Wingecarribee Local Environmental Plan 2010

Flood Planning Area Map -

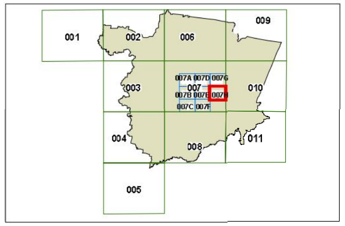
Sheet FLD_007H

Flood Planning Area

100yr +0.5m Flood Extent

Cadastre

Cadastre 04/05/10 © Land and Property Management Authority



N
W E
S

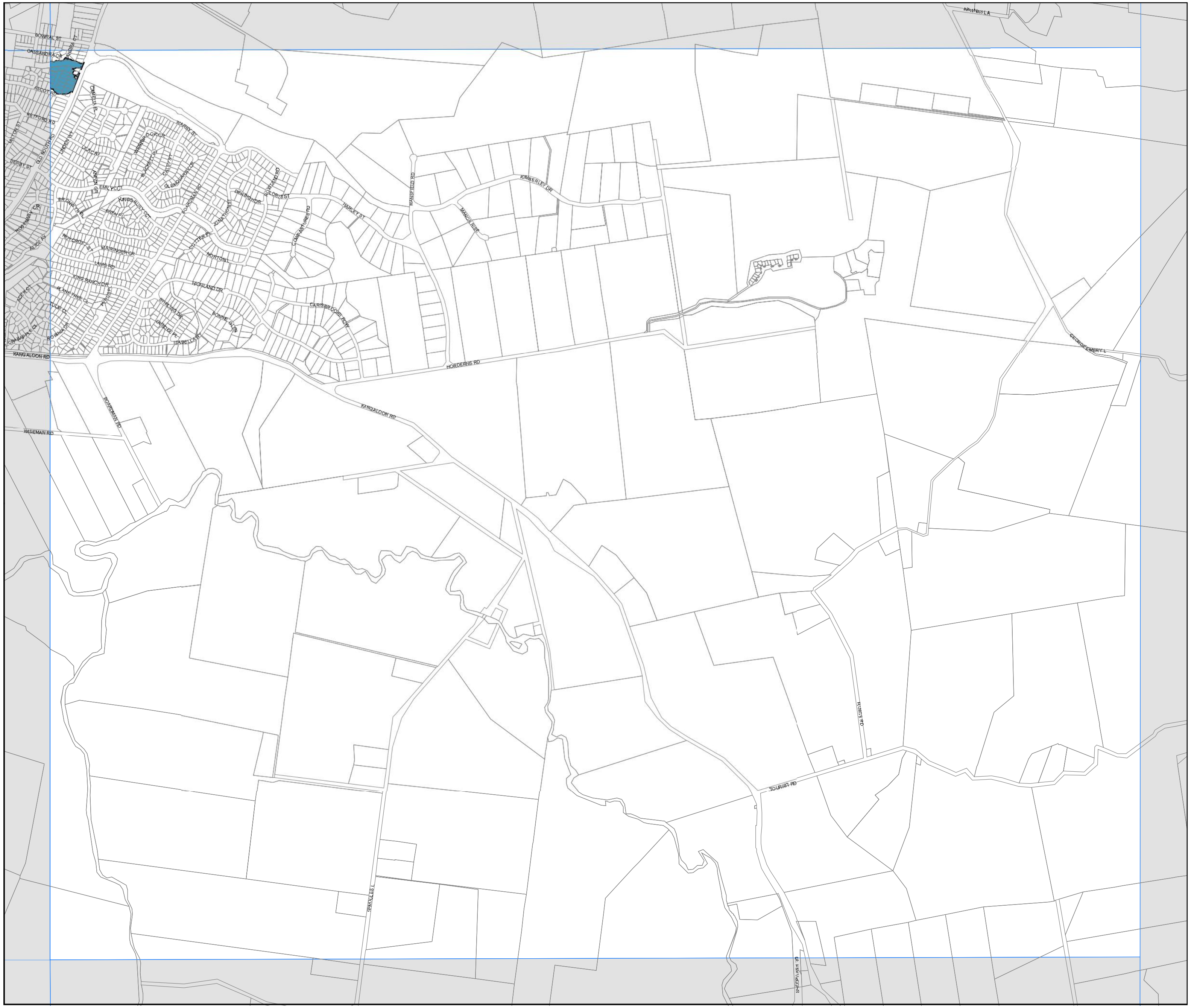
Projection: MGA (GDA94) Zone 56

0 100 200 400 600 800
Metres

Scale 1:20,000 @ A3

Map identification number:

8350_COM_FLD_007H_020_20100520



Appendix B

Surveyed structures

1.1 Medway Rivulet structures

1.1.1 Medway Dam

For the Medway Rivulet model the Medway Dam was included at the downstream end of the model. The Medway Dam structure was determined from drawing number B-40088 (also attached) in Medway Dam Second Surveillance Report (1991). Medway Dam provided the downstream boundary condition and was able to replicate the backwater levels upstream of the dam during the 1% AEP and PMF flood events. It has been assumed that the datum in the drawing is Australian High Datum (AHD) that the RLs of dam crest and spillway are correct when converted from feet to metres. A sanity check shows that the converted elevations are compatible to LiDAR survey levels.

It was assumed that the spillway tail water level (TWL) is located at 2055 feet (625mAHD) and top of dam wall at 2065 feet (629mAHD). Notes in Drawing B-40088 (attached) state that the arch section of the dam is designed for raising to TWL 2065 feet (629mAHD). It has been assumed that this is a dam wall crest of 2075 feet (632mAHD). A future case scenario for the 1% AEP and PMF flood events was run to determine the increase in flood levels due to the raising of the dam wall, if it were to happen in the future.

An inflow from Well's Creek and the residual catchment at Medway Dam was included at the downstream end of the model, to account for all inflow into the Dam. Catchment lumped in so that account for all inflow

1.1.2 Hume Highway – 3 Legs O'Man Bridge

Medway Rivulet crosses the Hume Highway just upstream of the proposed surface infrastructure. The twin bridge structure is locally known as the "Three Legs O'Man Bridge". Survey of the twin bridge for both lanes of the Hume Highway was undertaken by Southern Cross Consulting Surveyors on 25 September 2014. The dimensions of the bridge structures included in the HEC-RAS model are:

- 1.5 m thick concrete deck
- Four piers under each of the northbound and southbound spans
- 41.3 m opening.

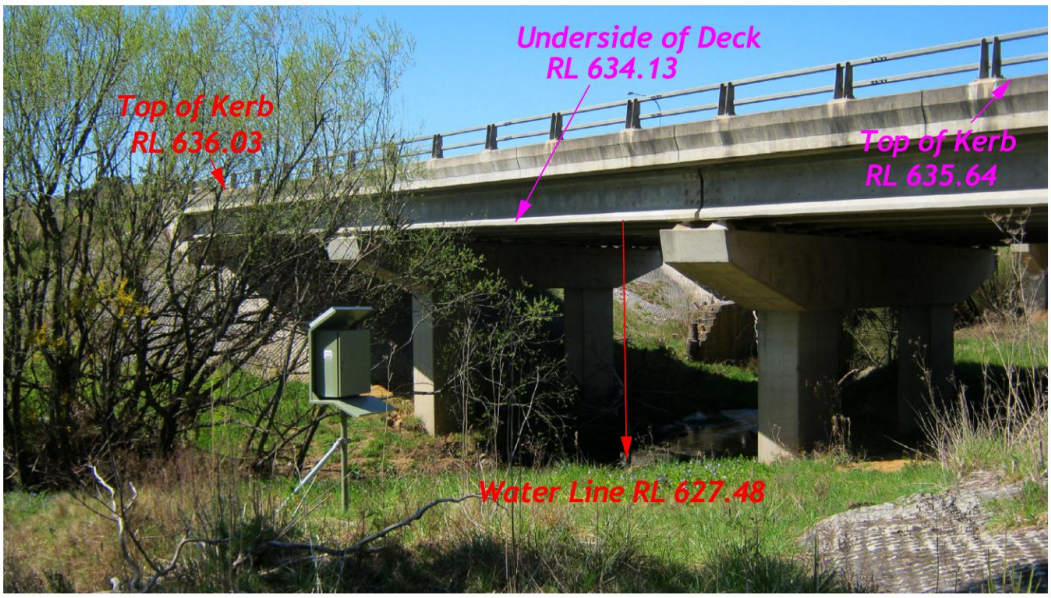


Photo 1 Hume Highway Three Legs O'Man Bridge (northbound looking upstream)

1.2 Oldbury Creek structures

1.2.1 Old Hume Highway plank bridge

Oldbury Creek flows under a plank bridge at the Old Hume Highway. The HEC-RAS model has included this structure based on a survey undertaken by Southern Cross Consulting Surveyors on 21 March 2014. The dimensions of the bridge structures included in the HEC-RAS model are:

- 650 mm thick plank
- No piers
- 5.4 m opening.

Photo 2 Old Hume Highway plank bridge

1.2.2 Hume Highway box culverts

Oldbury Creek flows through three large box culverts under the Hume Highway. The HEC-RAS model has included these structures based on a survey undertaken by Southern Cross Consulting Surveyors on 21 March 2014. The dimensions of the culvert structures included in the HEC-RAS model are:

- Three cells, each 2 m high by 3 m wide.

Photo 3 **Hume Highway box culverts**

1.2.3 Inline structures

There are two inline structures on Oldbury Creek. The most upstream one is a concrete pad, and dirt mound. Under the concrete pad there are 5,300 mm pipes.

Photo 4 **Upstream inline structure on Oldbury Creek**

The downstream inline structure has a high embankment and the spillway is located near the road. There is a single1.6 diameter pipe. The pipe inlet is located at an RL 644.4 mAHD. Only when the water level is above this, will water be able to go through the pipe.

At the time of survey the water level was 644.17 mAHD. This was assumed the initial water level in the XP RAFTS model.

Photo 5 **Downstream inline structure on Oldbury Creek**

1.2.4 Culverts under Medway Road

There are two 600mm pipes located under Medway Road to the west and a 900mm x 350mm box culvert located to the east.

Photo 6 **Western twin pipe culvert looking upstream**

Photo 7 **Eastern box culvert looking downstream**

1.2.5 Culvert under rail embankment to the south of Medway Road

There is are two 600 mm pipes located under the old rail embankment to the south of Medway Road.

Photo 8 **Culvert under old rail embankment to the south of Medway Road**

1.2.6 Culvert under Hume Highway

There is a single 1.2 diameter pipe located under the Hume Highway, on a tributary that is North of Oldbury Creek. The culvert is located under a steep embankment.

Photo 9 Culvert under Hume Highway on western side

Appendix C

Catchment parameters

1. MEDWAY RIVULET CATCHMENT PARAMETERS

XP-RAFTS catchment inputs – Existing and final landform case

Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
MR0	114.7	0.6	0.05	5
MR1	148.6	1.8	0.05	5
MR2	160.6	0.7	0.075	5
MR3	39.1	3.7	0.05	5
MR4 a	64	2.02	0.06	5
MR4 b	100.9	0.7	0.06	5
MR5 a	216.6	3.5	0.075	5
MR5 b	273	0.9	0.075	10
MR6	677.8	0.6	0.05	5
MR7	545.8	0.7	0.05	5
MR8	669	0.8	0.05	30
MR9	519.4	0.9	0.05	5
MR10	763.6	1.2	0.05	5
MR11	740.3	0.7	0.05	5
MR12	349	1.1	0.075	5
MR13	338.6	1.6	0.075	5
MR14	665	0.6	0.075	5
MR15	246.8	1.2	0.075	5
WC	3667	3.2	0.05	5

XP-RAFTS catchment inputs – Operation case

Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
MR0	114.7	0.6	0.05	5
MR1	**129.5**	1.8	0.05	**7**
MR2	**154.0**	0.7	0.075	**8**
MR3	39.1	3.7	0.05	5
MR4 a	64	2.02	0.06	5

Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
MR4 b	100.9	0.7	0.06	5
MR5 a	216.6	3.5	0.075	5
MR5 b	273	0.9	0.075	10
MR6	677.8	0.6	0.05	5
MR7	545.8	0.7	0.05	5
MR8	669	0.8	0.05	30
MR9	519.4	0.9	0.05	5
MR10	763.6	1.2	0.05	5
MR11	740.3	0.7	0.05	5
MR12	349	1.1	0.075	5
MR13	338.6	1.6	0.075	5
MR14	665	0.6	0.075	5
MR15	246.8	1.2	0.075	5
WC	3667	3.2	0.05	5

Bold – factors adjusted for operation case

2. OLDBURY CREEK CATCHMENT PARAMETERS

XP-RAFTS catchment inputs – Existing and final landform case

Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
SC1	138.35	1.6	0.04	5
SC2	210.43	1.4	0.04	5
SC3	136.51	1.5	0.04	5
SC4	27.26	2.7	0.04	5
SC5	27.15	3.4	0.04	20
SC6	95.06	2.0	0.05	15
SC7	39.21	2.3	0.05	5
SC8	21.81	1.5	0.04	5
SW08	134.88	2.2	0.075	7
SC10	156.89	2.4	0.08	7
SC11	134.32	4.6	0.09	5
T1	105.76	0.86	0.05	15
T2a	58.30	1.4	0.04	5
T2b	15.48	1.4	0.04	10
T3	30.57	2.4	0.04	5

XP-RAFTS catchment inputs – Operation case

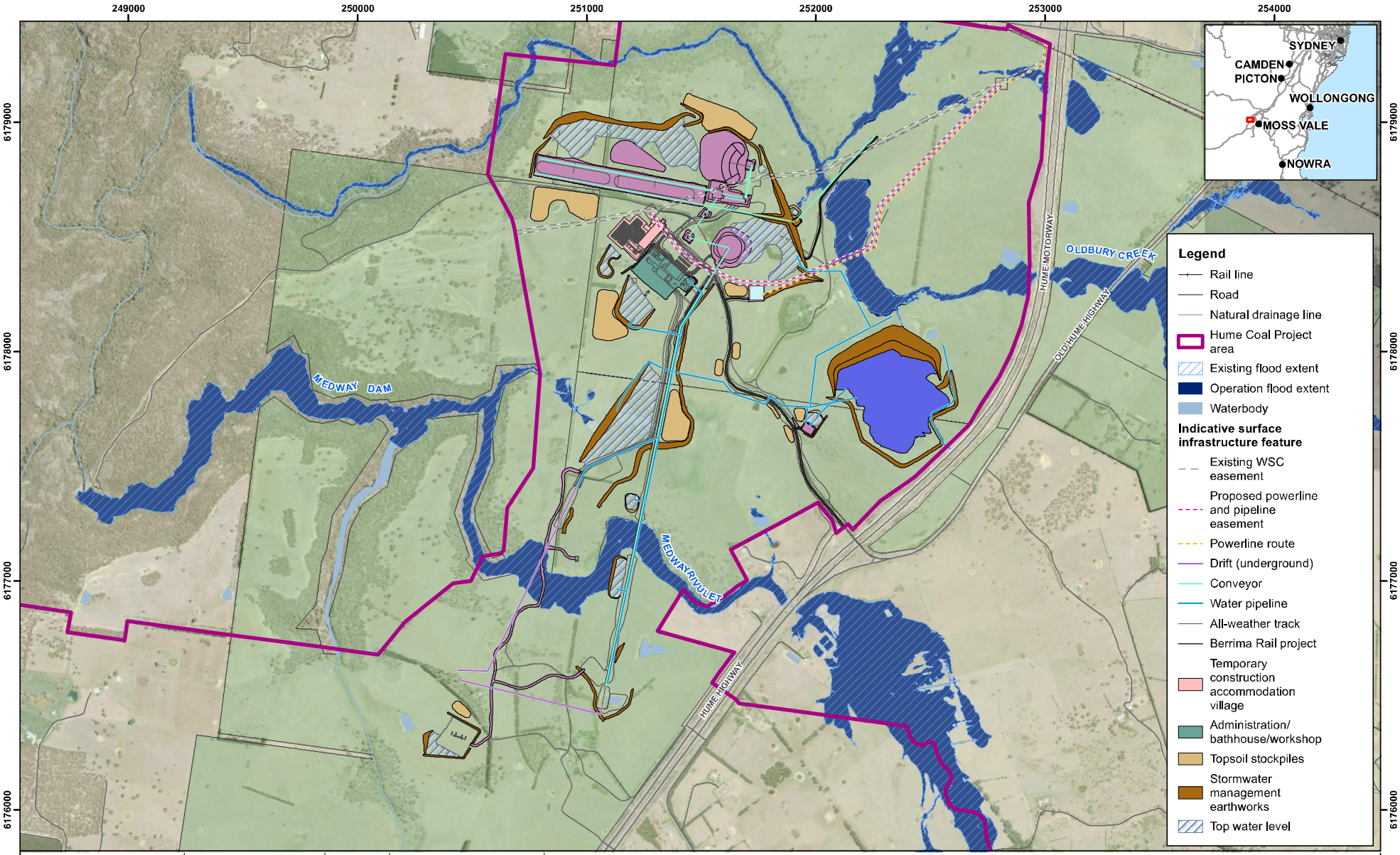
Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
SC1	138.35	1.6	0.04	5
SC2	210.43	1.4	0.04	5
SC3	136.51	1.5	0.04	5
SC4	27.26	2.7	0.04	5
SC5	27.15	3.4	0.04	20
SC6	**70**	**2.0**	0.05	**5**
SC7	**20**	**1.9**	0.05	**7**
SC8	**20**	**1.5**	0.04	**7**
SW08	**107**	**2.2**	0.075	**5**
SC10	156.89	2.4	0.08	7

Subcatchment	Total area [ha]	Catchment slope [%]	Catchment Manning's 'n'	Percentage impervious [%]
SC11	134.32	4.6	0.09	5
T1	105.76	0.86	0.05	15
T2a	58.30	1.4	0.04	5
T2b	15.48	1.4	0.04	10
T3	30.57	2.4	0.04	5

Bold – factors adjusted for operation case

Appendix D

Flood extents - Operation



Map: 2200540A_GIS_025_B1	Author: RP
Date: 14/11/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal, Google Earth

0 250 500 m

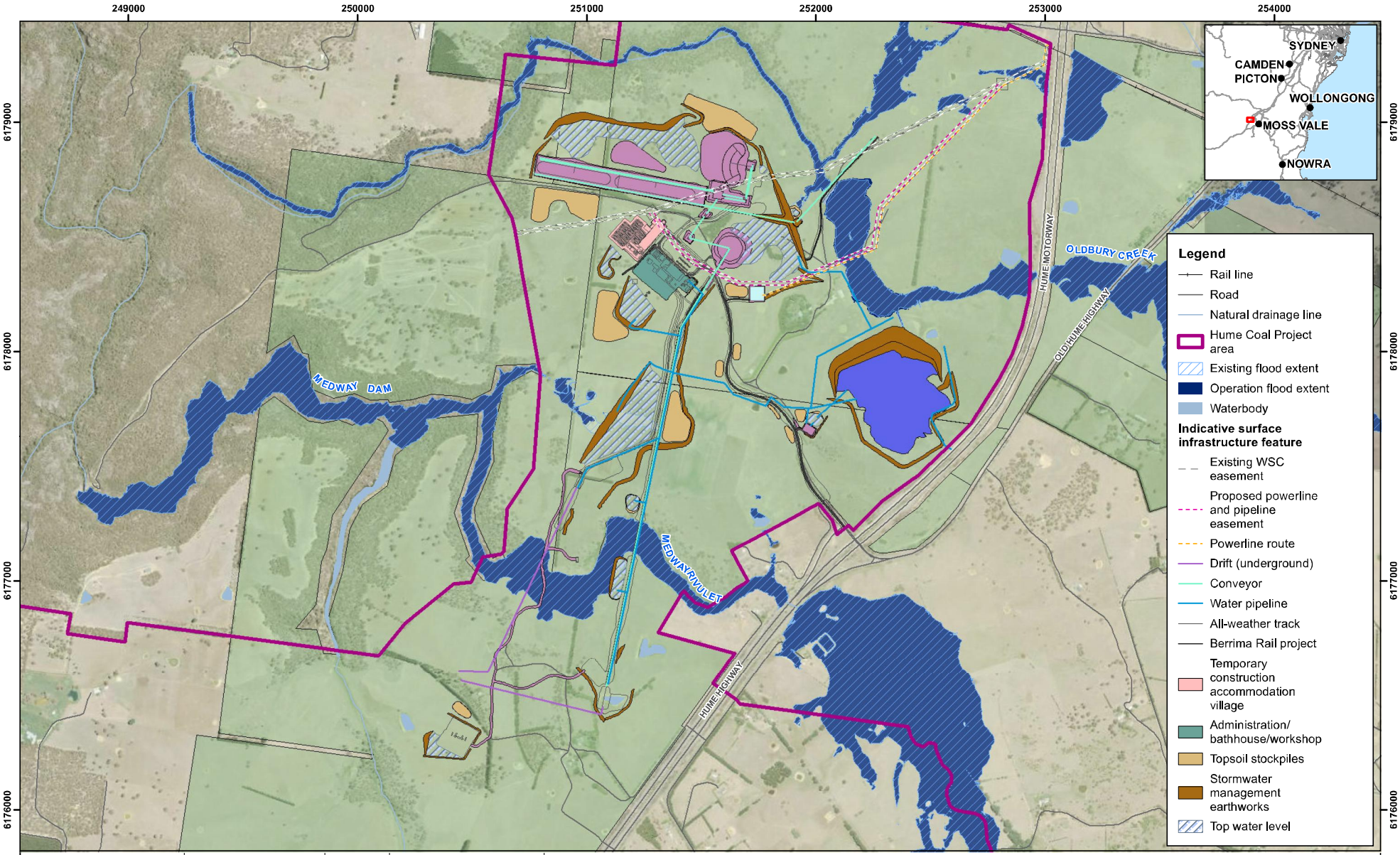
1:15,000

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment
Appendix D1
5 year ARI flood extent - Operation



Map: 2200540A_GIS_027_B1	Author: RP
Date: 14/11/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal, Google Earth

0 250 500 m

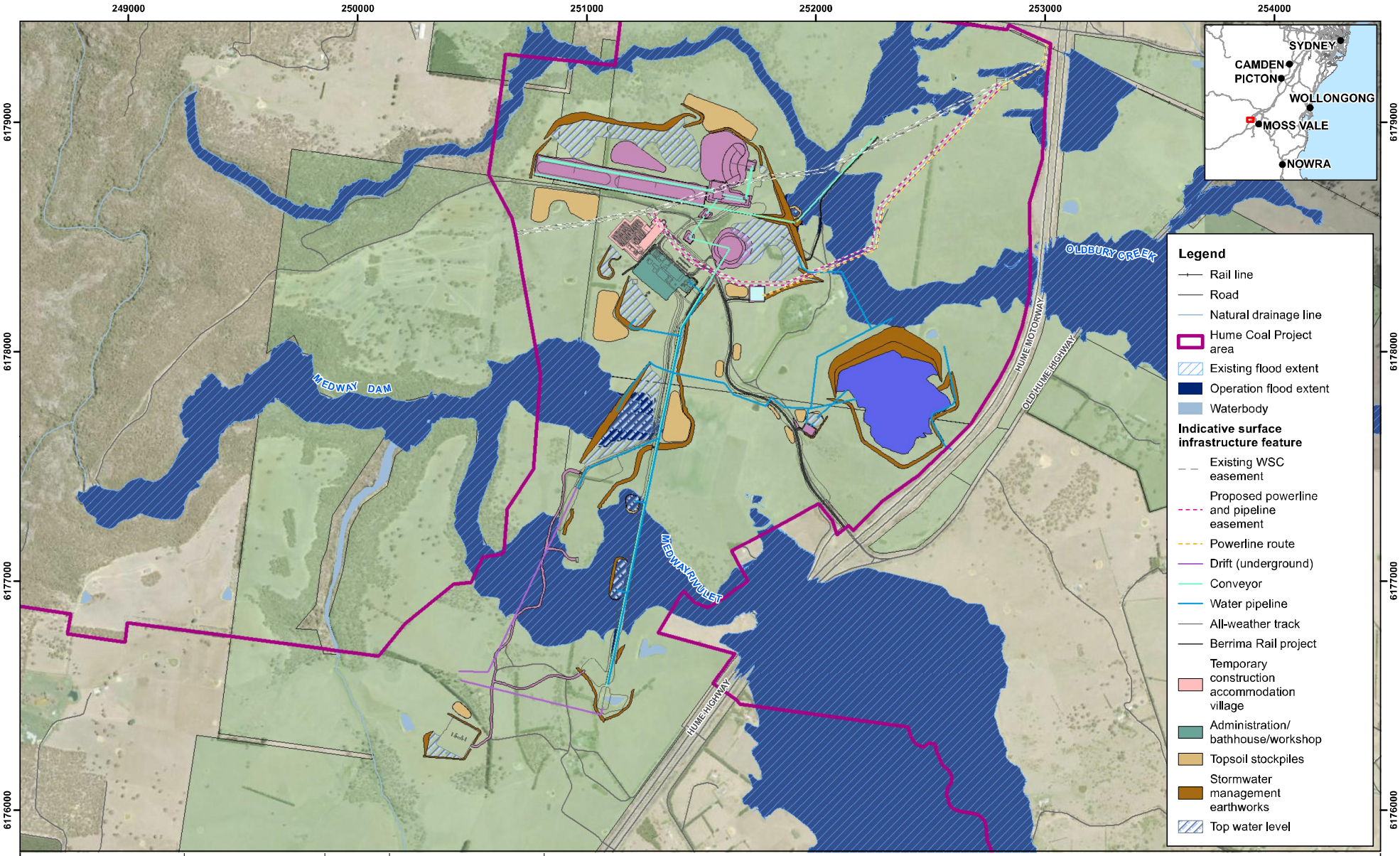
1:15,000

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment
Appendix D2
20 year ARI flood extent - Operation



Map: 2200540A_GIS_029_B1	Author: RP
Date: 14/11/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal, Google Earth

1:15,000

Coordinate system: GDA 1994 MGA Zone 56

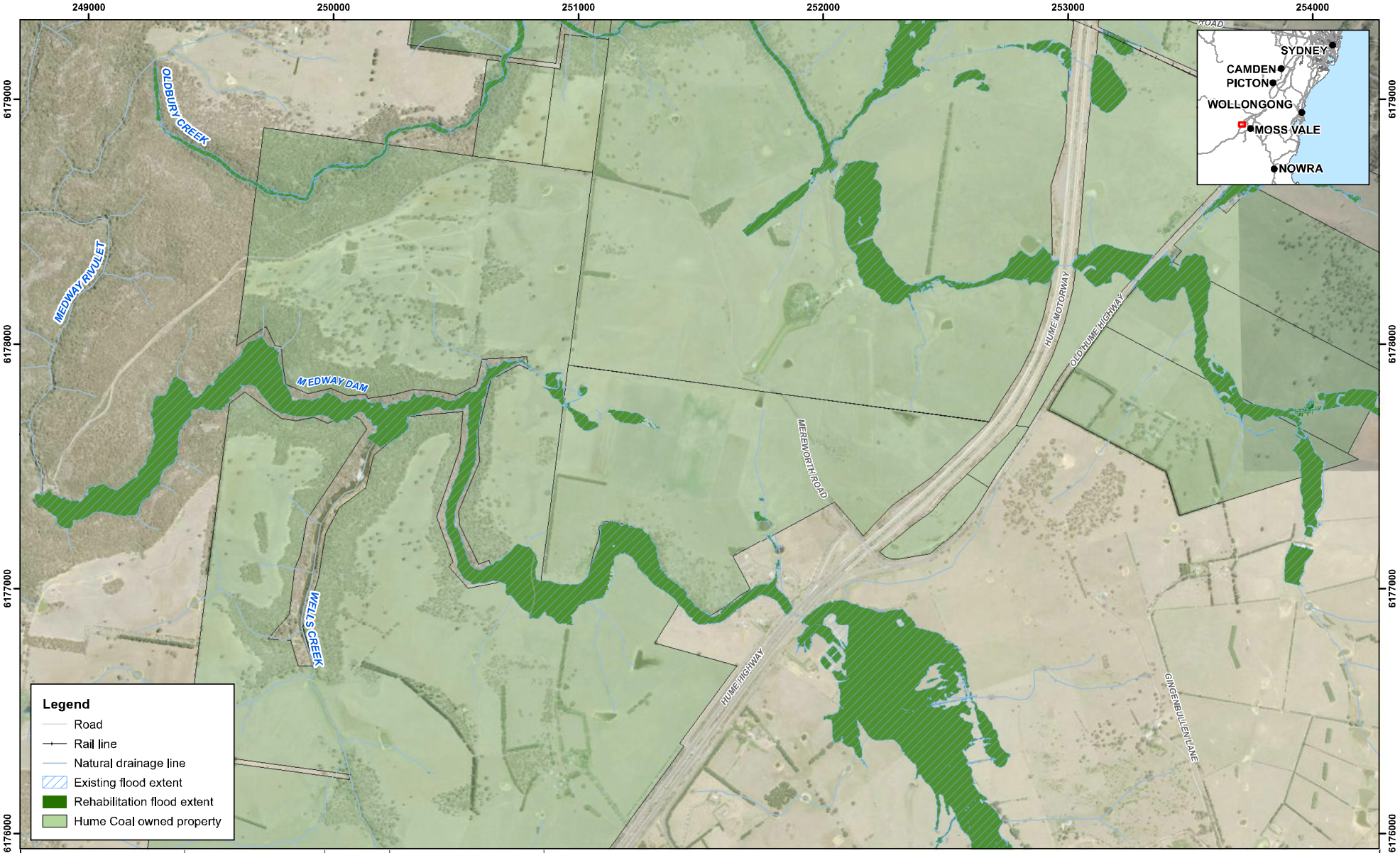
Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment
Appendix D3
PMF Flood Extent - Operation

Appendix E

Flood extents - Rehabilitation



Map: 2200540A_GIS_026_B1	Author: RP
Date: 14/11/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal

0 250 500 m

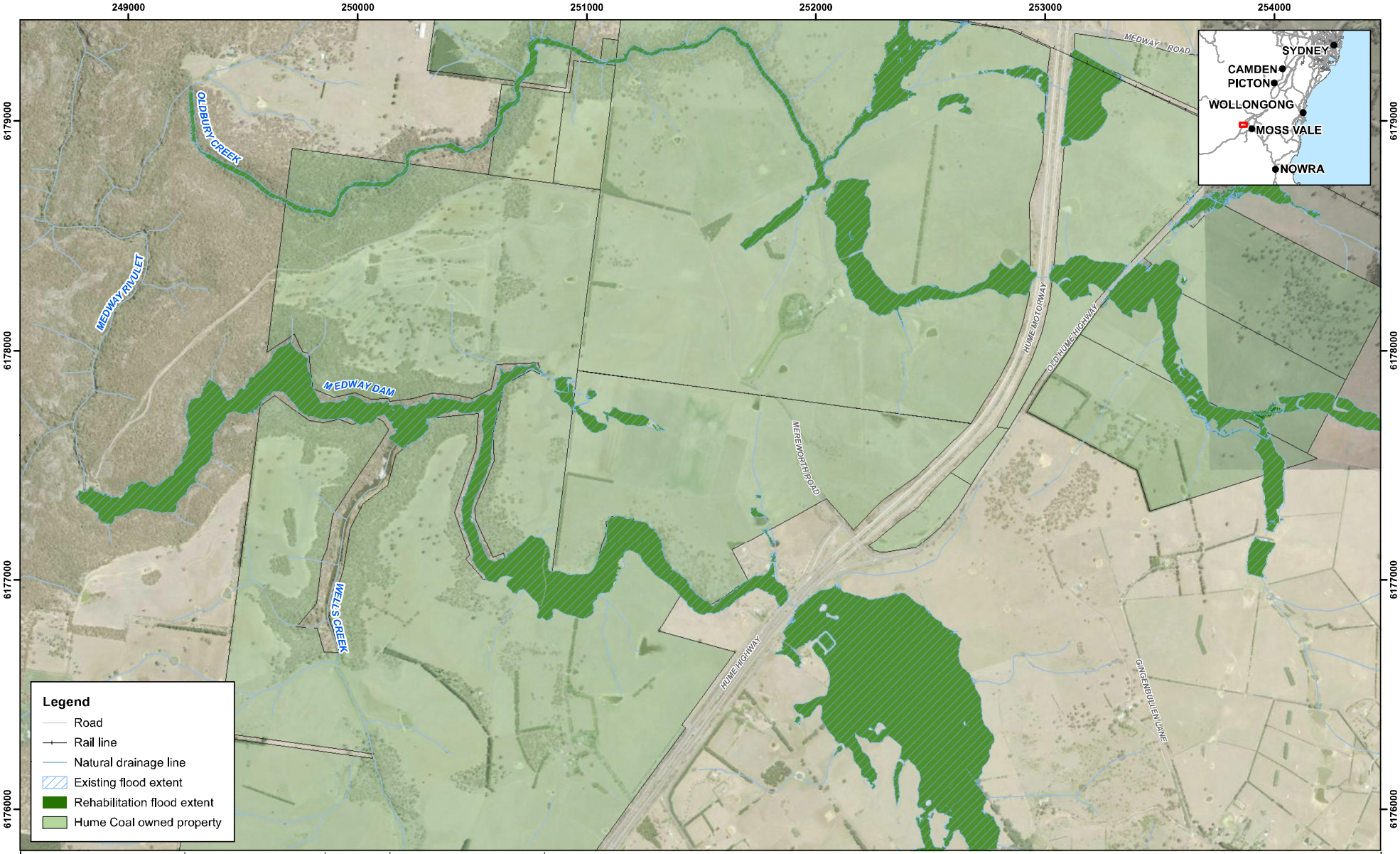
1:14,028

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment
Appendix E1
5 year ARI flood extent - Rehabilitation



Map: 2200540A_GIS_028_B1	Author: RP
Date: 14/11/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal

0 250 500 m

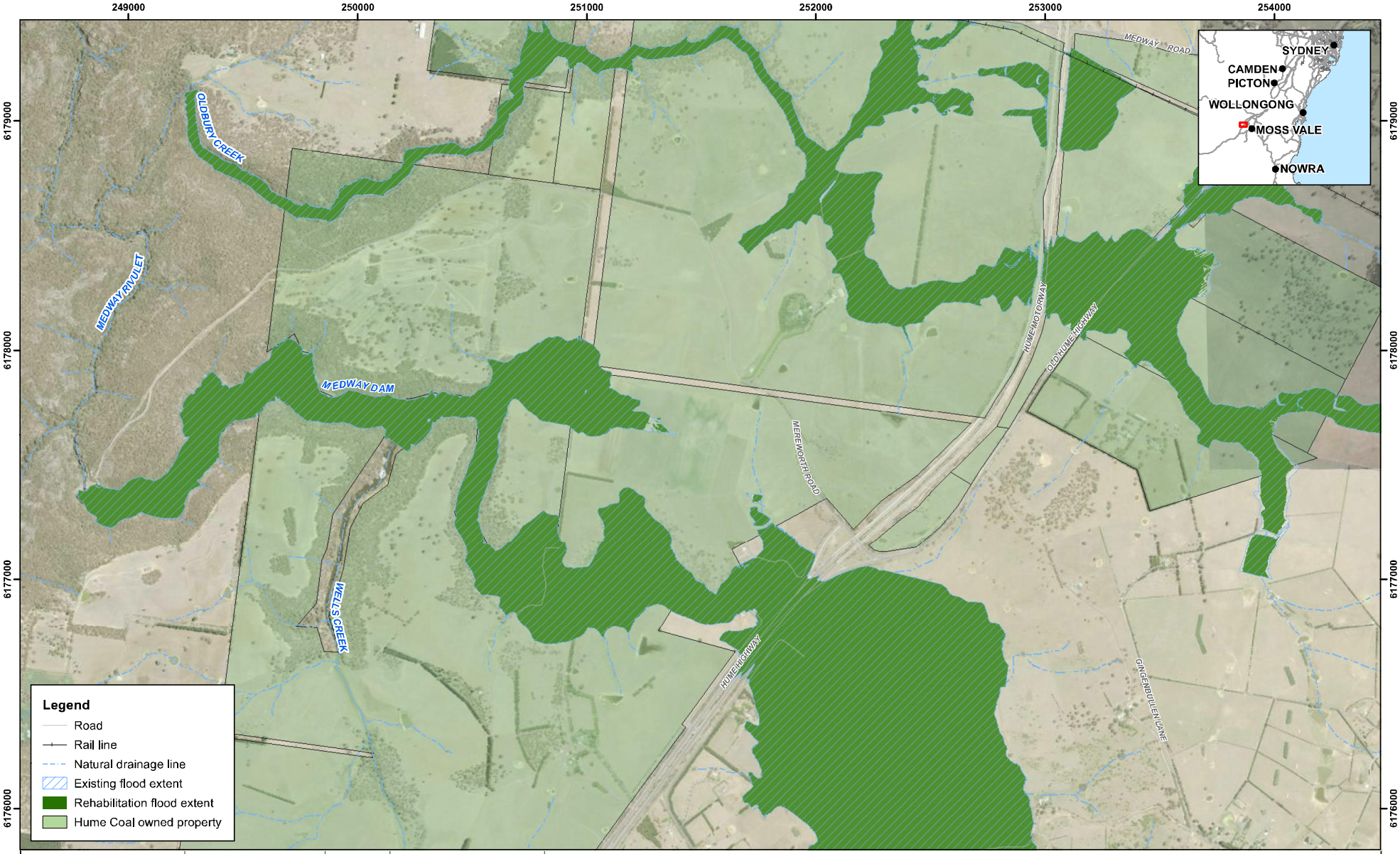
1:15,000

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment
Appendix E2
20 year ARI flood extent - Rehabilitation



Map: 2200540A_GIS_030_B1	Author: RP
Date: 26/10/2016	Approved by: LR

Data source: © Land and Property Information 2015, Hume Coal

0 250 500 m

1:15,000

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

WSP | PARSONS BRINCKERHOFF

Hume Coal Flooding Assessment

Appendix E3

PMF flood extent - Rehabilitation