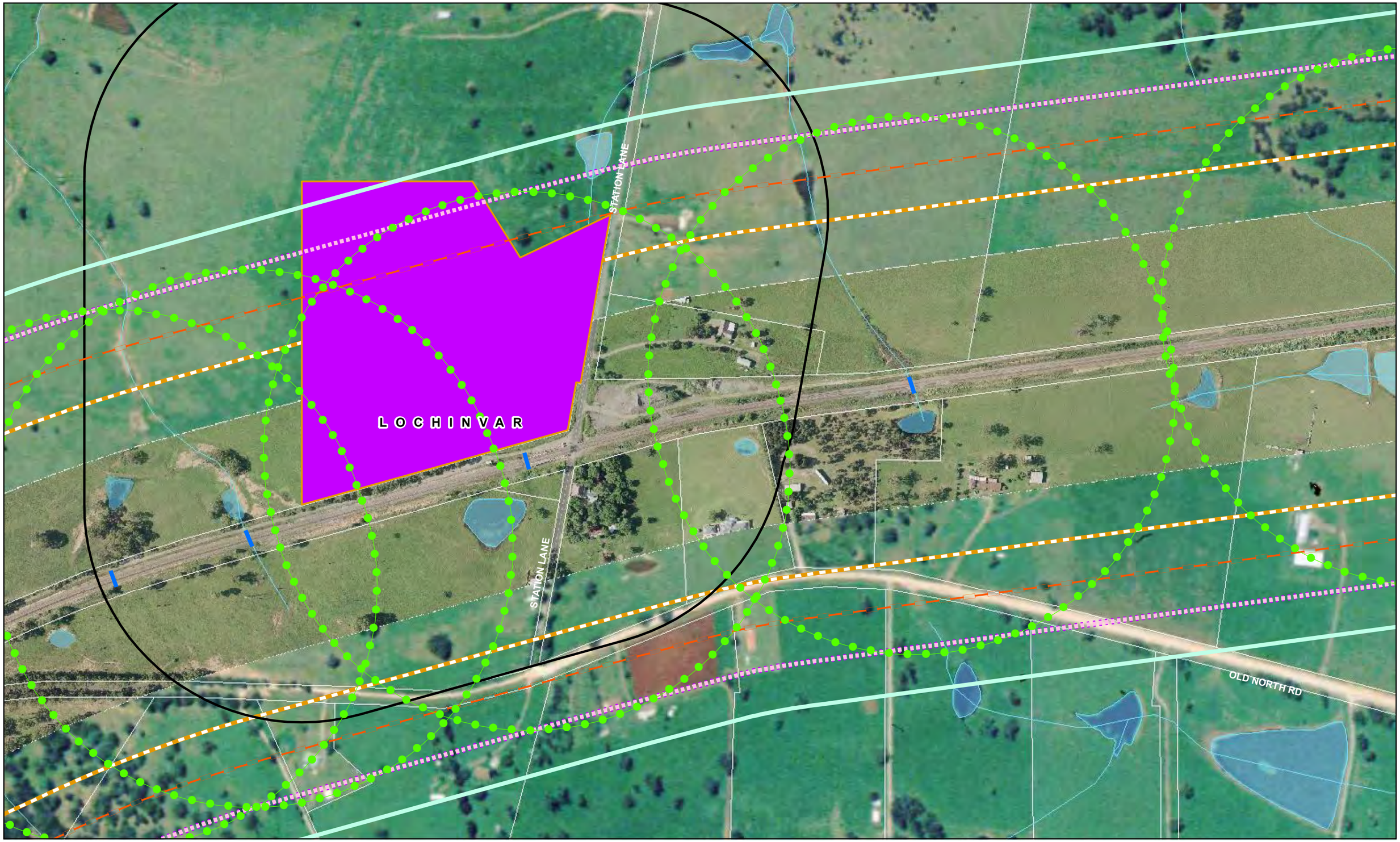

1:4,000 (at A3)

0 20 40 80 120 160

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Map Projection: Transverse Mercator
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Hunter ALLIANCE

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Figure 6.6p

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COWHILL RD

STONY CREEK

L O C H I N V A R

F A R L E Y

WINDERS LANE

OLD NORTH RD

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

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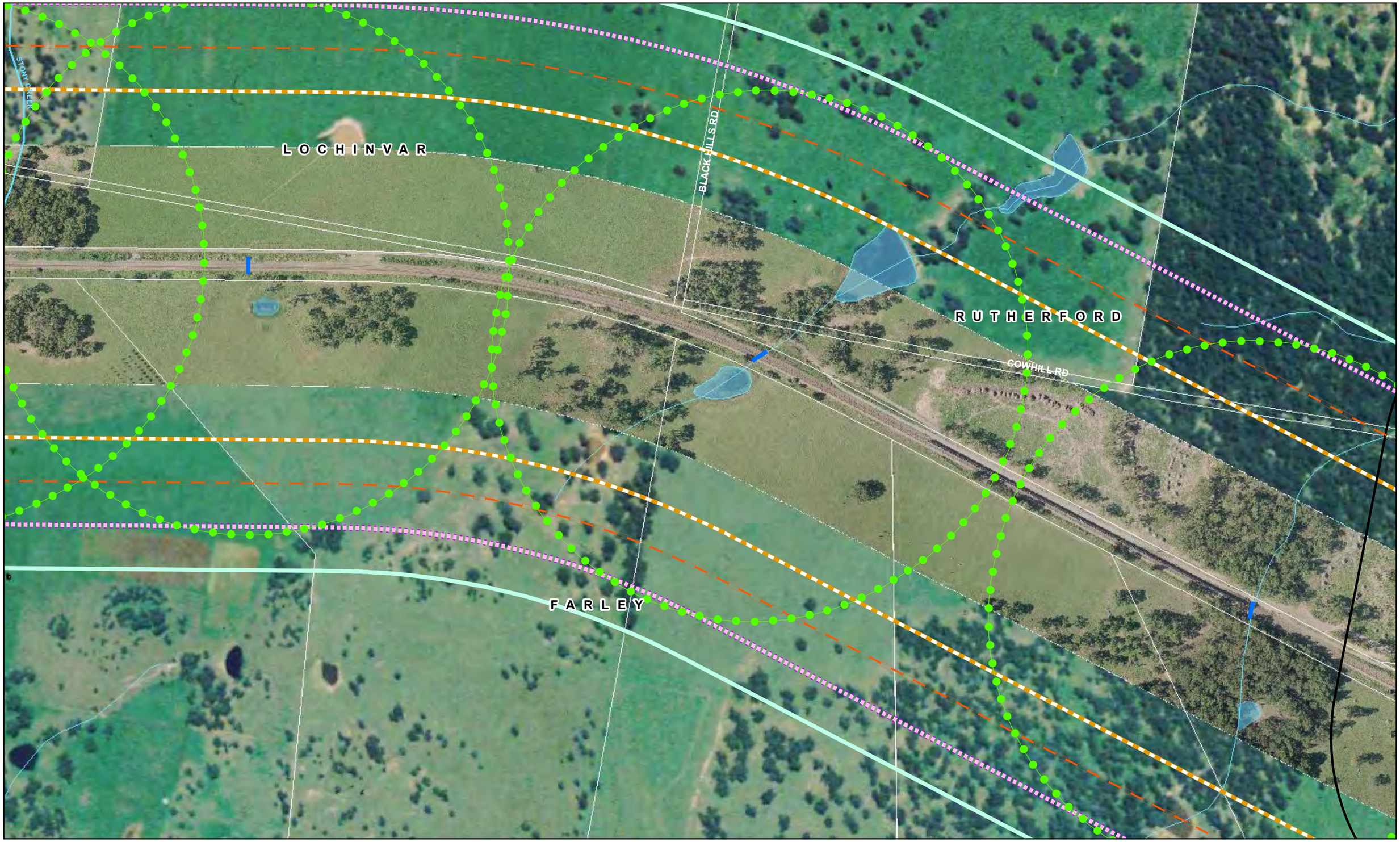
Figure 6.6q

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton



1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Impact Radius for Bridgeworks (Including Culverts)
- Impact Radius for Drainage and Capping
- Impact Radius for Cut and Fill
- Impact Radius for Topsoiling and Landscaping
- Impact Radius for Crushing Plant
- Impact Radius for Site Compounds
- Site Compounds
- Impact Radius for Clearing and Stripping
- Watercourse Area
- Proposed Culvert Extensions
- Proposed Third Track
- Proposed Crushing Plant
- Watercourse
- Proposed New Underbridge

Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

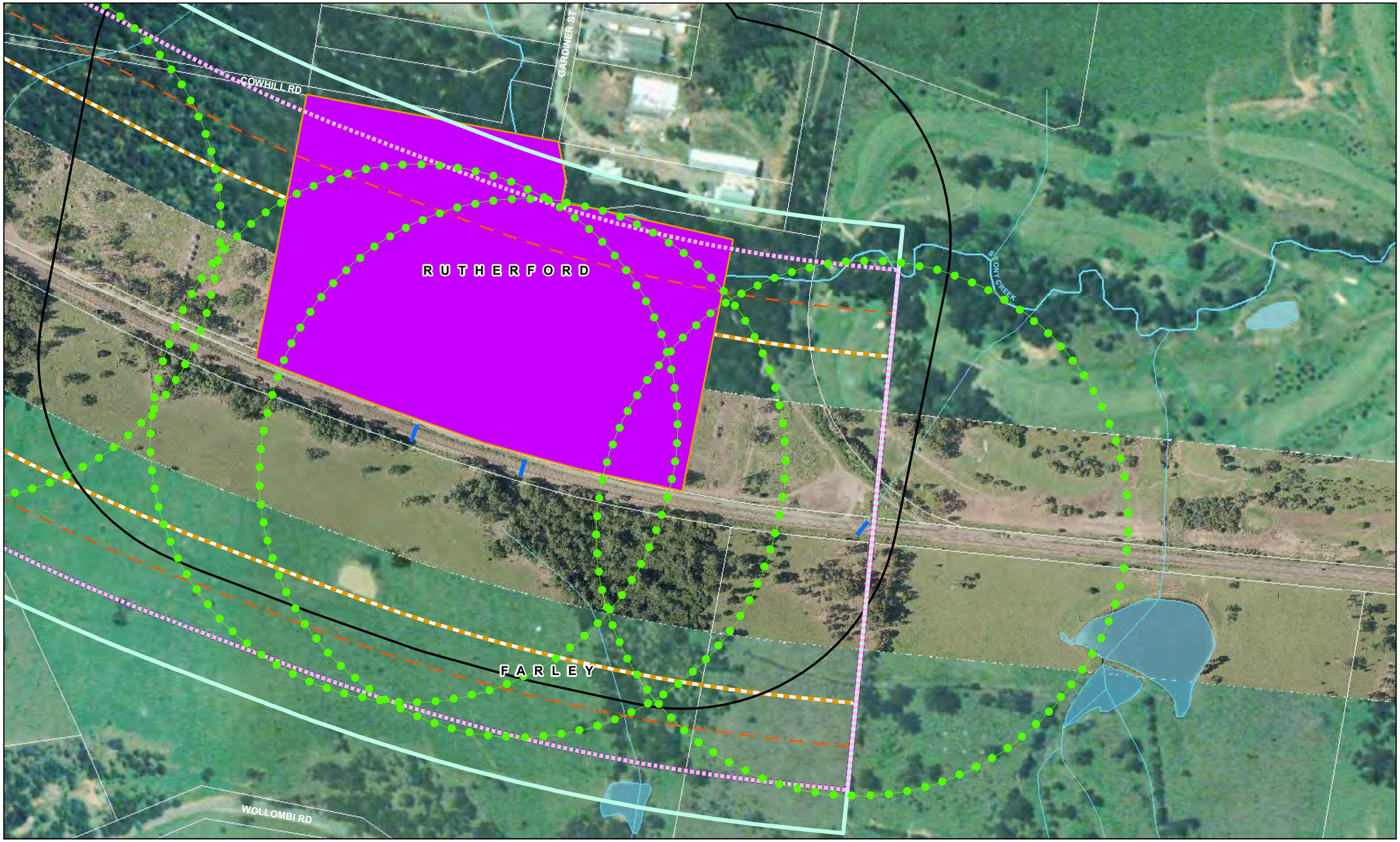
Revised Construction Impact Zones

Figure 6.6r

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au



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0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Impact Radius for Bridgeworks (Including Culverts)
- Impact Radius for Drainage and Capping
- Impact Radius for Cut and Fill
- Impact Radius for Topsoiling and Landscaping
- Impact Radius for Crushing Plant
- Impact Radius for Site Compounds
- Site Compounds
- Impact Radius for Clearing and Stripping
- Watercourse Area
- Proposed Culvert Extensions
- Proposed Third Track
- Proposed Crushing Plant
- Watercourse
- Proposed New Underbridge

Hunt8r ALLIANCE

Maitland To Minimbah Third Track Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6s

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton

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STONY CREEK

RUTHERFORD

SQUADRON CR

CORVETTE CL

BRIGANTINE ST

NICOLENA CR

CLAYTON CR

GILLETTE CL

DUMONT CL

REGIMENT RD

STONY CREEK

FARLEY

TELARAH

WOLLOMBI RD

OWLPEN LANE

1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Impact Radius for Bridgeworks (Including Culverts)
- Impact Radius for Drainage and Capping
- Impact Radius for Cut and Fill
- Impact Radius for Topsoiling and Landscaping
- Impact Radius for Crushing Plant
- Impact Radius for Site Compounds
- Site Compounds
- Impact Radius for Clearing and Stripping
- Watercourse Area
- Proposed Culvert Extensions
- Proposed Third Track
- Proposed Crushing Plant
- Watercourse
- Proposed New Underbridge

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Construction Impact Zones

Figure 6.6t

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton

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1:4,000 (at A3)

0 20 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Impact Radius for Bridgeworks (Including Culverts)
- Impact Radius for Drainage and Capping
- Impact Radius for Cut and Fill
- Impact Radius for Topsoiling and Landscaping
- Impact Radius for Crushing Plant
- Impact Radius for Site Compounds
- Site Compounds
- Impact Radius for Clearing and Stripping
- Watercourse Area
- Proposed Culvert Extensions
- Proposed Third Track
- Proposed Crushing Plant
- Watercourse
- Proposed New Underbridge

Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

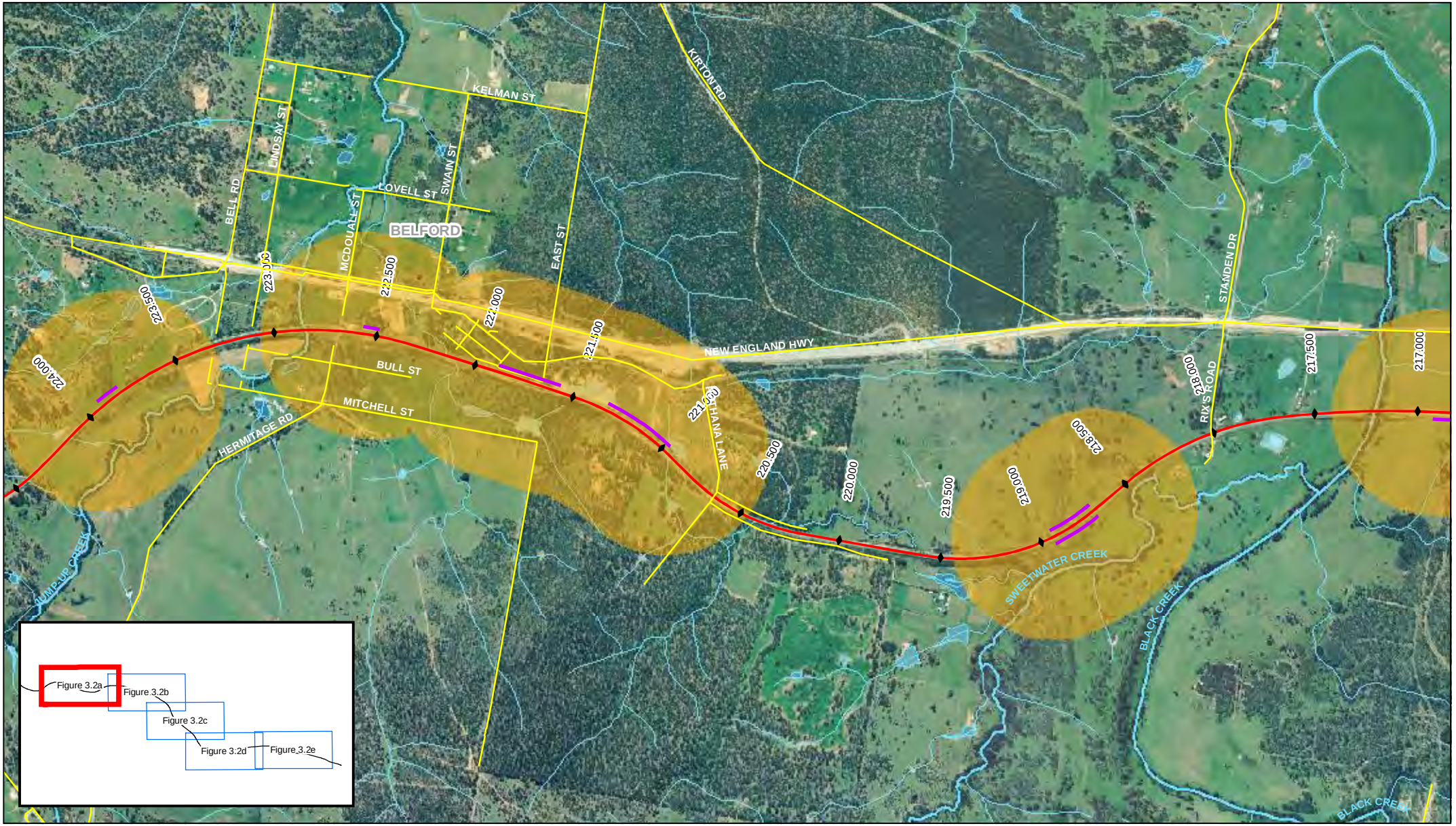
Revised Construction Impact Zones

Figure 6.6u

G:\22\14471\GIS\Maps\Deliverables\PPR\PPR_ConstructionNoise_ImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: msmiljkovski, tmorton



1:25,000 (at A4)

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Revised Blasting Locations
- Road Centre Line
- 500m Buffer
- Proposed Third Track
- Watercourse area
- Watercourse

Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number	22-14471
Revision	A
Date	August 2010

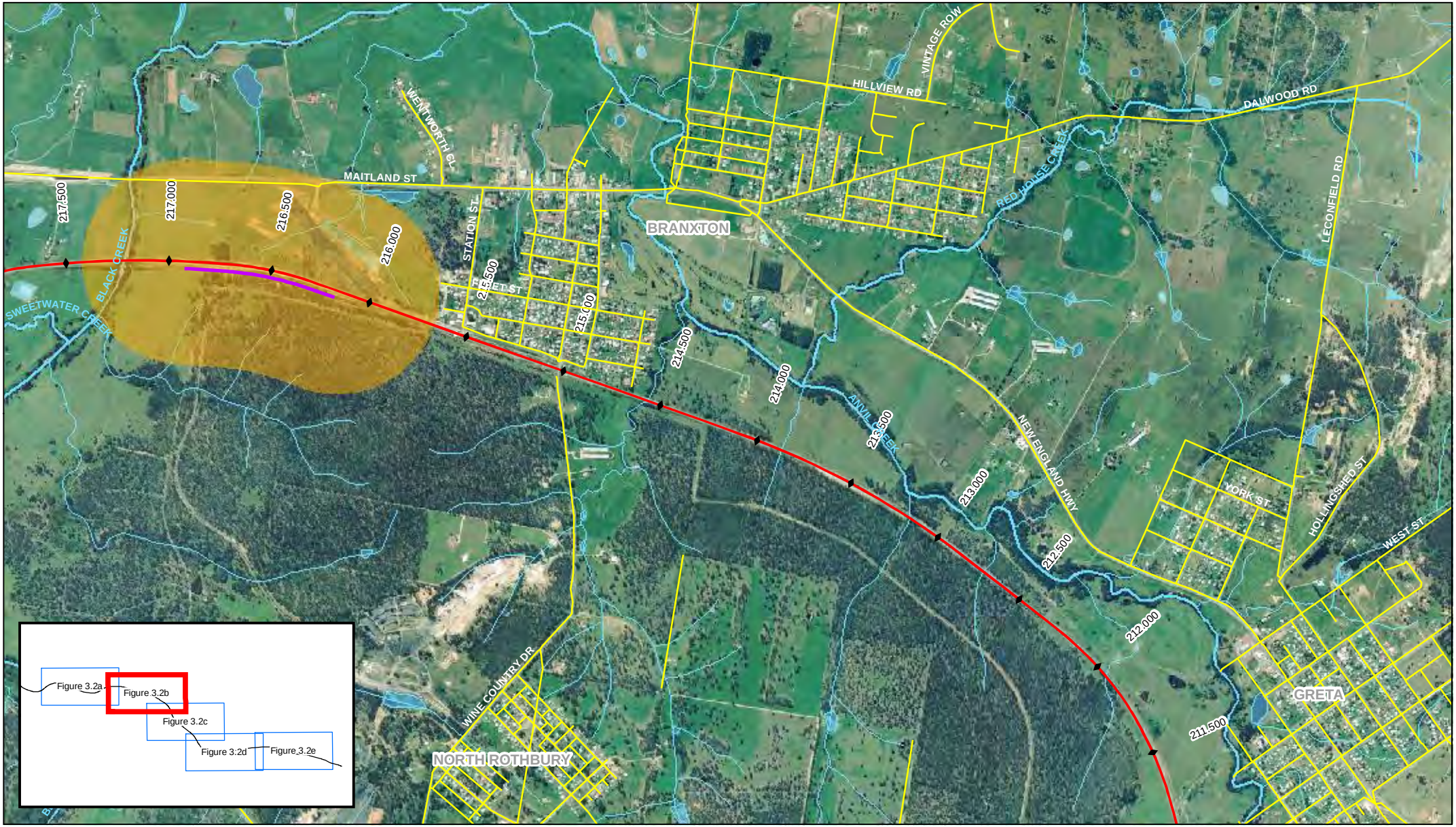
Revised Blasting Impact Zones

Figure 6.7a

T:\Hunter8 GIS\Gis\Maps\Deliverables\PPR\PPR_Revised_BlastingImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data Source: DPT of Lands: DCDB - 2007, Aerial Photography - 2006. Created by: msmiljkovski, tmorton, fmackay



1:25,000 (at A4)

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Revised Blasting Locations
- Road Centre Line
- 500m Buffer
- Proposed Third Track
- Watercourse area
- Watercourse

Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number	22-14471
Revision	A
Date	August 2010

Revised Blasting Impact Zones

Figure 6.7b

T:\Hunter8 GIS\Gis\Maps\Deliverables\PPR\PPR_Revised_BlastingImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data Source: DPT of Lands: DCDB - 2007, Aerial Photography - 2006. Created by: msmiljkovski, tmorton, fmackay

1:25,000 (at A4)

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Revised Blasting Locations
- Road Centre Line
- 500m Buffer
- Proposed Third Track
- Watercourse area
- Watercourse

Hunt8r ALLIANCE

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

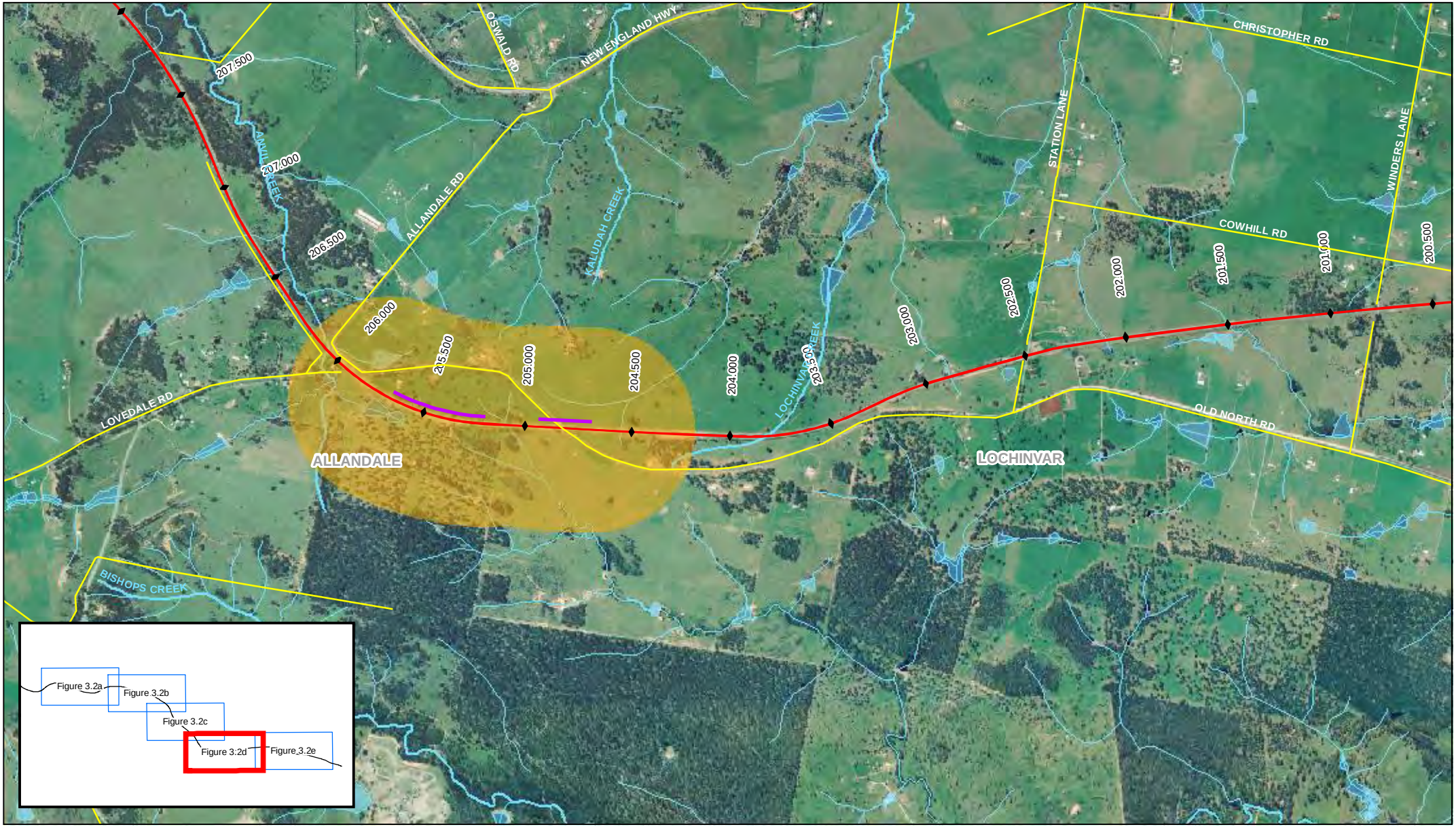
Revised Blasting Impact Zones

Figure 6.7c

T:\Hunter8 GIS\Gis\Maps\Deliverables\PPR\PPR_Revised_BlastingImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data Source: DPT of Lands: DCDB - 2007, Aerial Photography - 2006. Created by: msmiljkovski, tmorton, fmackay



1:25,000 (at A4)

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Revised Blasting Locations
- Road Centre Line
- 500m Buffer
- Proposed Third Track
- Watercourse area
- Watercourse

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Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Blasting Impact Zones

Figure 6.7d

T:\Hunter8 GIS\Gis\Maps\Deliverables\PPR\PPR_Revised_BlastingImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data Source: DPT of Lands: DCDB - 2007, Aerial Photography - 2006. Created by: msmiljkovski, tmorton, fmackay

1:25,000 (at A4)

0 200 400 600 800

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Australian Geodetic Datum 1966
Grid: Integrated Survey Grid, Zone 56-1

N

LEGEND

- Revised Blasting Locations
- Road Centre Line
- 500m Buffer
- Proposed Third Track
- Watercourse area
- Watercourse

Maitland To Minimbah Third Track
Submissions Report

Job Number 22-14471
Revision A
Date August 2010

Revised Blasting Impact Zones

Figure 6.7e

T:\Hunter8 GIS\Gis\Maps\Deliverables\PPR\PPR_Revised_BlastingImpactZones_20100826_A.mxd

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 **T** 61 2 4979 9999 **F** 61 2 4979 9988 **E** ntlmail@ghd.com.au **W** www.ghd.com.au

Data Source: DPT of Lands: DCDB - 2007, Aerial Photography - 2006. Created by: msmiljkovski, tmorton, fmackay

Operational Rail Noise

Leq Noise Levels

The operational rail noise model has been re-run to account for changes in the earthworks design and also to compare predicted rail noise emissions with and without the proposed deferment of works. Night-time noise contours (LA_{eq}, 9hrs) are presented in the Noise and Vibration Impact Study in Appendix E. Table 6-16 and Table 6-17 show a summary of the modelling results at the monitoring locations.

Table 6-16 2012 Scenarios - Summary of Results at Monitoring Locations

Receiver	2012 Model – With Deferment of Works		2012 Model – Without Deferment of Works		Difference
	Day $L_{Aeq, 15hrs}$	Night $L_{Aeq, 9hrs}$	Day $L_{Aeq, 15hrs}$	Night $L_{Aeq, 9hrs}$	
L1	63.3	63.8	63.3	63.8	0
L2	64.3	64.8	64.3	64.8	0
L3	53.7	54.2	53.7	54.2	0
L4	60.1	60.7	60.1	60.7	0
L5	56.2	56.7	56.3	56.8	0.1
L6	56.4	56.9	56.7	57.2	0.3
L7	61.9	62.4	62.6	63.0	0.6
L8	63.4	63.9	63.4	63.9	0
L9	62.6	63.2	62.9	63.4	0.2
L10	58.5	59.0	58.5	59.0	0
L11	53.5	53.9	53.5	53.9	0
L12	48.6	49.1	48.6	49.1	0
L13	69.6	70.1	69.6	70.1	0
L14	65.2	65.6	65.2	65.6	0
L15	65.0	65.5	65.0	65.5	0
L16	67.5	68.1	67.7	68.2	0.1
L17	67.8	68.3	67.9	68.4	0.1

Table 6-17 2022 Model - Summary of Results at Monitoring Locations

Receiver	2022 Model – With Deferment of Works		2022 Model – Without Deferment of Works		Difference
	Day $L_{Aeq, 15hrs}$	Night $L_{Aeq, 9hrs}$	Day $L_{Aeq, 15hrs}$	Night $L_{Aeq, 9hrs}$	
L1	64.2	64.8	64.2	64.8	0
L2	65.3	65.9	65.3	65.9	0
L3	54.7	55.2	54.7	55.2	0
L4	61.1	61.7	61.1	61.7	0
L5	57.2	57.8	57.3	57.8	0
L6	57.4	58.0	57.8	58.4	0.4
L7	62.9	63.5	63.7	64.3	0.8
L8	64.4	64.9	64.4	64.9	0
L9	63.6	64.2	64.0	64.6	0.4
L10	59.4	60.0	59.4	60.0	0
L11	54.4	55.0	54.4	55.0	0
L12	49.6	50.2	49.6	50.2	0
L13	70.6	71.1	70.6	71.1	0
L14	66.1	66.6	66.1	66.6	0
L15	66.0	66.5	66.0	66.5	0
L16	68.5	69.1	68.7	69.3	0.2
L17	68.8	69.3	69.0	69.5	0.2

The results in Table 6-16 and Table 6-17, and noise contours shown in the Noise and Vibration Impact Study in Appendix E indicate that the difference between operational Leq rail noise emissions are not significantly different with or without deferment of works. This means that L_{eq} rail noise emissions are primarily dominated by rail volumes rather than the positioning of the third rail track within the corridor.

Table 6-18 and Table 6-19 present the extent of receivers where IGANRIP is triggered (the IGANRIP Leq trigger levels are predicted to be exceeded, and the existing noise levels increased by 2dB(A) or greater). It also identifies when such exceedences of the IGANRIP trigger levels are first predicted to occur. Note that existing rail noise levels already exceed the IGANRIP trigger levels at some receivers. Also note that reported exceedences account for a + 2.5dB(A) façade correction.

Table 6-18 Affected Receivers Per Noise Catchment Areas – Up Side

Chainage	Noise Catchment Area ID	Affected Receivers	IGANRIP Trigger (Y or N)	IGANRIP Exceedence (2022)	Predicted Initial Year of Trigger
222.900 – 223.850	U1	All three residences in U1 (MMU-003.5, MMU-004, MMU-005).	Y	5 to 7 dB(A)	2012
222.300 – 222.700	U2	All land located between the 60dB(A) contour and rail corridor proposed for tourist development (accommodation).	Dependant on the proposed site development and layout.		
220.350 – 222.300	U3	Six residences in U3 (MMU-012, Lot 1 and 2 Sec 7 / DP 758078, Lot 8 to Lot 10 Sec 7 / DP 758078).	Y	3 to 6 dB(A)	2012
214.100 – 215.350	U4	IGANRIP compliance predicted	N	-	-
210.000 – 210.950	U5	Nelson Street (MMU-039, MMU-040) and John Street (MMU-046) residences, Greta.	Y	5 to 8 dB(A).	2012
205.100 – 206.500	U6	Both residences in U6 (MMU-053 and Lot 6 / DP 1112171).	Y	3 dB(A) at MMU-053. 5 dB(A) at Lot 6 / DP 112171.	2022 at MMU-053 2012 at Lot 6 / DP 112171
202.050 – 202.500	U7	Single residence in U7 (MMU-057).	Y	3 dB(A).	2022
200.250 – 201.100	U8	All four residences in NCA U8 (MMU-060 to MMU-062, 510/DP 774517). MMU-061 is the most affected residence in this NCA.	Y	Up to 10dB(A) at MMU-061. Up to 7 dB(A) at MMU-060 and MMU-062. 3 dB(A) at 510/DP 774517	2010 (existing) at MMU-061 2012 at MMU-060 and MMU-062 2022 at 510/DP 774517
196.400 – 197.400	U9	All land located between the 60dB(A) contour and rail corridor if proposed for residential development.	Dependant on the proposed site development and layout.		

Chainage	Noise Catchment Area ID	Affected Receivers	IGANRIP Trigger (Y or N)	IGANRIP Exceedence (2022)	Predicted Initial Year of Trigger
195.600 – 196.200	U10	Residences on Dumont Close	Y	Up to 7dB(A)	2010 (existing) for southernmost Dumont Close residence 2012 for other Dumont Close residences (southern end)
194.500 – 194.800	U11	All houses directly exposed to the rail lines on Railway Parade and Wentworth Street, Telarah.	Y	Up to 10dB(A).	2010 (existing)

Table 6-19 Affected Receivers per Noise Catchment Areas – Down Side

Chainage	Noise Catchment Area ID	Affected Receivers	IGANRIP Trigger (Y or N)	IGANRIP Exceedence (2022)	Predicted Initial Year of Trigger
222.300 – 223.300	D1	MMD-003	Y	3 dB(A)	2022
221.000 – 221.350	D2	IGANRIP compliance predicted	N	-	-
219.250 – 219.700	D3	Pothana Winery (MMD-007)	Y	5 dB(A)	2012
218.000 – 218.150	D4	Single residence in D4 (MMD-008)	Y	7 dB(A)	2012
215.650 – 217.200	D5	All land located between the 60dB(A) contour and rail corridor if proposed for residential development.	Dependant on the proposed site development and layout.		
214.850 – 215.100	D6	Existing residences in D6 have been acquired by the NSW RTA for demolition.	N	-	-
209.850 – 210.900	D7	Lloyd Street residences (Lot 81 DP 607773, Lot 106 DP 250308, Lots 4 and 5 DP 976366). Two residences off Mansfield Street (MMD-018.3 and Lot 104 DP 250308). MMD-017, Lot 1 DP 882276, Lot 2 DP 882276.	Y	4 to 7 dB(A)	2012

Chainage	Noise Catchment Area ID	Affected Receivers	IGANRIP Trigger (Y or N)	IGANRIP Exceedence (2022)	Predicted Initial Year of Trigger
209.850 – 210.900	D7	Residences west of Mansfield Street	Y	3 dB(A)	2022
206.750 – 209.850	D8	All land located between the 60dB(A) contour and rail corridor if proposed for residential development.	Dependant on the proposed site development and layout.		
205.950 – 206.300	D9	Three residences east of Lovedale Road (MMD-024, Lot 261 DP / 755211, Lot 32 / DP 846828). One residence west of Lovedale Road (Lot 1 DP 434185).	Y	13 dB(A) at MMD-024 and Lot 261 DP / 755211. 3 dB(A) at Lot 32 / DP 846828. 4dB(A) at Lot 1 DP 434185.	Existing (2010) at MMD-024 and Lot 261 DP / 755211 2022 at Lot 1 DP 434185 and Lot 32 / DP 846828
203.050 – 205.100	D10	IGANRIP compliance predicted	N	-	-
200.800 – 202.500	D11	Clifton House (MMD-029) MMD-030 to MMD-032	Y	11 dB(A) at Clifton House. 3 dB(A) at MMD-030 to MMD-032	Existing (2010) at Clifton House 2022 at MMD-030 to MMD-032
195.600 – 196.250	D12	Two residences at the eastern end of Wollombi Road (including MMD-041)	Y	9-11 dB(A)	Existing (2010)

LMax Noise Levels

The transition from three to two tracks will require some trains to stop in the vicinity of the following turnout locations:

- Chainage 216.320 kilometres (Branxton).
- Chainage 196.100 kilometres (Farley).

The operational noise assessment described in the Environmental Assessment assumes all trains operate at a set speed within the investigation area, and does not make provisions for stopping, idling and starting events.

Simulations by ARTC indicate that the proposed deferments of works would lead to a maximum of five trains stopping at the turnout daily, as follows:

- Four at chainage 216.320 kilometres.
- One at chainage 196.100 kilometres.

In average, it is anticipated that trains would station at the turnouts for approximately seven minutes.

Given the large number of daily movements (see Appendix K of the Environmental Assessment), train stop/start events nominated above are unlikely to affect the operational L_{eq} rail noise levels. However, local Lmax levels are likely to increase in the vicinity of the turnout locations as train stop or start. Major noise sources in such events are wheel squeal and shunting as the train halts.

Table 6-20 presents the extent of receivers where IGANRIP may be triggered (the IGANRIP L_{max} trigger levels are predicted to be exceeded, and the existing noise levels increased by 3dB(A) or greater).

Table 6-20 Affected Receivers Per Noise Catchment Areas – Lmax Levels

Chainage	Noise Catchment Area ID	Affected Receivers
196.400 – 197.400	U9	Depending on further investigation, land located along rail corridor is proposed for residential development.
195.600 – 196.200	U10	Residences on the southern side of Regiment Road and on Dumont Close.
215.650 – 217.200	D5	Depending on further investigation, land located along rail corridor has master plan approval for residential development.
195.600 – 196.250	D12	Two residences at the eastern end of Wollombi Road (including MMD-041)

Operational Rail Vibration

The Noise and Vibration Assessment undertaken for the Environmental Assessment included vibration monitoring along the rail corridor. From this monitoring, and consideration of the proposed increase in operations, it was determined that properties within 40 metres of the rail corridor would potentially have vibration levels exceeding the human comfort criteria in the Assessing vibration: a technical guideline (DECCW 2006) and BS 6472:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz).

It should be noted that the 40 metre distance is a conservative estimate. The actual distance would be dependant on a range of factors, including underlying geology and soil type; and building quality, which can vary throughout the Project area.

Findings with regards to operational vibration remain as described in the Environmental Assessment. Vibration control should be considered where dwellings are located within approximately 40 metres from the nearest rail track, which involves the following receivers (excluding those located along the proposed deferments of works):

- Two residences east of Lovedale Road (MMD-021 and Lot 261 DP / 755211) in NCA D9.
- Clifton House (MMD-029) in NCA D11.
- One residence at the end of Winders Lane, Lochinvar (MMU-061) in NCA U8.

As discussed in Section 4.1 a residence near Greta station was omitted from the list of properties potentially impacted by vibration. However it is located within the Phase 2 area and therefore vibration controls would be considered and implemented where possible at this stage.

6.7.4 Mitigation Measures

Construction Noise and Vibration

The mitigation measures and strategy remain as outlined in the Noise and Vibration Impact Assessment Report (Appendix K of the Environmental Assessment).

Operational Noise

As described in Section 5.9.6, noise attenuation would be provided for existing residences identified as currently exceeding the IGANRIP trigger levels, those predicted to exceed the IGANRIP trigger levels in 2012 (with introduction of the third track), and those predicted to exceed the IGANRIP trigger levels in 2022 (with introduction of the third track).

The proposed noise attenuation comprises of:

1. The Hunter 8 Alliance proposes noise mounds as the preferred noise attenuation option at properties where IGANRIP is triggered for both Phase 1 and Phase 2 of the Project. These noise mounds would be constructed during the relevant construction phases and prior to operation of the third track in these areas. A preliminary review of the locations where attenuation is required indicated that noise mounds could provide the required attenuation.
2. Following Project Approval, and during the construction of the Project, the Hunter 8 Alliance would undertake a detailed inspection of these properties and negotiations with the landholder to confirm whether noise mounds are reasonable and feasible. In the event that noise mounds are determined to not be reasonable or feasible, the Hunter 8 Alliance would consider alternative noise attenuation based on the following priority hierarchy:
   - Noise walls.
   - Architectural treatment.
   - Property acquisition (if attenuation is not reasonable or feasible).
3. Monitoring of operational noise levels with the third track in place is to be undertaken at properties where the predicted noise levels are predicted to be 2 dB(A) below the IGANRIP trigger levels. If the monitoring confirms the triggering of IGANRIP, the Hunter 8 Alliance would consider all reasonable and feasible noise attenuation options as discussed in Points one and two.
4. Monitoring of operational noise levels with the third track in place for those locations potentially affected by Lmax events in the vicinity of chainage 216.320 kilometres and chainage 196.100 kilometres turnouts.

The measures described in Points one to three would be implemented as appropriate during the construction of Phase 1 and Phase 2 of the Project, and would be operational prior to operation of the third track within these areas.

In addition, a noise barrier to be constructed between chainages 194.340 and 194.880 kilometres to attenuate the urban residences at Telarah prior to the operation of the third track through this section (Phase 2). The noise wall would be approximately 4.5 metres in height, which would provide an estimated 10 dB(A) in noise attenuation. This would be provided as part of Phase 2 of the Project prior to operation of the third track in this area.

Implementation of the Operational Noise Management Plan would be staged consistent with construction of the third track:

- The proposed measures would be implemented at the potentially affected properties adjacent to the Phase 1 works prior to commencement of operations on the third track. This would be construction of noise mounds for 33 residential properties.
- The proposed measures would be implemented at the remaining potentially affected properties prior to commencement of operations on the Phase 2 third track sections. This would be construction of noise mounds for 10 houses and construction of the noise wall at Telarah (as previously discussed).

Operational Vibration

Within Phase 1 of the Project, four properties are located within 40 metres of the rail corridor and therefore potentially impacted by operational vibration:

- Two residences east of Lovedale Road (MMD-021 and Lot 261 DP / 755211) in NCA D9.
- Clifton House (MMD-029) in NCA D11.
- One residence at the end of Winders Lane, Lochinvar (MMU-061) in NCA U8.

A vibration monitoring program would be developed and implemented for the listed properties prior to the commencement of operations on the third track. This would involve monitoring at the residences to measure the level of vibration in comparison to the relevant standards (human comfort from Assessing vibration: a technical guideline, BS 6472:1992 Evaluation of human exposure to vibration in buildings (1–80 Hz); and structural damage from German Standard DIN 4150-3: 1999 Structural Vibration – Part 3: Effects of vibration on structures). Vibration monitoring would be undertaken at a distance from the existing track equal to that which the third track is designed to be from the residence.

If the monitoring indicates that the criteria were to be exceeded, the Hunter 8 Alliance would enter negotiations with the landholder to determine an appropriate mitigation measure. This may include (but not be limited to):

- Property acquisition.
- Relocation of the existing residence where reasonable and feasible. If relocation is not reasonable or feasible, the landholder would be offered construction of a new residence outside the area of vibration impact.

This process would be implemented at those properties located within 40 metres of the Phase 2 areas prior to commencement of operations of a third track adjacent to those properties.

6.8 Contamination

This section identifies the potential changes to contamination impacts associated with the Project. It also discusses any additional management measures proposed to reduce these potential impacts. A detailed assessment on contamination is included in the Preliminary Site Contamination Study (Appendix F).

This assessment is based on the revised construction impact zone as shown in Figure 5.2 of this report.

6.8.1 Methodology

The scope of works for the Preliminary Site Contamination Investigation included:

- Review of historical and current aerial photographs
- Review of the Department of Environment, Climate Change and Water contaminated land register.

- Review of geology, hydrology, topography and the Department of Water and Energy groundwater bore database.
- Site inspection to identify any potential contamination issues or potential areas of concern.
- Limited soil sampling.
- Preparation of a report summarising the results of the investigation.

This scope is subject to the limitations as discussed in Section 2.2 of the Preliminary Site Contamination Study (Appendix F). Section 5 of the Preliminary Site Contamination Study describes the Quality Assurance/Quality Control and Sampling and Analysis Plan for the Project.

Field works and environmental sampling within the additional investigation areas were undertaken by experienced Hunter 8 Alliance personnel on 6, 7 and 11 May 2010. All fieldwork was undertaken in accordance with standard field operating procedures. All sampling was conducted using carefully documented and supervised quality assurance procedures.

Field works included:

- Excavation of 10 test pits using an excavator to a maximum depth of 2.5 metres.
- Boring of four test holes using a hand auger to a maximum depth of one metre.
- Collection of 63 soil samples including quality control (QC) samples.

Section 4 of the Preliminary Site Contamination Study (Appendix F) provides detailed information regarding:

- Relevant Guidelines.
- Soil Investigation Thresholds.
- Waste Classification Criteria.

Rationale for Sampling and Analysis Plan

Hunter 8 Alliance approach to the contamination assessment of the revised construction impact zone was to conduct a preliminary site contamination investigation with limited soil sampling to establish past site usage and to identify any potential contamination issues. The limited sampling and analytical program was based on information obtained from the desktop review, site inspection and data from the previous investigations undertaken as part of the Environmental Assessment. The limited sampling program targeted only those areas which had a high potential for use of chemicals on site (such as Vineyards, chainages 219.230-219.740 kilometres) or that were used for associated railway activities (such as the corridor south of railway chainages 196.100-196.750 kilometres). No sampling was undertaken at the two industrial properties (chainages 194.780-194.970 and 194.970-195.120 kilometres) or the vacant property (chainages 195.120 – 195.190 kilometres) due to access restrictions.

The sampling program undertaken was considered sufficient to provide an indication as to the potential contamination likely to be encountered. However the sampling density is not considered sufficient to delineate areas of contamination identified or provide sufficient information to characterise material for off-site disposal. In addition, areas of unknown potential contamination may exist on the investigation area, not identified during this limited investigation.

Sampling locations of the rail corridor and vineyard are represented in Figures 3 and 4 in the Preliminary Site Contamination Study (Appendix F).

6.8.2 Existing Environment

Regional Context, Site Location and Surrounding land uses

The revised construction impact zone is located within the Maitland, Cessnock and Singleton Council local government areas and is covered by Maitland Local Environmental Plan 1993, the Cessnock Local Environmental Plan 1989 and the Singleton Local Environmental Plan 1996 respectively.

A full list of the land use zonings covered by the revised construction impact zone is provided in Section 2.2 of the Preliminary Site Contamination Study (Appendix F).

Land use adjacent and surrounding the revised construction impact zone is consistent with that described in Section 2.1 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment), including a mixture of urban and rural residential dwellings, commercial/industrial premises, viticulture and grazing land.

Geology and Soils

The geology of the revised construction impact zone includes formations of the Maitland Group, the Greta Coal Measures, and the Dalwood Group. Further information on these formations is provided in Section 2.3.1 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment).

The soil landscape of the revised construction impact zone includes the Rivermead (ri), Hunter variant a (hua), Bolwarra Heights (bh), Wallalong variant a (wga), Rothbury (ro), Branxton (bx), and Lochinvar (lv). Further information on these soil landscapes is provided in Section 2.3.2 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment).

A review of the Department of Land and Water Conservation acid sulfate soil risk maps indicates a small area of risk, classified as high probability of occurrence of acid sulfate soil materials within one metre of the ground surface. This area is located within the revised construction impact zone, approximately 40 metres south of the railway, between chainages 195.490 -195.510 kilometres.

Hydrology and Hydrogeology

The hydrology and hydrogeology of the revised construction impact zone is as described in Sections 2.4 and 2.5 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment).

Site History

A review of the historical aerial photographs was undertaken and is described in Section 2.6.1 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment). This review covered the area of the revised construction impact zone.

In addition to the potential sources of contamination previously reported, the following additional potential sources of contamination were identified:

- Industrial properties north of the rail corridor (chainages 194.780 to 195.190 kilometres).
- Disturbed area south of the corridor (chainages 196.020 to 196.720 kilometres).
- Vineyard present on the southern side of the rail corridor (chainages 219.230 to 219.740 kilometres).

A search of the Department of Environment, Climate Change and Water (DECCW) contaminated land register was carried out for the revised construction impact zone. No records relating to specific contamination or remediation were identified.

Site Inspection

Hunter 8 Alliance undertook specific site inspections for the revised construction impact zone on 3 and 8 February 2010. A summary of the findings is presented in Section 2.7 of the Preliminary Site Contamination Study (Appendix F). The additional investigation areas and sample locations from 2009 and 2010 are presented in Figure 2 of the Preliminary Site Contamination Study (Appendix F).

Table 6-21 lists the areas of concern identified for the revised construction impact zone.

Table 6-21 Sources of Potential Contamination

Area of Concern	Description	Potential Contamination Sources	Potential Contaminants
Rail corridor	South of the rail corridor (196.100-196.750 kilometres).	Importation of fill and ballast material. Surface chemicals from spraying for weed and pest control. Spills of fuels, oils and greases. Illegal dumping.	Total petroleum hydrocarbons (TPH) Benzene, toluene, ethyl benzene and xylene (BTEX) Polynuclear aromatic hydrocarbons (PAH) Heavy metals Asbestos Organochlorine pesticides (OCP) Organophosphate pesticides (OPP) Polychlorinated biphenyls **(**PCB)
Vineyard	South of the rail corridor (219.230-219.740 kilometers)	Surface spraying for weed and pest control. Use of fertilisers.	Arsenic OCP/OPP
Rural property	North of rail corridor (221.100-221.650 kilometres)	Septic tank. Spills of fuels, oils and greases. Surface spraying for weed and pest control.	Nutrients Faecal coliforms TPH/BTEX PAH Heavy Metals OCP/OPP
Rural property	North of rail corridor (222.700-222.800, 218.700-218.900, 216.350-216.550, 213.470-213.630, 205.140-205.340, 202.430-202.470, 202.420-202.450, 197.500-198.800 kilometres)	Surface spraying for weed and pest control. Use of fertilisers.	Arsenic OCP/OPP
Rural property	South of rail corridor (203.120-204.400 kilometres)	Dumped building materials. Importation of fill material.	TPH/BTEX PAH Heavy metals Asbestos OCP/OPP PCB

Area of Concern	Description	Potential Contamination Sources	Potential Contaminants
Industrial properties	Properties north of the corridor (194.780 to 195.120 kilometres)	Surface chemicals from spraying for weed and pest control. Spills of fuels, oils and greases. Dumped material.	TPH/BTEX PAH Heavy Metals OCP/OPP Asbestos
Vacant property	Property north of the corridor (195.120 to 195.190 kilometres)	Importation of potential contaminated fill material. Surface chemicals from spraying for weed and pest control. Spills of fuels, oils and greases.	TPH/BTEX PAH Heavy Metals OCP/OPP Asbestos

6.8.3 Impact Assessment

General Site Identification

Based on the historical review and site inspection, the most likely sources of contamination within the revised investigation area were considered to be the following:

- Spraying for weed and pest control.
- Use of fertilisers on rural land and vineyards.
- Importation of fill materials including ballast.
- Illegal dumping/ dumping of waste materials.
- Septic tank on residential properties. and
- Use and storage of fuels, oils and greases.

Summary of Results

Full details of the investigation results, soil analyses and preliminary waste classification are provided in Section 6 of Preliminary Site Contamination Study (Appendix F).

Sample locations of the rail corridor and vineyard are represented in Figures 3 and 4 of the Preliminary Site Contamination Study (Appendix F).

Sampling was undertaken at 14 locations in the additional investigation areas. These included 10 test pit locations within the rail corridor and four test hole locations within surrounding vineyard land to assess potential contamination issues. Due to access restrictions the vacant property and industrial properties were unable to be inspected or sampled. The investigation program undertaken was considered sufficient to provide an indication as to the potential contamination likely to be encountered within the investigation area. However, the sampling density is not considered sufficient to delineate areas of contamination identified or to provide sufficient information to characterise material for off-site disposal. In addition, areas of unknown potential contamination may exist within the investigation area not identified during this limited investigation.

The typical soils encountered within the railway corridor during sampling (chainages 196.020-196.720 kilometres) were fill materials - consisting of ballast, sand, and clay. These were underlain by natural clay. Typical soils encountered within the sampled vineyard property consisted of natural clays, disturbed on the surface.

Concentrations of heavy metals, Organochlorine Pesticides, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, Benzene, Toluene, Ethylbenzene, and Xylene, were reported below the Health-Investigation Level, or threshold concentration, for commercial/industrial exposure settings for all individual samples analysed.

There were no exceedences of the nominated land use criteria, Health Investigation Levels setting “F” (HIL F) or Threshold Concentration (TC), for the samples analysed, however several samples analysed exceeded the Ecological Investigation Levels (EILs). Arsenic in eight samples (including two duplicates) exceeded the EIL. One sample exceeded the EIL for copper, while five samples (including one duplicate) exceeded the EILs for zinc. All of the exceedences were associated with fill or disturbed surface material. While concentrations exceeding EILs may indicate some potential environmental impacts the “decision-making process for assessing urban redevelopment sites” from DEC 2006 does not require consideration

of EILs when assessing the suitability of a site for commercial / industrial land use such as rail infrastructure. Samples exceeding the EILs may present an ecological risk, but are not considered to restrict construction activities. These exceedences should be considered when determining potential re-use of excavated material along the route, particularly with respect to contamination of adjacent areas and waterways, but given the concentrations found, are unlikely to present a risk of significant impacts.

Based on the investigations undertaken, soils within the areas investigated are considered suitable for on-site use, with regards to potential contamination risk to human health and the environment.

The extent of sampling of soils and subsequent analysis has been limited and targeted towards areas where contamination is considered to be most likely, based on the knowledge of the site history and visual observation. The sampling density is not considered sufficient to delineate areas of contamination identified or provide sufficient information to characterise material for off-site disposal. In addition, areas of unknown potential contamination may exist within the revised investigation area not identified during this limited investigation, particularly within those areas that could not be accessed.

Preliminary Waste Classification

Several samples exceeded the General Solid Waste guidelines without TCLP analysis, which would have resulted in a waste classification of Restricted Solid Waste. However, TCLP analysis of the samples (for exceeding analytes) reported concentrations below the criteria for General Solid Waste with TCLP testing. Based on the results, the indicative waste classification is therefore General Solid Waste.

It should be noted that the preliminary waste classification above is indicative only and was undertaken for the purposes of off site disposal to landfill for the sampled soils only. Specific classification of soils for the purpose of re-use on projects off site regarding classification as Virgin Excavated Natural Materials (VENM) or Excavated Natural Materials (ENM) (if applicable to these soils), was not undertaken as part of this investigation.

If off site disposal of soils from site is required, it is recommended that additional sampling and analysis is undertaken to specifically characterise the material prior to off site disposal. Soils to be taken off site and that are classified as either General Solid Waste, Restricted Solid Waste or Hazardous Waste, must be taken to an appropriately licensed landfill. Soils classified as either VENM or ENM may be either used on site or taken to another site with approval to receive VENM or ENM material. Soils would be managed in accordance with a contaminated soil management measures within a Spoil and Fill Management Plan prepared for the Project. This plan would document the sampling procedures and waste classification guidelines.

6.8.4 Mitigation Measures

Section 7 of the Preliminary Site Contamination Investigation (Appendix N of the Environmental Assessment) lists the mitigation measures in regard to contamination. These measures would also apply to the additional investigation areas.

In addition to these measures, the following would be implemented:

- Undertake contamination assessments within the vacant property north of the corridor (chainages 195.120 to 195.190 kilometres) and industrial properties north of the corridor (chainages 194.780 to 195.120 kilometres), which could not be accessed during this investigation prior to construction activities associated with Phase 2 of the project impacting on these areas.

7. Statement of Commitments

Section 21.1 of the Environmental Assessment presented the draft Statement of Commitments based on the mitigation measures proposed to address the various environmental issues.

Table 7-1 presents the finalised Statement of Commitments. These reflect:

- The changes to the Project described in Section 5 of this report.
- Relevant concerns received during exhibition of the Environmental Assessment, as described in Section 4.

Table 7-1 Statement of Commitments

Ref No.	Objective	Commitment	Timing
Flora			
SC1	Minimise the potential impacts that may occur to flora species and their habitats.	Management of adverse impacts arising from the Project is to be addressed according to the hierarchy of avoidance; mitigation and offsetting of adverse impacts, consistent with the approach outlined in the Part 3A Draft Guidelines for Threatened Species Assessment (DEC and DPI 2005).	Pre-construction
		Minimise vegetation clearing and retain mature trees where possible.	Construction
		Pre-clearance survey to flag: ◗ Slaty Red Gum and Mountain Grevillea occurring within and adjacent to the study area, with the aim to avoid clearing these individuals. ◗ The edge of EECs occurring in the vicinity of construction to avoid unnecessary impacts on these stands.	Pre-construction and Construction
		Habitat features that may be utilised by fauna such as fallen logs would be relocated into adjacent bushland where possible.	Pre-construction and Construction
		Provision of flagging, taping or similar marking method along the edge of the clearance area so that works would not encroach closer than necessary upon remnant bushland and minimise the footprint of construction works.	Pre-construction and Construction
		Use of existing disturbed corridors, such as paddocks, cleared areas, roads, tracks and existing easements, for set up of equipment, machinery turning circles, stockpile areas and site facilities where possible.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC2	Minimise runoff and sedimentation	Development and implementation of a Spoil and Fill Management Plan. Erosion and sediment controls would be installed prior to earthworks and vegetation clearing, and would be maintained throughout construction, to minimise sediment entering EECs, creeks and drainage lines.	Pre-construction and Construction
SC3	Minimise impact from stockpiles	Separate stockpiling of topsoil and vegetation removed from various areas to delineate soils containing seeds from native or exotic species where possible.	Construction
		Placement of soil stockpiles outside of vegetated areas and outside the drip line of trees.	Construction
SC4	Rehabilitation of area	Rehabilitation and replanting of native vegetation for areas of newly-created bare soil following construction, such as batters.	Construction and Post-construction
		A revegetation plan would be prepared, including strategies for protection and rehabilitation of Slaty Red Gum and EECs that occur in the study area. The revegetation plan would also identify local native species appropriate for the revegetation of riparian areas surrounding creeks and drainage lines.	Pre-construction and Construction
		A specific revegetation plan for Sawyers Creek would be developed prior to commencement of Phase 2 to reinstate riparian vegetation characteristic of Red Gum Open Forest, which extends upstream from the works site.	Pre-construction and Construction (Phase 2)
SC5	Minimise impacts of noxious weeds	Weeds from areas cleared during construction would be sprayed with appropriate herbicides or removed from the site and not allowed to enter watercourses or moist areas such as drainage lines. A weed management strategy would be implemented, possibly as part of a vegetation management plan, for any retained or rehabilitated natural vegetation within the study area and any offset areas. All noxious weeds within the land would be treated in accordance with their weed Class as per the *Noxious Weeds Act* 1993.	Construction
SC6	Minimise the risk of importation of root-rot fungus	Protocols to prevent introduction or spread of *Phytophthora cinnamomi* would be implemented following DECCW guidelines.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC7	Implementation of offset areas	A Compensatory Habitat Strategy would be developed that would contribute to the long term conservation of biodiversity. This would be developed in consultation with DECCW and DEWHA with the aim to set aside known habitat for Slaty Red Gum and EECs within the locality of the Project. Offset areas would be required to compensate for the loss of or disturbance to vegetation communities (fauna habitat areas) across the investigation area. The Strategy is further discussed in Section 5.11 of this report.	Construction and Operation
Fauna			
SC8	Minimise harm to fauna species during the clearing of trees for the Project	A tree felling protocol would be developed to minimise harm to all fauna species during the clearing of trees for the Project. The protocol would be developed by a suitably qualified and licensed ecologist with previous experience supervising the felling of trees.	Pre-construction and Construction
		All tree felling of habitat trees would be supervised by a suitably qualified and licensed ecologist with previous experience supervising the felling of habitat trees. Tree felling protocols are further detailed in Chapter 10 (Terrestrial Fauna) of the Environmental Assessment.).	Pre-construction and Construction
		The construction impact zone and areas of vegetation to be cleared would be clearly identified.	Pre-construction and Construction
SC9	Establishment of nest boxes	Nest boxes would be established and monitored as identified in Chapter 10 (Terrestrial Fauna) of the Environmental Assessment.	Pre-construction and Construction
SC10	Identify bridges and culverts that may be used for roosting/ nesting	Where bridges and culverts are to be removed or modified, an ecologist would inspect the bridge/culvert immediately prior to removal/modification for roosting bats, and fairy martin and welcome swallow nests.	Pre-construction and Construction
SC11	Wildlife friendly designs	Where culverts are to be replaced or constructed, they would not restrict the use of those culverts as movement corridors for fauna species through the rail corridor.	Construction
SC12	Minimise runoff and sedimentation	The commitments outlined in SC2 also apply to minimise run off and sedimentation impacts on fauna species and their habitats.	Construction and Operation

Ref No.	Objective	Commitment	Timing
SC13	Rehabilitation of area	The commitments outlined in SC4 also apply to implement rehabilitation which would minimise impacts to fauna species and their habitats.	Construction and Post-construction
SC14	Minimise impacts of noxious weeds	The commitments outlined in SC5 also apply to minimise impacts of noxious weeds on fauna species and their habitats.	Construction
SC15	Minimise the risk of importation of root-rot fungus	The commitments outlined in SC6 also apply to minimise impacts of root-rot fungus on fauna species and their habitats.	Pre-construction and Construction
SC16	Implementation of offset areas	The commitments outlined in SC7 also apply to implement offset areas which would minimise impacts to fauna species and their habitats.	Construction and Operation
Aquatic Ecology			
SC17	Minimise potential impacts to aquatic species and their habitats.	The commitments outlined in SC1 also apply to minimise impacts to aquatic species and their habitats. ◗ The construction areas would be clearly identified so that works would not encroach closer than necessary upon remnant riparian vegetation. ◗ Design new culverts for fish friendly crossings. ◗ No instream woody snags are to be removed from creeks or drainage lines except as required for structures or creek realignment. In the case of the Sawyer's Creek realignment, any woody snags that occur within the construction impact zone would be relocated or replaced (prior to commencement of Phase 2) up or downstream of the construction area dependant on site safety and access considerations.	Pre-construction and Construction (Phase 1 and/ or Phase 2 as appropriate)
SC18	Minimise runoff and sedimentation	The commitments outlined in SC2 also apply to minimise runoff and sedimentation impacts to aquatic species and their habitats.	Pre-construction and Construction
SC19	Rehabilitation of area	The commitments outlined in SC4 also apply to implement rehabilitation which would minimise impacts to aquatic species and their habitats.	Construction and Post-construction
SC20	Minimise impacts of noxious weeds	The commitments outlined in SC5 also apply to minimise impacts of noxious weeds on aquatic species and their habitats.	Construction

Ref No.	Objective	Commitment	Timing
Aboriginal Heritage			
SC21	Minimise impacts on Aboriginal heritage	Provisions relating to Aboriginal heritage would be included in an Aboriginal Heritage Management Plan (AHMP), which would be a component of the CEMP. These provisions would be formulated in consultation with the registered Aboriginal stakeholders and DECCW, and specify the policies and actions required to manage the potential impacts of the Project on Aboriginal heritage after Part 3A Approval is granted. The primary elements of the AHMP are outlined below and further detailed in Chapter 12 (Aboriginal Heritage) of the Environmental Assessment.	Pre-construction and Construction
SC22	Implement a program of salvage	To mitigate the impacts of development and to retrieve and conserve samples of Aboriginal heritage evidence, a program of salvage would be undertaken within the Construction Impact Zone. This work would be undertaken by representatives of the registered Aboriginal stakeholders and qualified archaeologists. A detailed description of these management strategies are provided in Chapter 12 (Aboriginal Heritage) of the Environmental Assessment.	Pre-construction and Construction
SC23	Implement precautionary measures	Where impacts can be avoided to the identified Aboriginal heritage evidence, appropriate precautionary measures, such as informing relevant staff and contractors of the nature and location of the items and need to avoid impacts, along with temporary protective fencing and signage, would be implemented for those sites within close proximity of the area of works.	Pre-construction and Construction
SC24	Minimise impacts to areas with moderate or high Aboriginal significance	Consideration would be given, where possible, to avoiding or minimising impacts to the high significance site and the zones where there is a moderate or high potential for sub-surface deposits of artefacts that may be in situ and/or of high research value in areas of lower ground disturbance.	Pre-construction and Construction
SC25	Heritage awareness training	All relevant contractors and staff engaged on the Project would receive heritage awareness training prior to commencing work on-site. Heritage awareness training is further described in Chapter 12 (Aboriginal Heritage) of the Environmental Assessment.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC26	Implement archaeological survey	Archaeological survey would be conducted to sample all of the potential impact areas that could not be sampled during the present investigation or any subsequent amendments to the impact area outside of the investigation area. Archaeological survey details are provided in Chapter 12 (Aboriginal Heritage) of the Environmental Assessment.	Pre-construction and Construction
SC27	Management of previously unrecorded Aboriginal heritage sites	Provisions would be included to guide the management of any previously unrecorded Aboriginal heritage sites that may be identified within the Project area. Management provisions would vary in relation to the nature of any evidence identified, its significance and the nature of the proposed impacts, and may include temporary protection, avoidance of impacts, mitigation, monitoring or unmitigated impact.	Pre-construction and Construction
SC28	Management of skeletal remains	Should any skeletal remains be detected during the course of development, work in that location would need to cease immediately and the finds be reported to the appropriate authorities, including the Police, DECCW and Aboriginal stakeholders. Detection of skeletal remains is further detailed in Chapter 12 (Aboriginal Heritage) of the Environmental Assessment.	Construction
SC29	Use qualified and experienced archaeologists	Archaeological investigations would only be undertaken by archaeologists qualified and experienced in Aboriginal heritage, in consultation with the registered Aboriginal stakeholders, and occur prior to any development impacts occurring to those specific areas or sites. The registered Aboriginal stakeholders would be afforded the opportunity to be involved in any field studies as per the DECC (2004) *Interim Community Consultation Requirements for Applicants* policy.	Construction
SC30	Review of AHMP	The AHMP would be regularly reviewed to establish that it is functioning as designed to the standard required.	Construction
SC31	Consultation with Aboriginal stakeholders	The involvement of the registered Aboriginal stakeholders in the ongoing management of the Aboriginal heritage items within the Project area during construction would be promoted.	Construction

Ref No.	Objective	Commitment	Timing
Non-Indigenous Heritage			
SC32	Minimise impacts on Non-Indigenous heritage.	All Hunter 8 Alliance employees, contractors and sub-contractors are to be made aware of the provisions of the *Heritage Act 1977* and the requirements under the Act, including that if a relic is suspected or discovered, the person suspecting or discovering must notify the NSW Department of Planning, Heritage Branch or its delegate and suspend work that might have the effect of disturbing, damaging or destroying such relic until the requirements of Heritage Branch have been satisfied.	Pre-construction and Construction
		Where Project activity would have the capacity to obscure, move, modify, damage or destroy any part or component of a heritage resource within the study area, the resource would be archivally recorded prior to the commencement of any Project works. Project works would then be monitored by a suitably qualified archaeologist and an archival record completed for each resource. The record would comply with requirements set out in the NSW Heritage Guidelines.	Pre-construction and Construction
SC33	Manage the potential heritage impacts at Greta and Branxton Stations	During Phase 2 construction activities at the Greta and Branxton Railway Stations, a representative length of any of the original brick platform facing to be disturbed would be salvaged and reinstated on the new platform alignment, away from the dedicated passenger area. The re-erected brick facing would be distinguished from any original work by suitable marking or inscription detailing the date and nature of re-erection	Construction and Post-construction
SC34	Manage the potential heritage impacts at Allandale Wine Cellars/ Penfold's Winery	Where elements of the Allandale Wine Cellars / Penfold's Winery site located within the road reserve are to be disturbed, the resource would be archivally recorded prior to the commencement of any Project works. Project works would then be monitored by a suitably qualified archaeologist and an archival record completed for each resource. The record would comply with requirements set out in the NSW Heritage Guidelines.	Pre-construction and Construction
SC35	Minimise impacts on natural heritage	The fossiliferous horizon disturbed in the Allandale Area would be removed using the method outlined in Section 13.4 of the Environmental Assessment. This would make the material available for inspection for and removal of fossil material by palaeontologists and other interested parties for research purposes and to place on display.	Construction

Ref No.	Objective	Commitment	Timing
Land Use			
SC36	Manage the potential land use impacts of the Project.	Where required land would be acquired for the construction of the works and mutually agreed compensation made for any loss of productive agricultural land or facilities. A detailed description of these management strategies is provided in Chapter 14 (Land Use) of the Environmental Assessment.	Pre-construction
		Stock fencing would be provided along the newly defined property boundaries and be constructed prior to the removal of existing fencing or any works being carried out on the subject land, unless otherwise agreed with the landowner.	Pre-construction
SC37	Reduce impacts on individual properties and land users	Detailed management measures to reduce land use impacts on individual properties and land users would be developed in consultation with the individual landowners concerned during the detailed design and property acquisition negotiations. Access requirements for the construction phase of the Project would be discussed with individual landowners prior to the landowner's access being affected.	Pre-construction and construction
		Measures to mitigate amenity impacts such as noise, air, visual and social are outlined in Chapters 16 and 17, and Sections 19.5 and 19.6 of the Environmental Assessment respectively.	Construction
		Where a dam or groundwater bore would be disturbed or removed as a result of the Project, appropriate compensation or mitigation would be provided that is agreed to by ARTC, the landholder and the DECCW (responsible for the licensing of dams and groundwater bores).	Pre-construction and Construction
Traffic and Access			
SC38	Minimise construction traffic impacts on Intersection Capacity	The intersection treatment methods proposed in Section 15.5 of the Environmental Assessment and Section 6.6 of this Submissions Report would be implemented during the construction period to minimise impacts on the New England Highway and the associated intersections. The detailed design and planning for these methods would be discussed with the RTA and Singleton, Maitland and Cessnock Councils.	Construction

Ref No.	Objective	Commitment	Timing
SC39	Manage the potential construction traffic impacts	A Construction Traffic Management Plan would be prepared dealing with the safe management of traffic during the construction phase of the Project.	Pre-construction and Construction
SC40	Appropriate signage at haul roads and access points	Erect appropriate signs warning of trucks entering at the following construction access points: ◗ Wollombi Road, Telarah (Phase 2). ◗ Station Lane, Lochinvar (Phase 1). ◗ Allandale Road, Allandale (Phase 1). ◗ Nelson Street, Greta (Phase 2). ◗ Station Street, Branxton (Phase 2). ◗ Rixs Road, Belford (Phase 1).	Construction
		Appropriate signs would be erected warning traffic of cyclist and pedestrian movements where existing shoulder or verge provisions are restricted due to construction activity.	Construction
SC41	Management of construction vehicles	Wherever possible, haulage vehicles would be filled to capacity to minimise vehicle movements.	Construction
		Vehicles transporting potentially dust and/or spillage generating material to and from the construction site would be covered immediately after loading (prior to traversing public roads) to prevent wind blown dust emissions and spillages.	Construction
		In the event of a spillage of materials from construction vehicles, spilled material would be removed as soon as practicable within the working day of the spillage.	Construction
		Arrangements including advance warning signs and emergency access arrangements would be implemented for any road closure.	Construction
SC42	Implementation of traffic control plans	Traffic Control Plans would be prepared for the road network surrounding the Project, including all primary and secondary access points. Traffic control plans would be produced for specific road construction staging scenarios, depicting vehicle, pedestrian, bus and cyclist restrictions and protection measures. Specific control measures are provided in Chapter 15 (Traffic and Access) of the Environmental Assessment.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC43	Maintain property access	Access would be maintained to neighbouring land uses throughout the construction period, unless otherwise agreed by the landowner. Access would be maintained to all neighbouring properties impacted by the construction works, unless otherwise agreed by the landowner.	Construction
SC44	Manage pedestrian and cyclist access	Pedestrian and cyclist access would be retained where possible during construction and would be addressed at each site in a Construction Traffic Management Plan or Traffic Control Plans.	Construction
SC45	Additional travel to site for construction employees	The Hunter 8 Alliance would establish a policy promoting car-pooling for employees.	Construction
Air Quality			
SC46	Minimise dust generation and adverse air quality impacts	Site managers would be provided with daily weather updates that would contain warnings of the onset of strong winds. The site manager could then take steps to pre-water construction areas and stockpiles before they are disturbed and continue watering during any activities where fugitive dust may be produced. Earthmoving activities would be suspended during times of high winds when dust emissions cannot be adequately controlled, particularly when dust plumes are directed towards sensitive receptors.	Pre-construction and Construction
SC47	Implementation of barriers and screens	Physical barriers would be considered to act as windbreaks for the construction site or for stockpile areas where practicable.	Construction
		Dust screens would be installed on construction site boundaries that are adjacent to sensitive receptors where practicable.	Construction
		Stockpiles would be placed, where possible, in areas protected from the wind and away from public places. Spoil stockpiles would be water sprayed regularly and dry material stockpiles would be covered, if generating windborne dust, and practicable.	Construction
SC48	Maintain existing vegetation	Existing vegetation would be retained where possible. Where clearing is required, cleared areas no longer subject to construction activities and stockpiles would be seeded with fast growing species for rapid coverage to temporarily or permanently stabilise soil, where practicable.	Construction

Ref No.	Objective	Commitment	Timing
SC49	Reduce impacts associated with construction traffic	Construction traffic would be considered by designating specific routes for haulage and access. Vehicle speeds would be limited to suit site conditions and as sign posted as part of the Traffic Control Plan.	Construction
		All trucks hauling dirt, sand, soil or other loose materials (materials that could generate dust emissions or result in spillages) to and from the construction site would be covered.	Construction
		Cattle grids or ballast beds would be installed where required to minimise mud and dirt being tracked onto public roadways by trucks and any equipment leaving the site. Material spillage on roads and pathways would be cleaned.	Construction
		All construction vehicles, mobile plant and machinery would be maintained and operated in accordance with the manufacturers' specifications to minimise exhaust emissions.	Construction
SC50	Management of air quality complaints	A line of communication would be established with the local community prior to the start of construction as part of a complaints management system. All complaints lodged by nearby residents would be recorded on a complaints register and addressed accordingly.	Construction
SC51	Enhanced mitigations for construction dust	Dust control would be linked to real-time dust and weather monitoring.	Construction
		Increase watering rate or consider application of chemical stabilisers to create an artificial crust on the surface by binding unconsolidated material.	Construction
		Earthmoving and other high dust generating activities would be suspended during times when dust plumes are blowing towards sensitive receptors, unless otherwise agreed with the sensitive receptor.	Construction
		Contact would be established with the local residents and the construction program and progress communicated, particularly to provide advance warning of significant dust generating activities being undertaken in close proximity to sensitive receptors.	Construction
SC52	Minimise emissions during the operation	Railway verges and other exposed surfaces would be re-vegetated or covered using cobbles or coarse gravel to reduce fugitive dust emissions.	Operation

Ref No.	Objective	Commitment	Timing
		Trains would minimise idling near sensitive receivers (where possible).	Operation
		Where practicable and available, consideration would be given to maintaining or establishing a stand of trees or other suitable vegetation on properties adjacent to the Project to aid dispersion and potentially remove dust particles through impingement on the foliage.	Operation
Noise and Vibration			
SC53	Minimise construction noise impacts.	Construction activities would be conducted consistent with provisions of a new Environment Protection Licence for construction activities, complaint management and reporting conditions.	Construction
SC54	Construction hours	The standard hours for construction activities associated with the Project would be: ◗ 7:00 am to 6:00 pm, Mondays to Fridays, inclusive. ◗ 8:00 am to 1:00 pm on Saturdays. ◗ No works on Sundays or public holidays.	Construction
SC55	Managing out-of-hours work	The current ARTC Environment Protection Licence 3142 (EPL) allows for maintenance and construction works to be undertaken outside business hours providing it is undertaken in accordance with specific conditions contained in the EPL. It is proposed that a new EPL for construction of the Project would include similar conditions.	Construction
		Communications with the local community with regards to out-of-hours work would be conducted in accordance with the relevant provisions of the EPL. Specific control measures for these are provided in Chapter 17 (Noise and Vibration) of the Environmental Assessment.	Construction
SC56	Inform all site workers of potential impacts	All site workers (including subcontractors and temporary workforce) would be informed of the potential for noise and vibration impacts upon local residents and encouraged to take practical and reasonable measures to minimise noise during the course of their activities.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC57	Development of Noise, Vibration and Blasting Impact Statements	Noise and Vibration Impact Statements would be prepared for discrete work areas in order to predict the noise impacts of specific activities at the most potentially affected receivers. A non-exhaustive list of NVIS requirements is provided in Chapter 17 (Noise and Vibration) of the Environmental Assessment.	Pre-construction
SC58	Development of control plans and work methods	A Pile Vibration Control Plan for driven piles and Blasting Vibration Control Plan would be included in the Noise, Vibration and Blasting Impact Statements, as appropriate.	Pre-construction
		Work methods would be reviewed with a preference for quieter and non-vibration generating methods wherever practical and feasible. This is particularly important for any out-of-hours and night-time activities.	Pre-construction and Construction
SC59	Mange movement of materials	Where practical, material dumps would be located as far as possible from the nearest residences, and whenever possible, loading and unloading areas be located as far as possible from the nearest residences.	Construction
		As far as possible, the practice of dropping materials dropped from heights into or out of trucks would be minimised.	Construction
SC60	Correct use of tools and equipment	All plant on site would be operated in accordance with the manufacturer's instructions.	Construction
		All construction vehicles and machinery would be fitted with manufacturer supplied noise suppression devices maintained in accordance with manufacturers' guidelines, where practical.	Construction
		Where practical, fixed equipment (pumps, generators, compressors) would be located as far as possible from the nearest residences.	Construction
		Where practical, all pneumatic tools operated near a residential area must be fitted with an effective silencer on their air exhaust port.	Construction
		Noise labels would be affixed to new mobile air compressors and pavement breakers. The unit with the lowest noise rating which meets the requirements of the job would be used where work is conducted in proximity of noise sensitive locations.	Construction

Ref No.	Objective	Commitment	Timing
		All mechanical plant would be silenced by best practical means. Noise suppression devices would be maintained to the manufacturer's specifications. Internal combustion engines would be fitted with a suitable muffler in good repair.	Construction
		Where possible, no plant or equipment would be left idling when operating adjacent to residential areas.	Construction
SC61	Minimise impacts from construction vehicles	All construction vehicle movements to and from the site must comply with the requirements of the appropriate regulatory authority requirements for such activities.	Construction
		Where practicable, all typically noisy construction activities that could impact on sensitive receptors would be kept within the daytime working hours.	Construction
SC62	Development of building condition surveys	Building condition surveys would be undertaken at all potentially impacted dwellings prior to commencement of vibration generating works (such as pile-driving). These would be repeated at works completion.	Pre-construction, Construction and Post-construction
SC63	Construction Monitoring and Reporting Commitments	Any noise and vibration monitoring would be undertaken by a qualified professional, with consideration to relevant standards and guidelines. Noise and vibration monitoring would occur: ◗ If vibration-generating activities are conducted within 30 metres of a residence, and a building damage risk is identified, alternative work methods would be implemented so the vibration impacts are reduced to acceptable levels. ◗ Any noise and/or vibration complaint would be addressed in accordance with the Hunter 8 Alliance complaint management system. This would include: – Provision of a written response to a complaint within seven days. – Provision of an email response to an electronic complaint within two days if the complaint cannot be resolved by an initial response.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
		Monitoring would be undertaken and reported to the Alliance within five days of receiving a complaint, if that activity is continuing, so that the monitoring findings can be incorporated to the written response provided to the complainant. If exceedances are detected, corrective actions would be implemented, included in the response to the complainant and recorded. Specific monitoring and reporting measures are provided in Chapter 17 (Noise and Vibration) of the Environmental Assessment.	Pre-construction and Construction
SC64	Mitigating Exceedances of Construction Noise and Vibration	Where it is found that standard and NVIS specific mitigation measures are not sufficient to reduce noise and vibration impacts to acceptable levels, additional mitigation measures would be implemented. The approach to mitigating exceedances of construction targets is substantially extracted from TIDC's *Construction Noise Strategy 2007* with variations specific to the Project. The implementation of the measures is determined by use of the Additional Mitigation Measures Matrices (AMMM) shown in Chapter 17 (Noise and Vibration) of the Environmental Assessment.	Construction
SC65	Community consultation and feedback	Contact would be established with the local residents and the construction program and progress communicated on a regular basis, particularly when noisy or vibration-generating activities are planned. The Community Relations Team would provide a community liaison phone number and permanent site contact so that noise and/or vibration related complaints, if any, can be received and addressed in a timely manner. Specific strategies are provided in Chapter 17 (Noise and Vibration) of the Environmental Assessment.	Construction
SC66	Minimise operational noise impacts.	◗ The Hunter 8 Alliance proposes noise mounds as the preferred noise attenuation option at properties where IGANRIP is triggered for both Phase 1 and Phase 2 of the Project. These noise mounds would be constructed during the relevant construction phases and prior to operation of the third track in these areas. A preliminary review of the locations where attenuation is required indicated that noise mounds could provide the required attenuation.	Phase 1: The measures described in points one to four would be implemented prior to operation of the third track. Phase 2: The measures described in points one to three and point five would be implemented prior to operation of the third track.

Ref No.	Objective	Commitment	Timing
		◗ Following Project Approval, and during the construction of the Project, the Hunter 8 Alliance would undertake a detailed inspection of these properties and negotiations with the landholder to confirm whether noise mounds are reasonable and feasible. In the event that noise mounds are determined to not be reasonable or feasible, the Hunter 8 Alliance would consider alternative noise attenuation based on the following priority hierarchy: – Noise walls. – Architectural treatment. – Property acquisition (if attenuation is not reasonable or feasible). ◗ Monitoring of operational noise levels with the third track in place is to be undertaken at properties where the predicted noise levels are predicted to be 2 dB(A) below IGANRIP trigger levels. If the monitoring confirms the triggering of IGANRIP, the Hunter 8 Alliance would consider all reasonable and feasible noise attenuation options. ◗ Monitoring of operational noise levels with the third track in place for those locations potentially affected by L_{max} events in the vicinity of chainage 216.320 kilometres and chainage 196.100 kilometres turnouts. ◗ In addition, a noise barrier to be constructed between chainages 194.340 and 194.880 kilometres to attenuate the urban residences at Telarah prior to the operation of the third track through this section (Phase 2). The noise wall would be approximately 4.5 metres in height, which would provide an estimated 10 dB(A) in noise attenuation. This would be provided as part of Phase 2 of the Project prior to operation of the third track in this area.	
SC67	Minimise operational vibration impacts	A vibration monitoring program would be developed and implemented for the following properties prior to the commencement of operations on the third track within Phase 1 of the Project: ◗ Two residences east of Lovedale Road (MMD-021 and Lot 261 DP / 755211) in NCA D9. ◗ Clifton House (MMD-029) in NCA D11. ◗ One residence at the end of Winders Lane, Lochinvar (MMU-061) in NCA U8.	Construction (Phase 1 and Phase 2 as appropriate).

Ref No.	Objective	Commitment	Timing
		The program would involve monitoring at the residences to measure the level of vibration in comparison to the relevant standards. Vibration monitoring would be undertaken at a distance from the existing track equal to that which the third track is designed to be from the residence. If the monitoring indicates that the criteria were to be exceeded, the Hunter 8 Alliance would enter negotiations with the landholder to determine an appropriate mitigation measure. This may include (but not be limited to): ◗ Property acquisition. ◗ Relocation of the existing residence if reasonable or feasible. If this is not achieveable construction of a new residence on the property outside of the area adversely impacted by vibration. This process would be implemented at those properties located within 40 metres of the Phase 2 areas prior to commencement of operations of a third track adjacent to those properties.	
Surface Water			
SC68	Minimise water quality impacts.	A Spoil and Fill Management Plan (SFMP) would be prepared and implemented to minimise potential impacts on water quality during construction of the Project. This plan would incorporate the design and installation of erosion and sediment controls in accordance with *Managing Urban Stormwater, Soils and Construction Volume 2D Main road construction* (DECC 2008).	Construction and detailed design
		Project team members involved in the construction of the Project would be made aware of their environmental responsibilities and the measures to minimise impacts.	Pre-construction and Construction
SC69	Management of vegetation clearance	At the vegetation clearing stage, the vegetation would be stockpiled and then mulched and spread over disturbed areas to provide a natural erosion barrier and assist during rehabilitation upon completion of construction.	Construction

Ref No.	Objective	Commitment	Timing
SC70	Minimise potential earthworks impacts	Prior to commencement of earthworks there would be a range of erosion and sediment controls implemented which would include but would not be limited to: ◗ Establishment of sediment filters, such as hay bales and sediment fences, sediment traps and/or sediment basins to capture sediment and prevent sediment laden water discharge to the downstream environment. ◗ Construction of temporary catch and diversion drains to reduce erosion hazard and prevent clean water from upstream of the corridor flowing onto disturbed areas and hence become dirty water. ◗ Stabilisation of exposed surfaces as soon as practicable following completion of construction in the vicinity of the works, including the stabilisation of disturbed soils through progressive revegetation.	Construction
SC71	Controls outside the specific work area	Refuelling of plant and machinery either by fuel trucks with spill trays or within bunded areas or off-site in appropriate locations wherever possible.	Construction
		Minimisation of disturbed areas for the safe completion of construction activities so that the potential export of sediment is minimised.	Construction
		Location of stockpiles clear of flood prone areas, stream banks, channels and stormwater drainage areas, and stabilisation of stockpiles that would be in place for longer than 10 days.	Construction
		Diversion of flows around stockpiles by bunds and/or diversion drains, and around work areas where practicable.	Construction
		Establishment of temporary creek crossings with a lower section for higher flows to pass with culverts extending beyond the toe of fill embankments.	Construction
		Rehabilitation of the waterway once temporary creek crossings have been removed.	Construction
		Establishment and maintenance of a limited number of construction compounds to reduce the areas of overall disturbance for the Project.	Construction
		Establishment of construction compounds, including machinery, fuel and chemical storage areas with bunded areas away from drainage lines.	Construction

Ref No.	Objective	Commitment	Timing
		Appropriate storage of construction materials on site so as to prevent leaching, leaking or other transfer of material into waterways or onto land.	
SC72	Spill containment	An appropriate spill kit would be kept on site at all times and any spillage would be immediately and appropriately cleaned up. In the event of a large or hazardous spill, the Fire Brigade, Police, Ambulance and the Department of Environment, Climate Change and Water would be contacted as appropriate.	Construction
SC73	Monitoring	A surface water-monitoring program would be established prior to commencement of construction. This would enable the compilation of background data over potentially a range of climatic conditions. Surface water quality monitoring would continue for the construction period to monitor water discharged from the construction site, and water quality upstream and downstream of the construction areas.	Pre-construction and Construction
SC74	Erosion and sediment control measures	Permanent catch and diversion drains to divert runoff from upslope and reduce erosion hazard.	Operation
		Permanent diversions to outlet to stable discharge areas.	Operation
		Revegetation of disturbed areas to encourage infiltration.	Construction and Operation
		Permanent areas of spoil to be located clear of flood prone areas, stream banks, channels and stormwater drainage areas.	Construction and Operation
		Permanent areas of spoil to have maximum batter slopes of 1 vertical to 2 horizontal and be stabilised by vegetation.	Construction and Operation
		Flows to be diverted around spoil areas and quarries by bunds/diversion drains.	Construction and Operation
SC75	Increase Existing Flood Levels	During the detail design process, review of the extent of encroachment into existing waterway areas would need to occur.	Pre-construction

Ref No.	Objective	Commitment	Timing
SC76	Fish Passage through Culverts	Guidelines of both NSW Fisheries and the Queensland Department of Primary Industries would be considered when establishing fish passage. Culverts at perennial waterways or waterways where there is evidence of regular flows would be designed to provide suitable conditions for fish habitat. Specific details for culverts are provided in Chapter 18 (Surface Water) of the Environmental Assessment.	Pre-construction and Construction
SC77	Minimise impacts on Sawyers Creek	The proposed realignment of Sawyers Creek to be undertaken during Phase 2 construction would maintain (where possible) the existing stream length, grade and power to minimise any impacts on the creek.	Pre-construction and Construction (Phase 2)
Topography, Soils and Geology			
SC78	Minimise potential disturbance of soil erosion, sedimentation, PASS, reactive soils or dispersive soils	Develop and implement a Spoil and Fill Management Plan which details erosion and sediment control measures including areas of higher risk. Detail appropriate procedures for the handling, stockpiling and assessment of materials during the works. The Plan would also include a contingency plan for unexpected hazards that may be encountered during site works.	Pre-construction
		Adoption of appropriate moisture and compaction controls where reactive soils are placed as general fill in embankments.	Pre-construction and Construction
		Assessing site reactivity in accordance with AS2870 Residential Slabs and Footings for proposed small to medium scale structures.	Construction
		Widen cuttings where appropriate to provide a buffer from the track to manage sediment issues.	Pre-construction and Construction
		Flattening back cut batter gradients where possible to promote vegetative cover and adoption of selective batter treatments as appropriate.	Pre-construction and Construction
		Treatment of soils with gypsum or similar to inhibit dispersive characteristics.	Construction
		Implement of an Acid Sulfate Soil Management Plan as part of the CEMP including procedures consistent with Remediation Guidelines from DECCW.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC79	Maintenance Activities	Undertake general geotechnical maintenance relating to culvert clean out and repairs, top drains, subsoil drainage and general earthworks.	Operation
Contamination			
SC80	Develop and Implement Spoil and Fill Management Plan	Develop and implement a Spoil and Fill Management Plan (SFMP) as part of the Construction Environmental Management Plan (CEMP) for managing possible contaminated materials not encountered and assessed during the Environmental Assessment investigation. The SFMP for the Project would detail appropriate procedures for the handling, stockpiling and assessing potentially contaminated materials during the works. The SFMP would also include a contingency plan for unexpected hazards that may be encountered during site works. Undertake Phase 2 Contamination Assessments within the vacant property north of the corridor (chainages 195.120 to 195.190 kilometres) and industrial properties north of the corridor (chainages 194.780 to 195.120 kilometres), which could not be accessed during this investigation.	Pre-construction
SC81	Minimise waste	Waste would be managed in accordance with relevant legislation.	Pre-construction, Construction and Post-construction
SC82	Management of Asbestos	Should any signal huts or structures within the site area be scheduled for removal, a hazardous material survey would be undertaken prior to demolition. In the event that asbestos is identified in these structures, an Asbestos Management Plan would be developed and implemented.	Pre-construction and construction
SC83	Management of acid sulfate soils	Implementation of an Acid Sulfate Soil Management Plan as part of the CEMP.	Pre-construction and Construction
Groundwater			
SC84	Minimise groundwater quality impacts through monitoring	Conduct groundwater monitoring (levels and quality), prior to the start of construction to establish baseline groundwater conditions at selected locations adjacent to the Project alignment to confirm groundwater quality and level action criteria against which to monitor conditions during construction.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
		Conduct groundwater monitoring to monitor groundwater levels and quality of shallow groundwater adjacent to the Project alignment at selected locations, to monitor any groundwater impacts during the construction phase.	Construction
		Assess groundwater monitoring results against baseline groundwater conditions during construction and review mitigation measures and monitoring program if necessary.	Construction
SC85	Implementation of storage areas	Storage areas for vehicles, machinery, equipment and chemicals during construction would have appropriate facilities to contain spills, leaks and surface water runoff to reduce the potential for contamination of groundwater through infiltration.	Construction and Operation
SC86	Develop a response plan	A response plan to deal with accidental spills and leaks would be included as part of the CEMP.	Construction
Energy and Greenhouse			
SC87	Reduce impacts of greenhouse gases	Use hierarchical approach to minimise greenhouse gas emissions: ◗ Avoid emissions source. ◗ Reduce consumption. ◗ Improve energy efficiency. ◗ Replace with low emissions alternative. ◗ Offset. Further details outlining greenhouse mitigation measures are provided in Chapter 19.4 (Energy and Greenhouse Gas Emissions) of the Environmental Assessment.	Construction
Social and Economic			
SC88	Land acquisitions	Negotiate land acquisitions and implement appropriate compensations measures. Further details outlining land use mitigation measures are provided in Chapter 14 (Land Use) of the Environmental Assessment.	Detailed design and Pre-Construction

Ref No.	Objective	Commitment	Timing
SC89	Minimise noise and vibration	Provide the relevant stakeholders with sufficient information to enable them to understand the likely nature, extent and duration of noise and vibration impacts. Further details outlining noise and vibration mitigation measures are provided in Chapter 17 (Noise and Vibration) of the Environmental Assessment and Section **Error! Reference source not found.** of this report.	Detailed design, Construction and Operation
SC90	Minimise property damage	◗ Measures to avoid and minimise property damage to be included in the CEMP. ◗ Implement ARTC and contractor conduct protocols. ◗ Monitor construction contractors' performance. ◗ Act swiftly to address any stakeholder complaint regarding property damage.	Construction
SC91	Reduce/manage construction dust	Provide relevant stakeholders with sufficient information to enable them to understand the likely nature, extent and duration of dust impacts. Specific control measures for construction dust are provided in Chapter 16 (Air Quality) of the Environmental Assessment.	Construction and operation
SC92	Minimise impacts on residents	Communicate localised construction activities and timeframes to relevant stakeholders so they can take measures to minimise impacts on themselves and their properties if required.	Construction
SC93	Reduce visual impacts	Communicate future changes (such as via Project newsletter/updates, advertisements) to help ensure the community understands what the proposal site would look like after construction activities. Specific mitigation measures for visual impacts are provided in Chapter 19.6 (Visual) of the Environmental Assessment.	Construction and Operation
SC94	Manage increased light pollution	Where light impacts are severe implement attenuation measures, such as screening of sensitive receptors. If the impact of operational light pollution is severe, consider the implementation of attenuation measures, such as landscaping or barriers, to screen sensitive receptors.	Construction and Operation

Ref No.	Objective	Commitment	Timing
SC95	Manage changes to property infrastructure	Implement measures to compensate/offset significant impacts on private infrastructure (such as dams and buildings). Measures to be developed in consultation with affected landholders.	Pre-construction and Construction
SC96	Minimise impacts to private property access	Communicate construction related road changes to relevant local residents to ensure awareness of changed access arrangements. Implement measures to maintain safe access to residential properties. Maintain property access points where appropriate. Where exiting access points need to close, consideration would be given to alternative access arrangements. Further details outlining access mitigation measures are provided in Section 15 (Traffic and Access) of the Environmental Assessment.	Construction and Operation
SC97	Manage security and privacy	Implement ARTC and contractor conduct protocols. Where impacts are severe, consider the implementation of attenuation measures to screen sensitive receptors.	Construction
SC98	Minimise impacts on road safety, access and traffic mobility	Implement ARTC and contractor OH&S procedures and develop a traffic management plan to: ◗ Instruct drivers to reduce speeds and demonstrate extra caution in the vicinity of sensitive receptors. ◗ Implement appropriate signage near Project site and along haul routes. ◗ Record any incidents involving accidents or near misses with pedestrians and cars on local roads, and report in an OH&S register. ◗ Define traffic movement areas during construction, including the use of signage onsite and along transport routes, to ensure awareness of increased heavy traffic along transport routes. ◗ If the impact of dirt and mud carried out onto local roads is severe, street cleaning would be undertaken to remove potentially hazardous debris and/or consideration can be given to sealing driveways, or establishing cattle grids or ballast beds to construction sites to reduce material carried onto the road.	Construction

Ref No.	Objective	Commitment	Timing
		◗ Further details outlining access mitigation measures are provided in Section 15 (Traffic and Access) of the Environmental Assessment.	
SC99	Maintain rail access	Maintain access to all operational rail stations.	Construction
SC100	Reduce impacts on community values	Implement a public information program that addresses community values. Implement complaint monitoring and response measures.	Construction
SC101	Impacts on local and regional employment	Include local employment in ARTC and construction contactor recruitment, where suitable.	Construction
SC102	Impacts to local businesses	Minimise any disruption to local businesses.	Construction
SC103	Inform community of progress and key activities	Provide regular updates to the community on construction activities and program. Maintain communication lines between ARTC and the community.	Construction Operation
Visual Amenity			
SC104	Minimise visual disruption to receptors	Minimise loss or damage to vegetation within the rail corridor and adjacent road reserves and private property including the protection of trees prior to construction and/or trimming of vegetation to avoid total removal. Minimise light spillage through designing the construction and operation lighting to reduce the likelihood of the sites being over-lit and to minimise additional light spillage from the rail corridor into adjacent visually sensitive properties. Temporary hoardings, barriers, traffic management and signage to be removed when no longer required. Materials and machinery to be stored tidily during the works. Roads providing access to the rail corridor and work sites to be maintained free of dust and mud as far as reasonably practicable.	Detailed design and construction Construction and Operation Construction Construction and Operation Construction
SC105	Integration of infrastructure	Integration of infrastructure (such as structures, embankments/cuttings and bridges) into the surrounding environment.	Detailed design, Construction and Operation

Ref No.	Objective	Commitment	Timing
SC106	Manage changes to landscape	Minimisation of vegetation clearance in sensitive environmental areas, where possible.	Construction and Operation
		Minimisation of vegetation clearance in areas where the vegetation provides screening of the rail corridor to sensitive receptors, where possible.	Construction and Operation
		An integrated and consultative design process and interface amongst specialist disciplines resulting in optimal design solutions.	Detailed design, Construction and Operation
		Landscape solutions would be buildable within the site boundary from the outset unless agreed by adjoining landholders.	Detailed design, Construction and Operation
		Demonstrate that environmental, landscape and urban design issues have been adequately considered as part of an integrated design process resulting in a positive legacy for the Project.	Detailed design, Construction and Operation
		Early identification of landscape 'hot spots' and integration of mitigation strategies to minimise landscape and visual impacts.	Detailed design, Construction and Operation
		Development of a Landscape Rehabilitation Strategy and Landscape Strategy that draws together the outcomes of the above integrated design and assessment process.	Construction and Operation
		Consultation with affected residents on desired screening.	Construction and Operation
		Maintenance of screening planting following the establishment phase to ensure continual / improved visual screening.	Construction and Operation
Waste Management			
SC107	Minimise waste impacts of the Project	To determine waste management options, waste would be classified according to the DECC's *Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes (*1999) into the following categories: ◗ Inert – including virgin excavated material, vegetation, building and demolition waste, concrete and asphalt. ◗ Solid – such as food waste and litter. ◗ Industrial – such as asbestos. ◗ Hazardous – such as flammable liquids. ◗ Liquid – such as sewage.	Construction and Operation

Ref No.	Objective	Commitment	Timing
		A Waste Management Plan would be prepared and provide details of the requirements for handling, stockpiling and disposal of wastes.	
SC108	Manage waste from rail maintenance and repair activities	The Resource Management Hierarchy principles of the *Waste Avoidance and Resource Recovery Act* 2001 would be implemented as follows: ◗ Unnecessary resource consumption would be avoided. ◗ Avoidance would be followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery). ◗ Disposal would only be undertaken as a last resort.	Operation
SC109	Recycling	Where feasible, suitable waste would be recycled. Items for recycling would be sorted, collected and taken to a recycling depot in the region. Non-recyclable materials would be disposed of at licensed disposal facilities.	Construction and Operation
Hazards			
SC110	Minimise the risk of an incident during construction in regards to human health, safety and the environment.	A site specific Safety Management Plan would be developed along with Activity Method Statements and Task Risk Assessments prepared and implemented for construction activities. The Plan would identify hazards associated with work on the site and the hazard control to be implemented so that people are adequately protected from risk of injury or illness, including: ◗ Procedures to comply with all legislative and industry standard requirements for the safe handling and storage of hazardous substances and dangerous goods. ◗ Procedures for manual handling of heavy loads. ◗ Procedures for blasting activities. ◗ Procedures for operation and maintenance of site plant, including mobile plants.	Pre-construction and Construction
		The Construction Environmental Management Plan and the supporting sub plans would address the relevant environmental risks and hazards. This would include: ◗ Details of the hazards and risks	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
		associated with the activity. ◗ Mitigation Measures and plans including those identified in this Environmental Assessment and environmental risk analysis sections. ◗ Contingency plans as required.	
Environmental Management			
SC111	Implementation of Construction Environmental Management Plan (CEMP)	The Hunter 8 Alliance would prepare a CEMP prior to the commencement of construction. The CEMP would address the potential impacts referred to in this Environmental Assessment and would outline the environmental management practices and procedures to be followed during the site preparation and construction of the Project: ◗ A summary of all the potential environmental aspects and impacts outlined in this Environmental Assessment. ◗ A description of all major activities to be undertaken on the site during site preparation and construction. ◗ Statutory approvals and other obligations that would be fulfilled during site preparation and construction, including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies. ◗ Details of how the environmental performance of the site preparation and construction works would be monitored, and what actions would be taken to address identified adverse environmental impacts. ◗ A description of the roles and responsibilities for all relevant employees. ◗ Complaints handling procedures. ◗ Compliance with ARTC's Environmental Protection Licence.	Pre-construction and Construction

Ref No.	Objective	Commitment	Timing
SC112	Development of Construction Environmental Management Sub-Plans	Concise environmental management sub-plans would be developed. These would link to the CEMP. The sub-plans would include the following: ◗ Traffic Management Sub-Plan. ◗ Noise, Vibration and Blasting Management Sub-Plan. ◗ Spoil and Fill Management Plan (includes Erosion and Sedimentation, Soil and Water Management and Contaminated Soils Management). ◗ Flora and Fauna Management Sub-Plan. ◗ Aboriginal Heritage Management Sub-Plan. ◗ Non-Indigenous Heritage Management Sub-Plan.	Pre-construction and Construction
SC113	Manage potential environmental impacts	Hunter 8 Alliance would: ◗ Implement the CEMP in accordance with this statement of commitments and all relevant acts and regulations. ◗ Periodically review the CEMP with the aim of continuous improvement.	Pre-construction and Construction
		There would be continuing consultation with the community during the construction and operation phase of the Project.	Pre-construction, Construction and Operation

8. Conclusion

The Environmental Assessment and this Submissions Report have addressed:

- The key issues and general requirements identified in the Director-General's Environmental Assessment Requirements under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act).
- Issues raised by government agencies and members of the community.
- The objects of the EP&A Act together with the Project's consistency with the aims and objectives of the NSW State Plan and State Infrastructure Strategy.

The Project would produce some adverse impacts, which are unavoidable for development of this scale. However, the Project's design (including a number of the design modifications described in Chapter 5 of this report) and the measures included in the Statement of Commitments (refer to Chapter 7) substantially mitigate the potential impacts during construction and operation.

The Project remains a key component in meeting the objectives and ARTC's strategy of improvements endeavouring to keep system capacity ahead of industry demands. In doing so the Project would be expected to produce economic and transportation benefits to the coal industry on a local, national and international scale that would, in turn, provide flow-on economic benefits to the Hunter Region.