2 Site and context

2.1 Geographical context

Mangoola Coal is in the upper Hunter Valley, 20 km west of Muswellbrook and 10 km north of the township of Denman (refer to Figure 1.1). The relevant local government area (LGA) is Muswellbrook Shire. The nearest major roads are the Golden Highway, approximately 3.5 km from the site, and the New England Highway, approximately 15 km to the east.

2.2 Land ownership

All land within Mangoola Coal's approved project disturbance boundary is owned by Xstrata Mangoola. Xstrata Mangoola also owns a substantial area of land surrounding the site. A number of the properties owned by Xstrata Mangoola are tenanted with the occupiers of these properties having entered into a rental tenancy agreement. Other mine-owned agricultural land is farmed and managed by Colinta Holdings Pty Limited (Colinta), a subsidiary of Xstrata Coal. Land ownership is shown in Figure 2.1.

Land ownership data for the residential receptors assessed within this EA is provided in Appendix D.

Other land parcels surrounding the site include Crown roads, Muswellbrook Shire Council roads, the bed and banks of the Hunter River, travelling stock routes, and the Muswellbrook–Ulan railway line.

2.3 Topography and soils

Topography within the approved project disturbance boundary ranges from lower slopes to hills and rocky outcrops, with the dominant feature being Anvil Hill, which peaks at approximately 285 m above Australian Height Datum (AHD). Topographical features outside of the approved project disturbance boundary include the hills to the west of Anvil Hill (Wallaby Rocks) and the rocky area to the south (Limb of Addy Hill) which rise to 264 m and 302 m, respectively, above AHD (refer to Figure 2.2).

The approved project disturbance boundary is largely within the Wybong Creek catchment with some areas within the catchments of Anvil Creek, Sandy Creek, Big Flat Creek and Clarks Gully, all of which are within the wider upper catchment of the Hunter River. The existing surface water environment is described further in Chapter 11.

Soil landscapes within the approved project disturbance boundary are predominantly Sandy Hollow with minor distribution of Castle Rock, Dartbrook, Lees Pinch and Hunter. Soil units within these landscapes comprise the yellow and brown solodics, deep and shallow sands, brown clay, blast alluvial clay and alluvial soils. The yellow solodics, associated with the Sandy Hollow and Castle Rock soil landscapes, are the dominant soil unit and cover the majority of the approved project disturbance boundary.

2.4 Coal resource

The coal seams approved for extraction at Mangoola Coal are the Great Northern Seam, Fassifern Seam and Upper Pilot Seam in the Newcastle Coal Measures. The approved project disturbance boundary, shown on Figure 2.1, contains a shallow-depth resource of approximately 150 million tonnes (Mt). The structure of the coal resource dips to the west at approximately 2 degrees, with a maximum seam floor depth of approximately 100 m, and a north-east trending dyke. The coal resource is of a high quality and is well suited to producing a low sulphur coal.

2.5 Climate

Mangoola Coal operates two automatic weather stations (WS): WS1 on Wybong Road and WS2 on Coolabah Road) (refer to Figure 3.2 for locations). In addition, climate data for the locality is collected from the Bureau of Meteorology (BoM) weather stations at Scone and Jerrys Plains, approximately 20 km north-east and 25 km south-east, respectively, of Mangoola Coal. The region is temperate, with weather stations consistently recording the highest rainfall, rainfall intensity, and number of rain days during summer. Conversely, the lowest rainfall and number of rain days occur in autumn, with the lowest rainfall intensity during winter. The lowest mean minimum temperatures occur in July and the highest mean monthly temperatures in January.

2.6 Land use

2.6.1 Regional land use patterns

Mangoola Coal is in the Hunter Coalfield in the upper Hunter Valley. The Hunter Coalfield is the largest coal producing area in NSW, containing 60 coal seams across three coal measures, the Greta, Whittingham and Newcastle Coal Measures. The majority of the coal seams are shallow, making them easily accessible to multi-seam open-cut mining operations. The Upper Hunter Strategic Regional Land Use Plan (Upper Hunter SRLUP) (DP&I 2012a) identifies that further development of the coal industry in the Hunter Valley is likely to be focused on expansion of existing mining operations between Singleton and Muswellbrook and to the north and north-west of Muswellbrook, where Mangoola Coal is, to maximise utilisation of existing infrastructure used for the extraction, processing and transportation of coal for energy and industrial purposes.

The upper Hunter Valley also has a strong association with the rural sector and has traditionally been dominated by a mix of grazing and cropping land uses. The region is a well established grape growing area. The thoroughbred industry is established to the south-east and north-east of the site, near Jerrys Plains and Scone, respectively. Another dominant land use within the upper Hunter Valley is timbered land contained within national parks, state forests, reserves and on private land.

Wollemi National Park is further south of the site, Goulburn River National Park to the west, Manobalai Nature Reserve to the north-west.

2.6.2 Local setting

Mangoola Coal is on land zoned primarily for environmental management and partially zoned primary production (land use zones E3 Environmental Management and RU1 Primary Production) under the Muswellbrook Local Environmental Plan 2009. Broadly, surrounding land uses include grazing, vineyards, intensive cultivation, rural residential, mining, quarrying, and industrial.

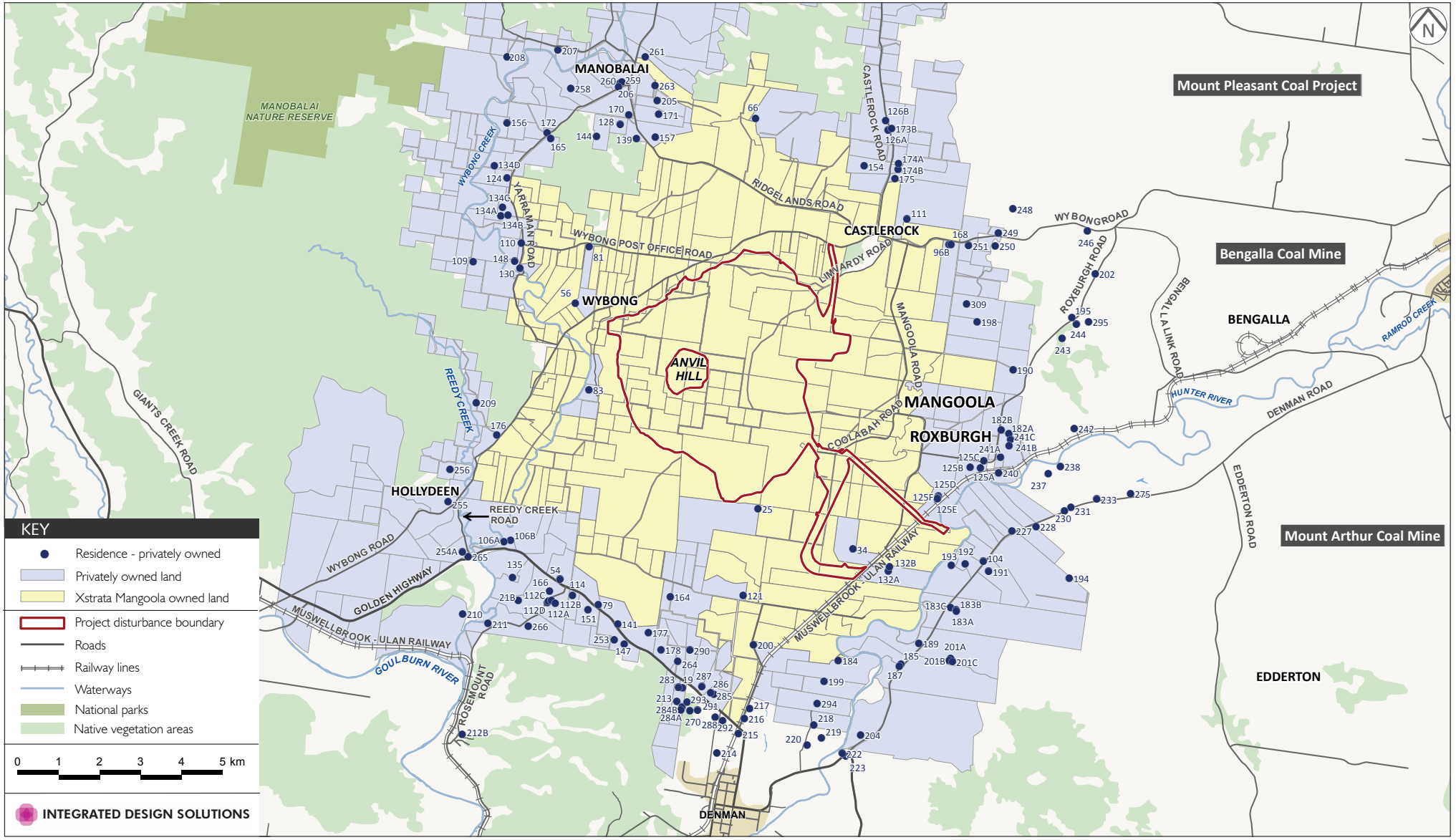
Land uses surrounding the site are identified in Figure 2.2. This includes land owned by Xstrata Mangoola which is reserved for biodiversity and sustainable agriculture offsets, required under Schedule 3, Condition 42 of PA 06_0014. These areas include sustainable agriculture, habitat enhancement and conservation offset areas (refer to Figure 2.2) which reflect the key land use priorities and objectives for these areas as identified in Mangoola Coal's Rehabilitation and Offset Management Plan.

The distribution of agricultural uses surrounding Mangoola Coal is mainly determined by the local landscape character and soil type. More intensive agriculture and vineyards are primarily on alluvial soils in corridors along the floodplain of the Hunter River, to the south and east of Mangoola Coal. The undulating hill slopes immediately surrounding the site are generally used for grazing on unimproved pastures. According to the former NSW Soil Conservation Service rural land capability classification system, these hill slopes generally consist of Land Capability Class VI land, which is suitable for low productivity grazing. The floodplain of the Hunter River consists of Class II prime agricultural land.

The approved project disturbance boundary includes land mapped as Strategic Agricultural Land (SAL) under the Upper Hunter SRLUP (refer to Chapter 15). Further information on the Upper Hunter SRLUP is provided in Section 5.3.7 and on SAL in Section 15.2.1.

A portion of land owned by Mangoola Coal is managed by Colinta. These lands comprise marginal dryland grazing areas supporting a breeding herd of cattle with some areas of intensive agriculture (ie irrigation/cropping) along the Hunter River. Within the area, Colinta also has a resident fixed breeder herd of 1,200 cattle.

Nearby mining and industrial operations include Mt Arthur Coal Mine, Bengalla Mine and Drayton Colliery to the east and south-east. Another coal mine to the north-east, the Mount Pleasant Project, has been approved but is not yet constructed. Spur Hill Underground Project, east of Denman and abutting Drayton Colliery's mining lease boundary, has submitted a request for DGRs and is currently preparing an EA for an underground coal mine. Thomas Mitchell Drive Industrial Estate is approximately 15 km south-east of the site (refer to Figure 2.2).



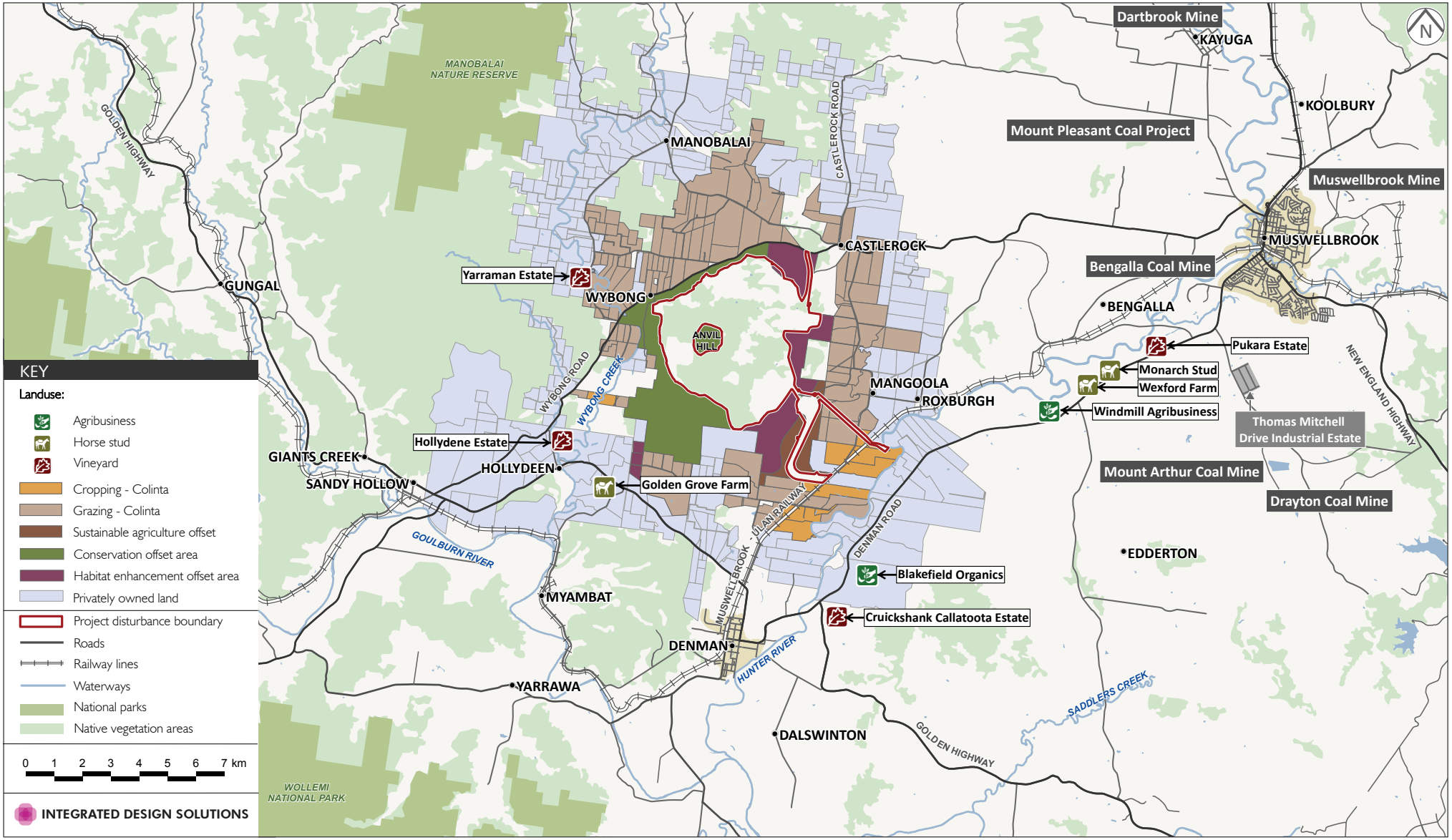
xstrata coal mangoola coal

EMM

Land ownership and residential receptors

Mangoola Coal Modification 6 Environmental Assessment

Figure 2.1



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Surrounding major land uses

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Figure 2.2