

Hydro Kurri Kurri rezoning

Social and Economic Impact Assessment

Client:
Hydro Kurri Kurri

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Final report

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1 Introduction

1.1 Study purpose

Hydro owns and manages the former Hydro Aluminium Kurri Kurri Smelter (the Smelter) and the surrounding buffer lands located at Loxford, NSW (the Hydro land). The Hydro Land is located in the north eastern area of the Cessnock LGA, approximately three kilometres north of the Kurri Kurri central business district (CBD) and approximately 33 kilometres to the northwest of the Newcastle CBD.

Smelting activities ceased in September 2012, and in May 2014 Hydro formally announced the closure of the Smelter.

Hydro Kurri Kurri proposes to rezone and remediate land at the site of the former Kurri Kurri Aluminium smelter for a range of uses in accordance with an adopted subdivision layout.

The purpose of this report is to examine the proposed rezoning and consider the socio-economic implications for a future development, identify its potential benefits and impacts for existing and future residents and the workforce and to provide advice in relation to how the project could provide benefits to Kurri Kurri and Lower Hunter communities, particularly those within the Cessnock and Maitland LGAs. Where potentially adverse socio-economic impacts are identified, this analysis will provide input into further development of the concept in order to reduce the potential for impacts on members of these communities.

Key aspects of this analysis have included:

- » Consideration of Cessnock Council's Social Impact Assessment Guidelines
- » Consideration of the proposed uses and scale of activities and the potential benefits and impacts of these on surrounding communities
- » The potential for the adopted subdivision layout to create a socially sustainable community
- » Expected needs of new residents and workers for social infrastructure, both on and off the site, and adequacy of existing social infrastructure to meet these needs.

1.2 Social impact assessment guidelines

Cessnock City Council's *Development Control Plan* (2010a) contains best practice guidelines to ensure that social impacts are considered in the early stages of development proposals and to provide opportunities for potentially impacted stakeholders to participate in consultations about the proposed changes. A Social Impact Assessment, including assessment of crime data and strategies for crime prevention, is required for Planning Proposals lodged with Council.

Maitland City Council does not require social impact assessments for master planned communities.

This report follows the approach set out in Chapter 8 of Cessnock Council's *Social Impact Assessment and Crime Prevention Guidelines* (Cessnock 2010a).

1.3 Study process

The study process has involved:

- » A review of existing information, including reports, maps and plans
- » Site investigations
- » Identification and analysis of socio-economic issues and site constraints
- » Liaison with strategic and social planners from Cessnock City Council
- » Assessment of the social and economic impacts of the proposed rezoning to employment and residential lands.

2 The development proposal

2.1 The site and surrounding areas

The study area comprises around 2,000 ha of land owned by Hydro Kurri Kurri located within both the Cessnock and Maitland LGAs. Around 60 ha of this land, at Loxford, within Cessnock LGA, was used for primary metal production, including aluminium production, until 2012.

Hydro Aluminium Kurri Kurri was primarily engaged in the smelting, production and wholesale distribution of aluminium. Its main products included extrusion ingots and foundry alloys. The smelter employed around 500 full-time employees and with the inclusion of contractors and other workers, there could be up to 700 workers on the site on any one day. Most workers lived in the surrounding communities of the Lower Hunter region, including Cessnock and Maitland LGAs, the City of Newcastle, City of Lake Macquarie or Port Stephens LGAs.

In addition to the former manufacturing area, the site also has a large presence of high ecological value habitat, with part of the site recently identified within the Lower Hunter Regional Strategic Assessment Mapping as a Matter of National Environmental Significance.

Since closure of the operations, Hydro has undertaken a strategic review of operations, existing infrastructure and landholdings to establish a future vision for the site.

The proposed subdivision adjoins land identified within Maitland and Cessnock Council Strategies for future residential zoning or development. Gillieston Heights in Maitland City Council adjoins the site's north eastern boundary, while Kurri Kurri, Heddon Greta and Cliftleigh adjoin its southern and south eastern boundaries respectively.

The proposed development of Cliftleigh will adjoin the development to the east. This development has approval for 977 residential lots. The Voluntary Planning Agreement (VPA) with Cessnock City Council stipulates that this development will include a neighbourhood community centre (750 sqm), a neighbourhood childcare centre (minimum 30 places), a multi-purpose sports field and training field and a number of local parks.

2.2 Overview of the proposed rezoning

It is Hydro's strategic vision for the Site to play a key role in allowing the Hunter Region to achieve the economic, employment and environmental objectives identified in the NSW State Plan 2021 and the Hunter Regional Action Plan. Hydro aims to achieve this strategic vision by facilitating the rezoning and development of the Site for significant employment, residential, rural and biodiversity conservation purposes.

Hydro has provided a commitment to meeting its corporate environmental and social responsibilities, and to managing its environmental legacies. The rezoning of the land will ensure a long term legacy of housing, employment and conservation with the Hydro land.

The Planning Proposal seeks to amend the current zoning of the Hydro site at Loxford within the Cessnock Local Environmental Plan (LEP) 2011 to include:

- » R2 Low Density Residential
- » RU2 Rural Landscape

- » B1 Neighbourhood Centre
- » B7 Business Park
- » IN1 General Industrial
- » IN3 Heavy Industrial
- » E2 Environmental Conservation.

The adopted subdivision layout for the Hydro Kurri Kurri site (November 2014) is presented in Figure 1.

Key features include:

- » Three distinct residential precincts extending generally eastward from the South Maitland Railway Line (176 ha)
- » A Heavy Industrial zone in the south western portion of the site (38.38 ha)
- » A large General Industrial area (125.5 ha) located on the site of the former Kurri Kurri aluminium smelter between the Heavy Industrial area and Residential Southern
- » An area designated as a Business Park on the site's southern boundary, south of the Hunter Expressway
- » A Neighbourhood Centre of 5,046m² located within the Residential Central precinct
- » Areas of open space including local parks, sporting fields and recreational open space along drainage corridors and the railway corridor (14.17 ha)
- » The Residential Northern precinct adjoins the southern boundary of Gillieston Heights in Maitland LGA. The Residential Central precinct adjoins the western boundary of Cliftleigh and the Residential Southern precinct adjoins the community of Loxford. The local road network for Hydro Kurri Kurri is shown connecting into these existing roadways.

Figure 2, the rezoning masterplan (November 2014) shows the great majority of the site outside of these masterplanned areas would be zoned E2 for Environmental Conservation and another 161.7 ha would be zoned Rural Landscape.

The Subdivision Design Report (pcb 2014) and the Industrial Lands Analysis (Urbis 2013) examined market demand and other factors likely to influence future demand and supply for different land use types. These studies underpin the proposed site layouts, including lot sizes and a suggested dwelling and industrial land use mix, which have then been adjusted to account for site constraints in the masterplanning process.

2.2.1 Residential areas

The proposed 176 ha of residential uses comprise three discrete precincts, each representing extensions of existing or developing residential areas:

- » The Residential Southern precinct is a narrow rectangular development around three blocks wide that extends from McLeod Road in the south west in a north easterly direction, between Bowditch Avenue and the South Maitland Railway Line. To the south east lies the Loxford TAFE site and to the south west, the Kurri Kurri sewage treatment plant (STP). The adopted subdivision layout shows a circular internal road network with several cross streets, connecting into the north-eastern parts of Kurri Kurri (1 km to the south) via McLeod Road. The precinct contains two local parks – one at either end. Some southern and central parts of this precinct are outside the Hydro Kurri Kurri site boundary

- » The Residential Central Precinct is the largest of the three precincts, between the South Maitland Railway Line and Cliftleigh. Parts of its south west boundary are also defined by the 1 in 100 year flood level. The adopted subdivision layout shows a 5,046m² neighbourhood centre and a double playing field near its eastern boundary with Cliftleigh, as well as several parks (most within drainage corridors to the north). The local road network is based on a north/south grid pattern. The precinct would connect eastward into Cliftleigh via Glen Ayre Avenue, which has access to Main Street / Cessnock Road. There is also road access to the north east to Cessnock Road, and via the Residential Northern Precinct into Cartwright Street and Russell Street in Gillieston Heights
- » The Residential Northern Precinct lies within Maitland Council and consists of a large rectangular block adjoining Cessnock Road to the west and Russell Street, Gillieston Heights to the north. In addition, two small residential neighbourhoods alongside the South Maitland Railway Line are separated from this main part of the precinct by rural and environmental uses. The road network in this precinct is also broadly a grid layout which would connect directly onto Cessnock Road and into Gillieston Heights.

2.2.2 Employment areas

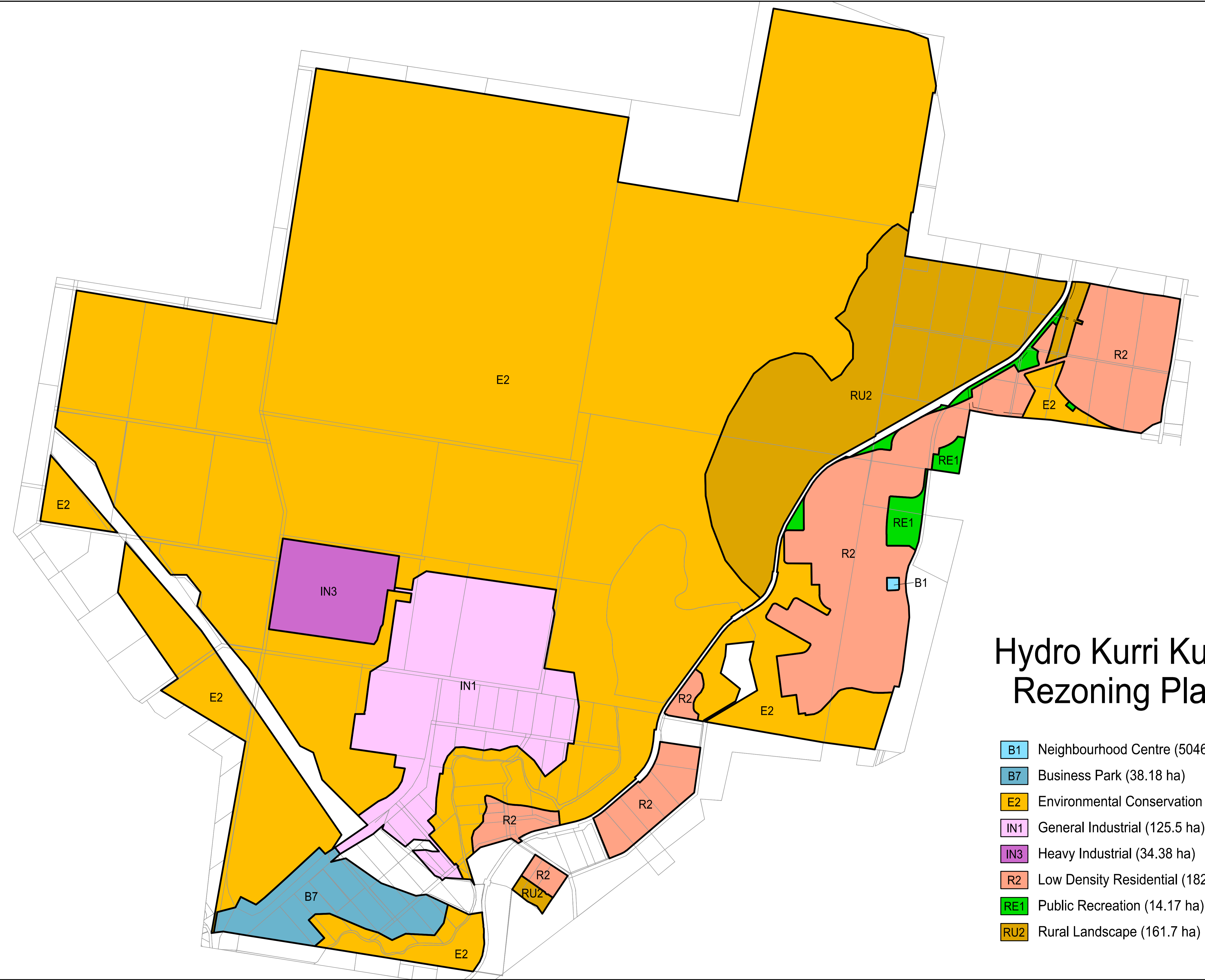
The proposed rezoning provides for approximately 198 ha of industrial land in a mix of formats, as shown in Table 1 below.

Table 1 Proposed industrial precinct areas

Precinct	Developable land (ha)	% of Industrial precinct
Business Park	38.2	19%
General Industry	125.5	64%
Heavy Industry	34.4	17%
	198.1	100%

Source: pcb 2014

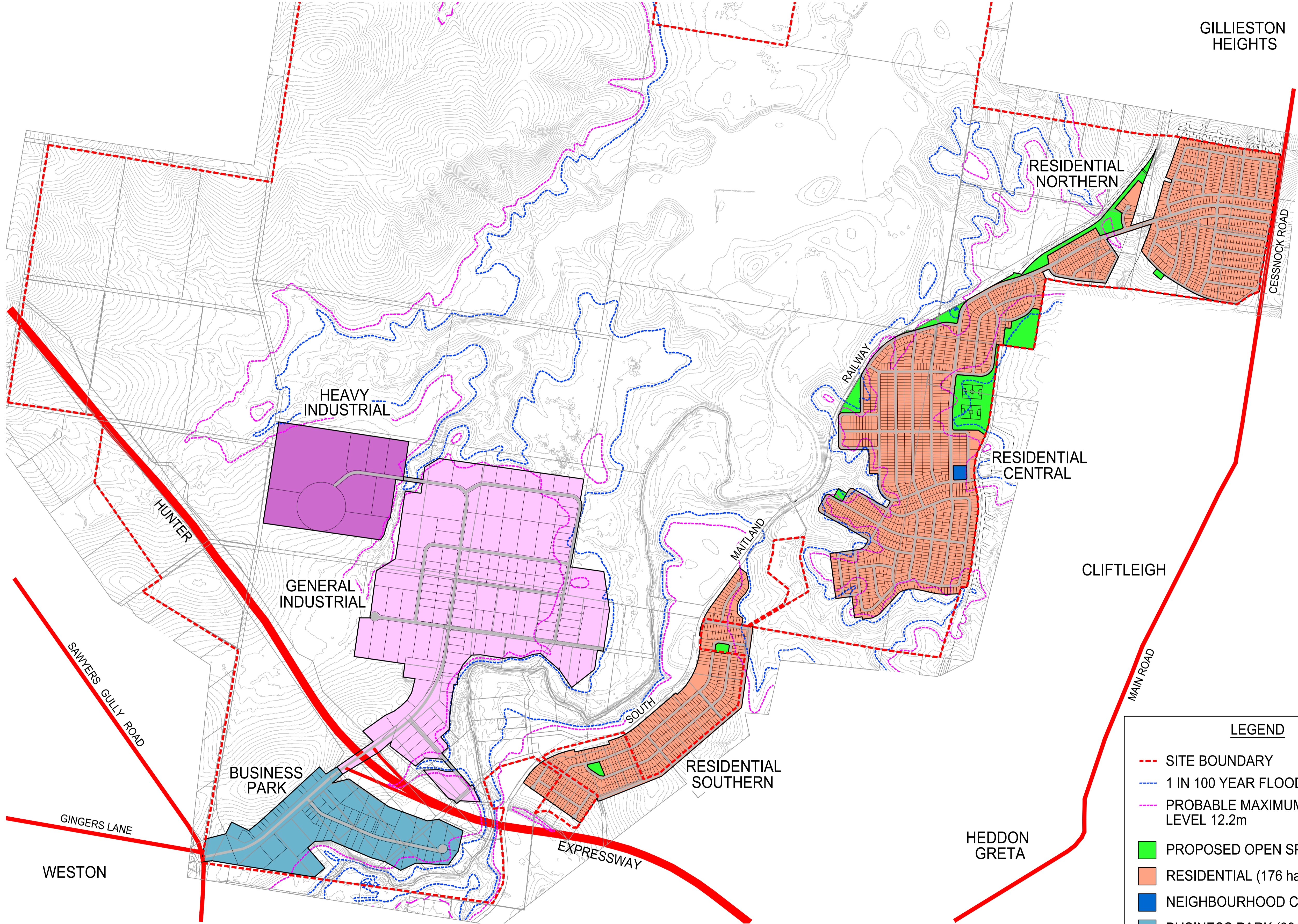
The adopted subdivision layout shows a roughly square shaped area of heavy industry at the site of the former smelter. This site is connected by local road to a larger General Industrial area with a mixture of large and smaller sites accessed by a grid network of internal roads. These zones are accessible to Weston and Kurri Kurri an extension of Hart Road to the south. The proposed Business Park zone lies to the south of the Hunter Expressway with a range of lot sizes along Hart Road and McGarva Avenue.



Hydro Kurri Kurri Rezoning Plan

- B1** Neighbourhood Centre (5046m²)
- B7** Business Park (38.18 ha)
- E2** Environmental Conservation (1349 ha)
- IN1** General Industrial (125.5 ha)
- IN3** Heavy Industrial (34.38 ha)
- R2** Low Density Residential (182.2 ha)
- RE1** Public Recreation (14.17 ha)
- RU2** Rural Landscape (161.7 ha)

HYDRO KURRI KURRI MASTERPLAN



LEGEND	
	SITE BOUNDARY
	1 IN 100 YEAR FLOOD LEVEL 9.7m
	PROBABLE MAXIMUM FLOOD LEVEL 12.2m
	PROPOSED OPEN SPACES (14.17ha)
	RESIDENTIAL (176 ha)
	NEIGHBOURHOOD CENTRE (5046m ²)
	BUSINESS PARK (38.18 ha)
	GENERAL INDUSTRIAL (125.5 ha)
	HEAVY INDUSTRIAL (34.38 ha)

3 Regulatory context

3.1 Government plans and policies

A range of contextual documents and existing policies have been reviewed to provide guidance for this assessment.

This policy review has considered:

- » *Lower Hunter Regional Strategy, Discussion Paper and NSW 2021 Hunter Regional Action Plan*
- » *Cessnock Community Strategic Plan 2023*
- » *Cessnock City Wide Settlement Strategy (CWSS)*
- » *Cessnock Economic Development Strategy*
- » *Cessnock Development Contributions Plan*
- » *Cessnock Open Space and Recreation Plan*
- » *Maitland Activity Centres and Employment Clusters Strategy.*

A brief outline of relevant issues contained in these policies is presented in Table 4.

Table 2 Relevance of policies and plans to proposed development

Policy / plan	Comments
NSW government	
<p><i>Lower Hunter Regional Strategy 2006-31</i></p> <p>NSW Department of Planning</p> <p>Reviewed and updated, 2010</p>	<p>Aims to set a clear direction for this rapidly growing region over the longer term” and sets the framework and direction for the region’s growth and infrastructure development.</p> <p>Identifies major land release areas and targets for residential and employment lands. The site is shown as employment lands.</p> <p>The region is nominated as a significant growth area within NSW. Potential to accommodate an additional 160,000 new residents, 115,000 new dwellings and 66,000 new jobs in the next 25 years.</p> <p>Cessnock and Maitland are classed as major regional centres. Cessnock LGA is expected to attract 21,700 new dwellings, with 19,700 in greenfield development sites. This equates to around 45,600 new residents, using the Department’s estimates of 2.1 residents per dwelling in future (p. 23). Maitland LGA is expected to attract another 21,500 new dwellings in greenfield sites. Development in other areas is subject to meeting Sustainability Criteria.</p> <p>Suggested Neighbourhood Planning Principles for new developments are:</p> <ul style="list-style-type: none"> » A range of land uses to provide the right mix of houses, jobs, open space, recreational space and green space. » Easy access to major town centres with a full range of shops, recreational facilities and services along with smaller village centres and neighbourhood shops.

Policy / plan	Comments
	<ul style="list-style-type: none"> » Jobs available locally and regionally, reducing the demand for transport services. » Streets and suburbs planned so that residents can walk to shops for their daily needs. » A wide range of housing choices to provide for different needs and different incomes. Traditional houses on individual blocks will be available along with smaller, lower maintenance homes, units and terraces for older people and young singles or couples. » Conservation lands in-and around the development sites, to help protect biodiversity and provide open space for recreation. » Public transport networks that link frequent buses into the rail system. <p>Progress in delivering the <i>Regional Strategy</i> was reviewed in 2009 and the <i>Regional Strategy</i> was re-endorsed as the basis for strategic land use planning (NSW Department of Planning 2009). Maitland LGA had grown at 2.23% pa over the 2 years compared with a growth rate of 1.62%pa in Cessnock LGA. Major greenfield release areas near Kurri Kurri to be rezoned were identified as:</p> <p>Maitland LGA</p> <ul style="list-style-type: none"> » Gillieston Heights – 1,200 new dwellings <p>Cessnock LGA</p> <ul style="list-style-type: none"> » Huntlee – 7,500 new dwellings » Cliftleigh – 900 new dwellings.
<p><i>The Lower Hunter over the next 20 years: A Discussion Paper</i></p> <p>NSW Government 2013</p>	<p>The NSW Government prepared a Discussion Paper as the first step in developing a new regional growth plan for the Lower Hunter region. The new regional growth plan must also integrate with strategic infrastructure and transport plans and protect the environment and quality of life.</p> <p>The Discussion Paper seeks community input on questions such as:</p> <ul style="list-style-type: none"> » how and where housing and jobs should be delivered » how to address issues such as affordability and accessibility » opportunities to plan for and deliver infrastructure » ways to create better places and improve social cohesion » how to improve connections to surrounding regions » how to protect the area’s productive resources and natural environment. <p>The submission period closed in mid-2013.</p> <p>A <i>draft Regional Growth Plan for the Lower Hunter Region</i>, incorporating community feedback, is being prepared and is expected to be exhibited and finalised in 2015.</p>
<p><i>NSW 2021 Hunter Regional Action Plan</i></p> <p>NSW Government</p>	<p>The <i>NSW 2021 Hunter Regional Action Plan</i> is the NSW Government’s response to issues raised during community consultation, undertaken following election of the Liberal government early in 2012. The consultation identified the need to plan for population growth and an ageing population, as well as the delivery of quality healthcare and education opportunities.</p>

Policy / plan	Comments
Cessnock City Council	
<p><i>Cessnock City Wide Settlement Strategy (CWSS)</i> Cessnock City Council 2010</p>	<p>This Strategy provides strategic directions for Council's new LEP and incorporates aspects of the <i>Lower Hunter Regional Strategy 2006</i>. Key directions are to establish a Residential Hierarchy and to contain Cessnock's urban footprint to the area identified in the <i>Lower Hunter Regional Strategy 2006</i> and the CWSS to ensure that appropriate levels of service and support are available to local communities.</p> <p>The CWSS adopts the following principles in planning for socially sustainable communities:</p> <ul style="list-style-type: none"> » Functional economy: improved access between housing, jobs and services by locating these activities closer together and providing better transport links and options » Sound infrastructure: more efficient use of existing infrastructure and a corresponding reduction in cost provision for infrastructure » Social cohesion: greater equity in access opportunities. <p>The CWSS recommends that Council does not support further 'englobo sites' for urban expansion other than those identified (p. 49). In the East Sector (Kurri Kurri area), these include:</p> <ul style="list-style-type: none"> » Cliftleigh – 977 new dwellings » Heddon Greta – 135 new dwellings » Heddon Greta (Avery Village) – 1,200 new dwellings » Sawyers Gully – 900 new dwellings. <p>Previous projected growth targets have not been met, and careful monitoring of growth and sequencing of land release is needed to coordinate market supply (p. 53).</p> <p>Identifies increasing housing affordability issues due to factors such as population growth, increased property prices, limitations to increasing supply of affordable housing and relatively low income levels of residents.</p>
<p><i>Cessnock Community Strategic Plan 2023</i> Cessnock City Council 2013</p>	<p>Sets the vision for Cessnock as "Cessnock will be a cohesive and welcoming community living in an attractive and sustainable rural environment with a diversity of business and employment opportunities supported by accessible infrastructure and services which effectively meet community needs. In summary, the vision is: Cessnock – thriving, attractive and welcoming."</p> <p>Desired outcomes and objectives most relevant to this proposal are:</p> <ul style="list-style-type: none"> » A connected, safe and creative community <ul style="list-style-type: none"> > Promoting social connections > Strengthening community culture > Promoting safe communities > Fostering an articulate and creative community » A sustainable and prosperous community <ul style="list-style-type: none"> > Diversifying local business opportunities > Achieving more sustainable employment opportunities » A sustainable and healthy environment

Policy / plan	Comments
	<ul style="list-style-type: none"> > Protecting and enhancing the natural environment and the rural character of the area > Better utilisation of existing open space » Accessible infrastructure, services and facilities <ul style="list-style-type: none"> > Better transport links > Improving and road network > Improving access to health services locally » Civic leadership and effective governance <ul style="list-style-type: none"> > Encouraging more community participation in decision making.
<p><i>Cessnock Economic Development Strategy, 2014</i></p>	<p>Provides the direction and framework to encourage and facilitate economic development within Cessnock LGA. It describes the current economy of Cessnock and identifies Priorities, Strategies, and Actions to support the vision for Cessnock published in the <i>Cessnock Community Strategic Plan 2023</i>.</p> <p>Kurri Kurri town centre is identified as “an important secondary retail node and industrial heart of the LGA” (p. 6). The LGA is seen to form an important ‘transition zone’ between the heavily urbanised and the rural mining parts of the region.</p> <p>“The LGA is well serviced in terms of education and training, children, cultural and community, health, aged care, recreation and sports” (p.6). However, some regional roads are considered to be in poor condition (eg Maitland Road between Cessnock and Kurri Kurri) and there is “very limited public transport, particularly on weekends” (p. 11).</p> <p>Key challenges identified in the strategy that present opportunities for the proposed rezoning are:</p> <ul style="list-style-type: none"> » Building a positive profile of Cessnock LGA, capitalising on and promoting its strengths and attributes » Improving the presentation of LGA (eg Cessnock and Kurri Kurri to Cessnock corridor) to create strong positive first impressions and to showcase the natural environment, heritage and scenic assets » Building a strong economic development culture within Cessnock City Council, with Council recognised as a leader and driver of change » Developing the capacity and flexibility of both businesses and the workforce to respond to the changing marketplace and business environment » Providing ‘development ready’ sites for industrial and commercial development as well as a range of modern premises available for sale and lease » Protecting the key assets of the LGA – rural environments, vineyard areas and significant viewsheds. » Improving the social and economic prospects of residents with low educational and occupational levels » Building a work force with enhanced and diversified work skills, tertiary qualifications and who are ‘work ready’ » Ensuring that all areas within the LGA have mobile telephone coverage and access to high speed broadband. <p>Of the priorities, strategies, and actions identified within the document, the</p>

Policy / plan	Comments
	<p>following are most relevant to the proposed rezoning:</p> <ul style="list-style-type: none"> » Priority 1: To ensure that the foundation blocks needed to support and stimulate economic development are in place. » Strategy 7: Ensure that there is suitable industrial and commercial land and premises available in the LGA to facilitate growth » Strategy 8: Ensure that the infrastructure and utilities needed to support economic development are in place.
<p><i>Cessnock Development Contributions Plan 2014</i></p>	<p>The Cessnock Residential <i>Section 94 Contributions Plan</i> has been based upon only modest population projections and provides for the collection of development contributions towards the upgrading of existing facilities, including local and district open space and district community halls, libraries and bushfire facilities.</p> <p>Development contributions for major areas of new development have generally been sought through separate voluntary planning agreements (VPAs). Of particular note for this study is the VPA for the adjoining development of Cliftleigh. For the proposed 977 lots, the VPA has required a variety of local community and recreation facilities to be provided within the development, as well as contributions towards district level facilities off-site, including library services, the Kurri Kurri Aquatic Centre and cycleway links.</p>
<p><i>Cessnock Recreation and Open Space Strategic Plan 2009</i></p>	<p>This Plan provides guidance to Cessnock City Council to plan and manage the future development and maintenance of open space and recreation facilities throughout the Cessnock LGA in line with population characteristics and growth forecasts. It includes an analysis of current supply and demand of open space and recommendations to address existing gaps in provision through Council's capital works program.</p> <p>The Plan also contains guidelines which set out Council requirements for different types of open space and recreation facilities in areas of new development. Key requirements include:</p> <ul style="list-style-type: none"> » Minimum size of 0.5 ha for local parks » Local parks to be distributed to allow for all residents to be within 10 minutes walking distance » Local sportsgrounds to comprise a double playing field, minimum 2 ha in size » Local sportsgrounds to cater for up to 5,000 people. » District sportsgrounds (min 5 ha) to be provided for 5,000 – 15,000 people.
Maitland City Council	
<p><i>Activity Centres and Employment Clusters Strategy 2010</i></p>	<p>The Strategy provides a hierarchy and network of activity centres and employment clusters to support orderly planning for local economic and employment growth. The role and function of each centre is defined, and guidelines provided to ensure they are well designed with appropriate infrastructure to guide quality planning and residential growth.</p> <p>Gillieston Heights is identified as a Local Centre. A Local Centre should provide for the daily needs of its local residential population including convenience shopping, local health and professional services, food options and local community facilities.</p>

3.2 Design Guidelines

In addition to these plans and policies, Cessnock City Council recommends that Social Impact Assessments are conducted with reference to the *Healthy Urban Design Checklist* (NSW Health 2009) and Crime Prevention Through Environmental Design (CPTED) principles (summarised in Appendix A). Council's DCP seeks an assessment of social impacts against these principles, to ensure the social benefits and safety of new developments can be realised and adverse impacts can be avoided.

The ways in which the adopted subdivision layout incorporates these principles in the design, or uses these principles to mitigate potential social impacts are detailed in Section 9. Some of the principles have been applied directly in the masterplanning process for this site. Other principles are more relevant in later stages of planning including development of DCP controls.

4 Socio-economic profile

4.1 Introduction

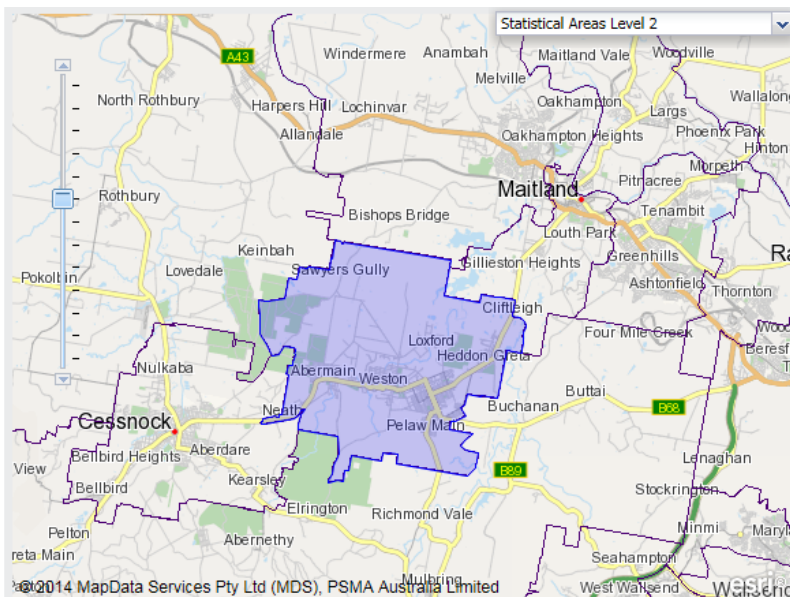
In order to consider the potential social impacts of the proposal, it is important to understand the social profile of the area in which it would be built and the demographic characteristics of people in the surrounding area.

The following community profile is based on data from the Australian Bureau of Statistics (ABS) 2011 Census of Population and Housing. The study area described in Section 2.1 straddles the boundaries of Cessnock and Maitland Local Government Areas (LGAs). Most of the site lies within Census statistical area level 2 (SA2 106011111), shown in Figure 1 below, which also contains the township of Kurri Kurri. This area is part of Cessnock Local Government Area (LGA). However, 466ha in the northern part of the Hydro Kurri Kurri site lies within Maitland LGA. For this reason, the analysis below considers characteristics of the local area and the two LGAs. These areas are compared with NSW as a whole.

4.2 Demographic profile

The proposed development site does not contain any residents at present, as it is a former industrial site. More than 16,000 people live within the Kurri Kurri Abermain area, (almost one third of Cessnock's population), and the age profile across this area is very similar to that of the Cessnock LGA as a whole. Key features of the population profile are highlighted in Table 3 and discussed below.

Figure 3 Kurri Kurri Abermain SA2



Source: Australian Bureau of Statistics (ABS) <http://www.abs.gov.au/websitedbs/censushome.nsf/home/map>

Table 3 Demographic Profile — Kurri Kurri-Abermain and comparison areas

Indicator	Kurri Kurri-Abermain SA2	Cessnock LGA	Maitland LGA	NSW
Population (2006)	n/a*	46,206	61,880	6,549,177
Population (2011)	16,196	50,840	67,478	6,917,658
Change 2006 to 2011 (%)	-	+10.0	+9.0	+5.6
Age groups (%)				
0-4	7.6	7.5	7.5	6.6
5-14	14.2	13.9	14.5	12.6
15-19	6.8	6.7	7.2	6.4
20-24	6.3	6.1	6.2	6.5
25-54	38.2	38.8	40.5	41.5
55-64	13.2	12.9	11.4	11.7
65 and over	13.9	14.0	12.7	14.7
Median age (yrs)	37	37	36	38
Household type (%)				
Family household	72.9	73.6	76.1	71.9
Lone person	24.6	23.8	21.5	24.2
Group household member	2.5	2.6	2.4	3.8
Average household size (no. people)	2.6	2.6	2.7	2.6
Family composition (%)				
Couples with children	41.0	41.8	46.1	45.5
Couples without children	35.6	36.6	35.7	36.6
Single parent families	22.1	20.3	17.1	16.3
Cultural diversity (%)				
Aboriginal or TSI heritage	5.4	4.8	3.5	2.5
Overseas born	10.0	12.2	12.2	31.4
Speaks language other than English at home	1.4	1.7	3.1	22.5
Most common non-English languages spoken at home	German, Greek, Spanish	Cantonese, German	Cantonese, German	Arabic, Mandarin, Cantonese
Median weekly household income (\$)	970	1,042	1,292	1,237
Labour force status persons aged 15+ (%)				
Employed full-time	56.8	57.0	60.1	60.2
Employed part-time	28.7	29.7	29.1	28.2
Unemployed	7.3	6.5	5.0	5.9
Occupation (%)				
Professionals	8.5	10.8	16.6	22.7
Clerical and administrative workers	12.0	11.4	14.1	15.1
Managers	6.2	8.7	9.8	13.3
Technicians and trade workers	20.6	19.0	18.1	13.2
Sales workers	9.8	9.7	10.0	9.3
Machinery operators and drivers	15.1	14.6	10.4	9.3
Labourers	15.1	13.4	10.4	8.7
Community and personal service workers	10.7	10.5	9.1	9.5
Industry of employment (%)				
Manufacturing	23.9	18.0	16.9	11.9
Construction	12.7	12.1	12.9	11.5
Mining	12.6	17.2	10.8	1.6
Highest year of school completed (% aged 15+ and not in school)				
Year 12	20.3	24.9	34.7	49.2
Post school education (% aged 15+ with qualifications)				
Postgraduate degree	0.9	1.4	2.9	7.5
Graduate diploma / certificate	0.9	1.3	2.1	2.6
Bachelor degree	7.5	10.7	16.0	24.6
Certificate or Advanced Diploma	67.4	70.0	60.6	45.4
Not stated / inadequately described	23.4	25.6	18.4	20.0
Housing types (%)				
House	92.5	91.7	88.2	69.5
Semi-detached house	4.6	4.8	6.2	10.7
Apartment	2.6	3.0	4.9	18.8
Housing tenure (%)				
Owned outright	35.4	34.8	30.9	33.2
Owned with a mortgage	36.9	36.3	39.7	33.4
Rented	24.1	25.2	26.8	30.1

Indicator	Kurri Kurri- Abermain SA2	Cessnock LGA	Maitland LGA	NSW
Other / not stated	3.6	3.8	2.6	3.3
Dwelling status (%)				
Occupied private dwellings	93.8	90.5	93.7	90.3
Unoccupied private dwellings	6.2	9.5	6.3	9.7
Same usual address as 5 years ago	64.1	59.6	58.2	57.2
SEIFA Index of Relative Disadvantage	912	936	993	995.8

Note: * areas not comparable between two census periods

Source: Australian Bureau of Statistics Census of Population and Housing, 2011 and 2006

In comparison with Cessnock LGA, Maitland LGA, and the rest of NSW, the Kurri Kurri locality shows the following characteristics:

- » **Primarily family households** (72.9%), with the remainder being single person households and a small number of group households
- » A relatively high proportion of **single parent families**
- » Representation of people of **Aboriginal or Torres Strait Islander background is higher** than in the comparison areas
- » One quarter of the population of Kurri Kurri Abermain is employed in the **manufacturing industry**, with another quarter evenly divided between **construction and mining industries**.
- » The three main occupational groups are **technicians and trade workers, machinery operators and drivers, and labourers**. The locality has fewer professionals and managers than the comparison areas.
- » Median **household incomes are substantially lower** than for Cessnock and NSW.
- » Around one third of **dwellings are owned outright**, which is slightly higher than in the comparison areas
- » **A well-established population**, where a higher proportion of residents have lived at the same address as 5 years ago, compared with Cessnock, Maitland and NSW
- » **Relatively small proportion of residents have completed year 12** and most post school qualifications are TAFE Certificates or Diploma level
- » An area of **relatively high socio-economic disadvantage**, with a SEIFA index of 912.

In comparison with NSW, Cessnock LGA has the following characteristics:

- » **A faster growing population** with a **higher proportion of children**
- » Higher proportion of people of Aboriginal and Torres Strait Islander background
- » Lower proportion of people born overseas and speaking a language other than English at home
- » Lower median household incomes
- » Relatively low proportion of people in white collar occupations and a higher proportion in technical and trades, machine operator and labouring occupations, predominantly in the manufacturing or mining industries
- » Relatively lower levels of educational attainment
- » Predominantly detached dwellings.

4.2.1 Population growth and change

Both Cessnock and Maitland recorded growth of around 10% between 2006 and 2011. Maitland is known as the biggest and fastest growing population centre in the Lower Hunter region (NSW Department of Planning 2009). Since the last census, growth has continued apace, mostly in identified urban growth areas.

The population is projected to increase in all Hunter Valley LGAs, with an overall increase of 40,843 people (23%) from 2006 to 2021. A substantial increase is projected for the Maitland LGA, already the most densely populated region, with an overall population increase of 25,627 people (40%). The Hunter Valley population is also ageing, with Maitland's elderly population expected to double between 2006 and 2021 (NSW Health, 2013).

In Cessnock LGA's Kurri Kurri area, population growth is seen in the development of new communities to the east and south of the Hydro Kurri Kurri site, particularly at Heddon Greta, Avery Village and Cliftleigh, but also at Branxton in the north of the LGA. Council has advised that these developments have already exceeded the housing growth targets in the *Lower Hunter Regional Strategy* and the *City Wide Settlement Strategy*.

4.2.2 Population health

In the 2011 census, 4% of the Hunter Valley population identified as being of Aboriginal or Torres Strait Islander origin, compared to the NSW average of 2%. There is a recognised gap in health outcomes for Aboriginal people.

Several areas of the Hunter Valley have low indices of social disadvantage (SEIFA), which is associated with poorer health outcomes. The Hunter Valley population has high rates of chronic disease and higher than state average rates of potentially preventable hospitalisations, hospitalisations for coronary heart disease and diabetes, and high body mass attributable deaths. In addition to rates of behavioural risk factors that are higher than NSW rates, there is concern in the community and among health professionals about the risk of exposure to dust from open-cut coal mining. Air quality and hospital utilisation data continues to be monitored (NSW Health 2010).

Data from NSW Health (2010, p. 12) indicates that there are health issues particular to residents of Cessnock, with the postcode having very high rates of emergency department visits for respiratory illness and for asthma, for most age groups. The Kurri Kurri postcode also ranked very highly in the rates of emergency department visits for respiratory problems.

Compared with the NSW average, Cessnock has:

- » Higher rates of obesity and overweight, and rates of hospitalisation attributable to high body mass
- » Low levels of physical activity
- » Inadequate fruit consumption
- » High rates of smoking and hospitalisation attributable to smoking
- » High rates of respiratory disease
- » High rates of hospitalisation due to diabetes
- » Higher incidence of cancers (Hunter Medicare Local Health Needs Assessment Report, 2013).

Demand for inpatient medical and surgical services is projected to increase in all LGAs within the Hunter New England Local Health District, and particularly in Maitland LGA. The greatest increase in demand for acute beds is expected to come from Hunter Valley residents aged over 70 years.

Population growth and ageing are the primary factors contributing to an increase in demand for health services in the future.

4.2.3 Crime profile

The major criminal offences committed within the Cessnock LGA are tabled below. Malicious property damage is by far the most prevalent offence committed in the Cessnock LGA. Malicious property damage is a broad offence category covering a range of different acts including vandalism (e.g. smashing windows, damage to recreational or sporting facilities, public toilets, public phone boxes, motor vehicles, fencing and graffiti) (Cessnock City Council 2009a, p.5). However, the LGA also has very high rates of motor vehicle theft, being ranked fourth highest of all LGAs in NSW for this crime category. 'Break and enter – non dwelling' and 'Assault – domestic violence related' also rank highly in comparison with other parts of NSW. Importantly, domestic violence related assault increased by 28% in the two years to end 2013, and by more than 9% in the five years to end 2013. There has also been a sharp increase in 'Steal from retail store'. 'Steal from motor vehicle' and 'Steal from dwelling' also increased by 10.8% and 7.7% respectively over the previous five years, while there was a 4.6% decrease in the number of 'malicious damage to property' offences in the Cessnock LGA.

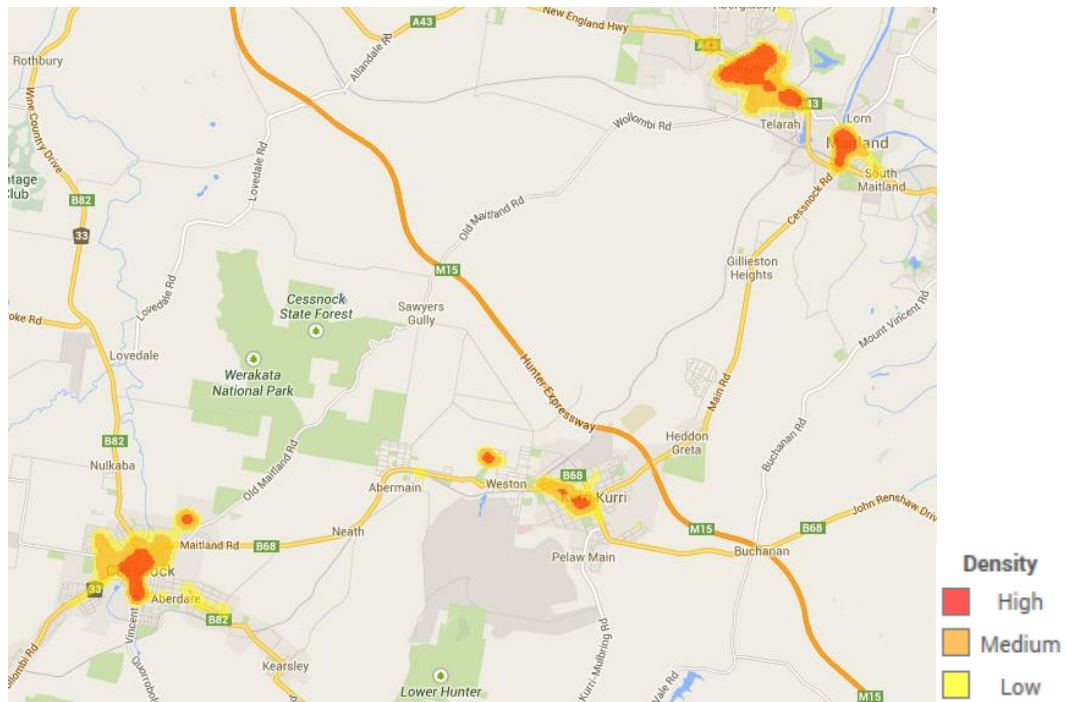
Table 4 Major Criminal Offences in Cessnock LGA – Jan-Dec 2013

Offence Type	Rate per 100,000 population	24-month trend	60-month trend	LGA rank
Motor vehicle theft	493.7	Stable	Stable	4
Break and enter – non-dwelling	565.0	Stable	Stable	12
Assault – domestic violence related	724.6	28.2%	9.4%	17
Steal from dwelling	538.8	Stable	7.7%	22
Steal from motor vehicle	795.9	Stable	10.8%	29
Steal from retail store	307.9	42.6%	15.2%	35
Malicious damage to property	1,456	Stable	- 4.6%	37
Break and enter – dwelling	602.6	Stable	2.4%	41

Adapted from NSW Bureau of Crime Statistics and Research (2013)

The Kurri Kurri CBD area has been identified as a crime hotspot, as shown on Figure 1 below.

Figure 4 Crime Hotspots – Malicious Property Damage in Cessnock, Maitland and Kurri Kurri CBD



Source: Bureau of Crime Statistics and Research (BOCSAR) website: <http://crimetool.bocsar.nsw.gov.au/bocsar/>

4.3 Economic profile

Mining and primary industries such as beef and poultry production have been major industries across the Cessnock region since its early settlement. As mining production methods and demand have changed over time, other industries such as winemaking and tourism have grown in its place. Other industries including aluminium production, the processing of explosive equipment and mining support services have contributed towards the area’s economic base and employment. The area has also attracted restaurants, tourist accommodation, galleries, museums and craft centres (Cessnock Council website).

The Kurri Kurri plant was one of two aluminium smelters operating in the Lower Hunter region. Although the region “has undergone significant structural change in the past 15 years with the closure of the local steelworks and loss of associated industries” (Environ, 2012, p. 12), growth in the service sector and resource industries has contributed to new jobs and minimised the impacts of job losses in contracting industries.

Council’s Economic Development Strategy notes a diverse economic base, but identifies numerous constraints and challenges, including with the local workforce (eg limited numeracy and literacy, need for training, need for more people with higher education), poor condition of some roads and inadequate internet / mobile coverage, a contracting manufacturing sector and shortfalls in some community services, particularly health services, childcare and early intervention.

The *Hydro Kurri Kurri Smelter Limited Social Impact Assessment* explored the likely impacts on the community from job losses associated with the closure of the smelter. It provided an assessment of employment prospects and future trends within the Lower Hunter region, with the information intended to inform skill transferability and potential retraining levels required by displaced employees.

With regard to employment opportunities and training needs, the assessment concluded:

- » Approximately half of the displaced workers may find it difficult to find alternative employment in the region, based on existing skills and current similar occupations
- » Mining and transport industries would be most likely to provide opportunities for displaced employees, although some level of retraining may be required into the future due to constraints on skills transferability
- » Although the coal sector is increasing in prominence, machine operators and miscellaneous factory process workers would have the most difficulty finding work in the coal sector based on their current skills and job opportunities.

The following future trends were identified:

- » Development of the Port of Newcastle is likely to continue because of strong global demand for domestic commodities, such as coal. The port's role for the tourism industry may continue to increase as cruise ships visit Newcastle as part of their itinerary.
- » The recent opening of the Hunter Expressway leaves Kurri Kurri well positioned to capture a wide range of industrial and other employment-generating investments. Improved accessibility would help the viability of existing local businesses and would make the area attractive to new investors. It is expected land values overall would increase as a result of this new expressway. The Hydro site has excellent access to the highway, with immediate proximity to the Loxford interchange.
- » Coal mine operations in the Hunter Valley will remain strong through to 2017.

4.4 Transport and access

The new Hunter Expressway provides dual carriageway access between the F3 and the New England Highway near Branxton. Interchanges, including two at Loxford and Kurri Kurri, provide good access to local communities and will encourage local economic development. The new Expressway will improve accessibility for residents, employees and visitors to the area from areas such as Newcastle and Upper Hunter regions.

The Cessnock and Kurri Kurri areas are served by three bus routes operated by Rover Coaches (Hyder 2015, p. 13):

- » Route 160 – Newcastle Interchange to Cessnock via Kurri Kurri
- » Route 163 – Morisset to Cessnock via Kurri Kurri
- » Route 164 – Maitland to Cessnock via Kurri Kurri.

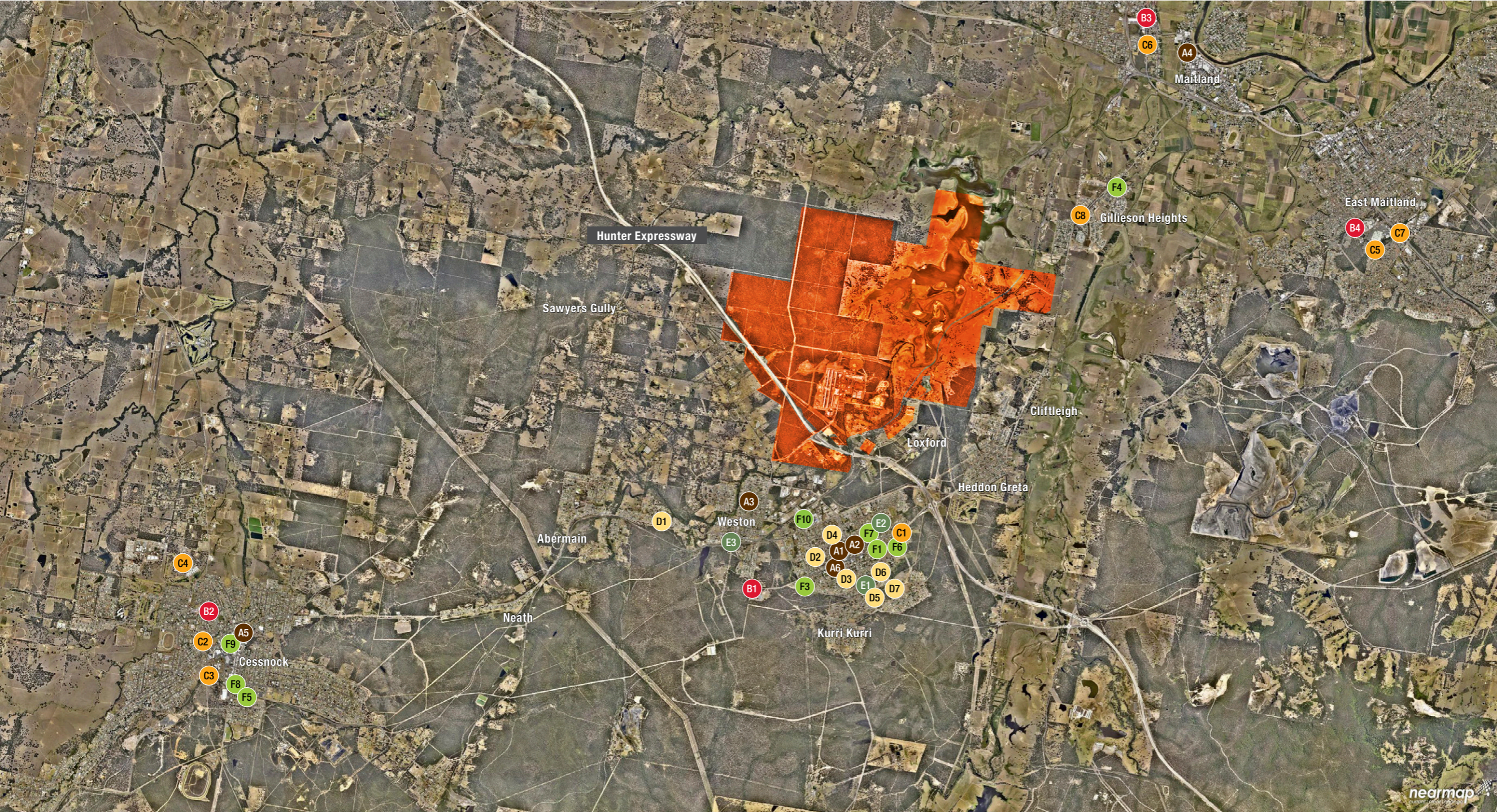
No bus routes are currently within walking distance of the site.

The South Maitland Railway line connects to the state's rail network at Maitland and forms much of the residential area's western boundary. The single track railway line once served several local coal mines but is now privately owned and operates only one round trip per day. No passenger services operate on this route. The area also contains several former spur lines that are retained for heritage purposes Hyder 2015, p. 14).

4.5 Existing human services and community facilities

The location and distribution of existing community facilities within the Cessnock and Maitland areas is provided in Figures 5, 6 and 7.

Community Facilities near Hydro Kurri Kurri site



Community facilities

- EMERGENCY SERVICES**
- A1 Kurri Kurri Police Station
 - A2 Kurri Kurri Fire Station
 - A3 Weston Fire Station
 - A4 Maitland Police Station
 - A5 Cessnock Police Station
 - A6 Kurri Kurri Ambulance Station

- MAJOR HEALTH FACILITIES**
- B1 Kurri Kurri District Hospital and Community Health Centre
 - B2 Cessnock Hospital
 - B3 Maitland Hospital
 - B4 East Maitland Community Health Centre

- AGED CARE FACILITIES**
- C1 Kurri Kurri Masonic Village
 - C2 Northern Coalfields Community Care Association
 - C3 Cessnock Masonic Village
 - C4 Calvary Retirement Community
 - C5 Greenhills Nursing Home
 - C6 Benhome Home for the Aged
 - C7 Ashton Gardens
 - C8 Settlers Lifestyle

- PLACES OF WORSHIP**
- D1 St Francis Xavier Abermain
 - D2 Seventh-Day Adventist Church
 - D3 Kurri Kurri Congregational Church
 - D4 Church of Christ
 - D5 Hunter Baptist Church
 - D6 Catholic Church of the Holy Spirit
 - D7 Anglican Parish

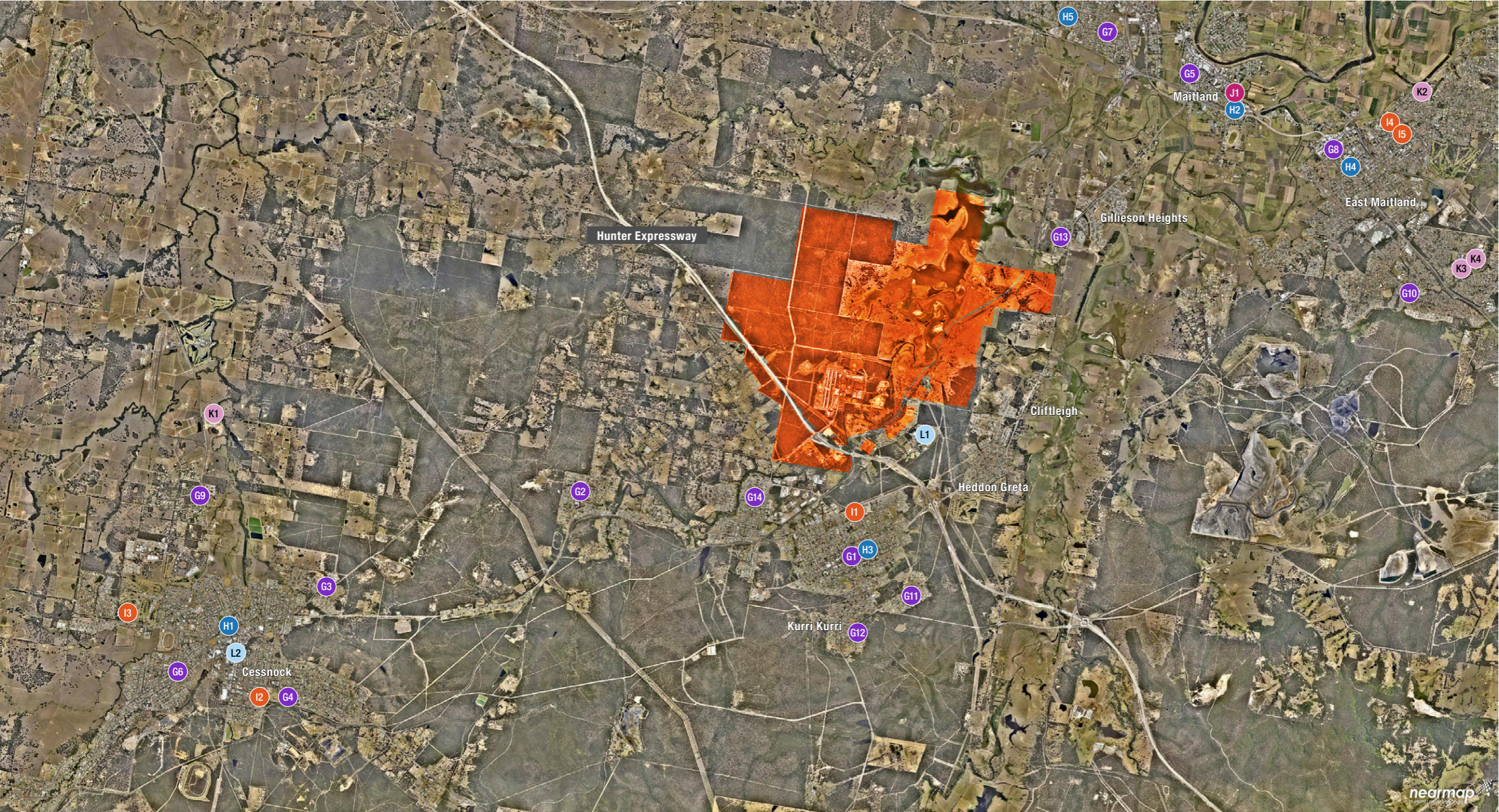
- CHILDCARE CENTRES**
- E1 Mission Australia Early Learning Services / Kindergarten
 - E2 Kurri Kurri Early Childhood Centre
 - E3 Weston Community Preschool

- COMMUNITY FACILITIES**
- F1 Barkuma Indigenous Neighbourhood Centre
 - F2 Kurri Kurri Community Centre
 - F3 Kurri Kurri Library
 - F4 Gillieston Heights Community Centre
 - F5 Samaritans Foundation Information and Neighbourhood Centre
 - F6 Kurri Kurri Senior Citizens Hall
 - F7 Kurri Kurri Ambulance Hall
 - F8 Cessnock Performing Arts Centre
 - F9 Cessnock Library
 - F10 Hunter Prelude Early Intervention Centre

Hydro Kurri Kurri site



Education facilities near Hydro Kurri Kurri site



Education facilities

- PRIMARY, GOVERNMENT**
- G1 Kurri Kurri Public School
 - G2 Abermain Public School
 - G3 Cessnock East Public School
 - G4 Cessnock Public School
 - G5 Maitland Public School
 - G6 Cessnock West Public School
 - G7 Telarah Public School
 - G8 Maitland East Public School
 - G9 Nulkaba Public School
 - G10 Ashtonfield Public School
 - G11 Stanford Merthyr Infants School (K-2)
 - G12 Pelaw Main Public School
 - G13 Gillieston Public School
 - G14 Weston Public School

- PRIMARY, NON-GOVERNMENT**
- H1 St Patrick's Primary School
 - H2 St John the Baptist
 - H3 Holy Spirit Primary School
 - H4 St Joseph's Primary School
 - H5 St Paul's Primary School

- SECONDARY, GOVERNMENT**
- I1 Kurri Kurri High School
 - I2 Cessnock High School
 - I3 Mount View High School
 - I4 Maitland Grossman High School
 - I5 Maitland High School

- SECONDARY, NON-GOVERNMENT**
- J1 All Saints College

- COMBINED PRIMARY AND SECONDARY, NON-GOVERNMENT**
- K1 St Philip's Christian College
 - K2 Linuwel School Ltd
 - K3 Maitland Christian School
 - K4 Hunter River Community School (special needs)

- TERTIARY INSTITUTIONS**
- L1 Hunter TAFE, Kurri Kurri Campus
 - L2 Hunter TAFE, Cessnock Campus

● Hydro Kurri Kurri site



Recreation and Open Space Facilities near Hydro Kurri Kurri site



Recreation Facilities and Open Space

- RECREATION FACILITIES**
- M1 Kurri Kurri Bowling Club
 - M2 Kurri Golf Club
 - M3 Kurri Kurri Aquatic Centre
 - M4 Kurri Kurri Tennis Courts
 - M5 Abermain Soccer Field
 - M6 Kurri Kurri Skate Park
 - M7 Cessnock Sportsground
 - M8 Cessnock Civic Indoor Sports Centre
 - M9 Maitland Tennis Centre
 - M10 Maitland Indoor Sports Centre
 - M11 Walka Water Works

PARKS AND OPEN SPACE

- N1 Heddon Greta Reserve
- N2 Birralee Park
- N3 Booth Park
- N4 Jacobs Park
- N5 Log of Knowledge Park
- N6 Nellie Simm Park
- N7 Lions Park
- N8 Weston Park
- N9 Varty Park
- N10 Peace Park
- N11 The Pines Oval
- N12 Bailey Park
- N13 Howe Park
- N14 Jeffries Park
- N15 Centenary Park
- N16 Maitland Park
- N17 Robins Oval, Maitland

● Hydro Kurri Kurri site



4.5.1 Regional facilities

Hospitals and medical facilities

The nearest hospital to the Hydro Kurri Kurri site is at Kurri Kurri, around 5kms south. Kurri Kurri Hospital is a 41 bed acute and transitional care facility providing general medicine, general surgery, ear nose and throat, ophthalmic, an emergency department and a range of allied health services.

HNE Health covers a large geographic area (16% of the area of NSW) with a major metropolitan centre (Newcastle) and several regional population centres as well as small remote communities.

Other facilities near the Hydro Kurri Kurri site include:

- » Cessnock Hospital (16 kms west) - a 68 bed acute facility, providing general medicine, general surgery, orthopaedics, urology, gynaecology, obstetrics, an emergency department and a range of allied health services
- » Maitland Hospital (16 kms north) – is the regional hospital serving the Upper and Lower Hunter regions and the busiest facility in the Hunter Valley. It offers a comprehensive range of services including medical, rehabilitation, surgical, mental health, dental, renal, maternity and child services, a coronary care/ high dependency unit and a 24-hour emergency department.
- » GP services are available at Cessnock Hospital (Cessnock 2010b).

Health services in the Cessnock LGA are considered to be “stretched”, with “a shortage of medical practitioners and limited hospital services” (Cessnock 2014, p. 12).

Maitland Hospital operates near or at capacity and will require reconfiguration of some services to enable it to meet demand in the near future. Demand for health services from the projected increase in population, coupled with ageing infrastructure and existing workforce challenges, mean that current services in the Hunter Valley are considered inadequate to meet future health needs.

Changes to Hunter Valley services recommended in the *Clinical Services Plan* (NSW Health 2013) are:

- » Strengthening the role of Muswellbrook Hospital, including emergency services
- » Increasing ambulatory care and outreach services in line with demand
- » Undertaking high volume short stay surgery at Cessnock Hospital and Singleton Hospital
- » Enhancing lower acuity services in district and community hospitals
- » Partnering with Medicare Locals and GPs to increase services in the community and reduce emergency department presentations
- » Working with external partnerships to provide primary and community services to meet the health needs of the local population.

A 40 ha site at Metford has been selected as the preferred site for the proposed new hospital for the Maitland (Lower Hunter) region. The site, near the New England Highway and other major link roads, public transport, and an existing train station, will allow adequate scope for future growth and development of a dedicated health precinct.

Community health facilities

Community health facilities are currently provided at:

- » Kurri Kurri Community Health Centre - providing a range of support services at the Kurri Kurri Hospital site
- » Cessnock Community Health Centre - providing a range of in-house and visiting services (Hunter New England Health, 2007).

The Kurri Kurri Prelude Early Intervention Centre provides support services for people and families needing support with early childhood, development and disability issues.

Cultural facilities

Cultural facilities near the Hydro Kurri Kurri site include:

- » The 466 seat Community Performing Arts Centre at Cessnock
- » Kurri Kurri Library
- » Cessnock Library.

The Kurri Kurri Library is operating at its capacity at present.

Emergency services

Emergency services near the Hydro Kurri Kurri site are located at Kurri Kurri, including Police, Ambulance and Fire and Rescue NSW.

4.5.2 Local facilities

Cessnock has a range of local community facilities and services, such as childcare options and other community support services.

Cessnock City Council is preparing a *Community Facilities Strategic Plan* to guide planning for new community facilities. The Strategic Plan will adopt a hierarchy for the provision of social infrastructure.

Schools

Figure 5 shows the location of the many schools near the Hydro Kurri Kurri site. The closest primary schools are located at Kurri Kurri, Gillieston and Weston, while the nearest high school is at Kurri Kurri. Many Independent schools are also located in nearby areas, especially in Maitland, although there is a Catholic (Holy Spirit) Primary School in Kurri Kurri.

The site is well-located for tertiary education facilities, with Kurri Kurri TAFE adjoining the site to the south.

Child care

Cessnock Council's *City Wide Settlement Strategy* (2010b) notes that there are many long day care centres, pre-schools and Family Day Care providers in the LGA.

Council currently licenses ten child care facilities to community based organisations across the LGA, with the facilities nearest the Hydro Kurri Kurri site being:

- » Kurri Kurri Early Childhood Centre and Kurri Kurri Playgroup
- » Mission Australia Early Learning Services, Kurri Kurri.

In addition, there is a community pre-school at Weston and a number of home-based Family Day Care services in Kurri Kurri and nearby communities.

The Cessnock *City Wide Settlement Strategy* (2010b) notes:

"[A]necdotal evidence suggests that the recent growth in privately owned and operated child care centres has led to an oversupply of places in some areas, while other services are still operating at or near capacity, depending on their location" (Cessnock City Council 2010b, p. 175).

However, "it is not known whether this is a short or long term trend" (Cessnock City Council 2010b, p. 175).

Cessnock Council has advised that while services across the LGA appear to meet demand at present, there will be a need to monitor supply of childcare facilities as the planned growth occurs through this region.

In addition, "affordability remains an issue in the LGA and this is in line with state and national trends. Levels of service will need to be monitored in response to population growth projected in the LHRSS" (Cessnock City Council 2010b, p. 175).

Community halls

There are around 20 community halls in the LGA, including three at Kurri Kurri:

- » Kurri Kurri Ambulance Hall
- » Kurri Kurri Senior Citizens Hall
- » Kurri Kurri Community Centre.

It is understood that the Kurri Kurri Community Centre is operating at capacity.

Disability services

Cessnock Council plays a role in advocating for the needs of its current and future residents, including in the areas of disability services. It convenes an Access Advisory Committee "to raise awareness of, and where possible address, issues which face people living in the community who have a disability" (www.cessnock.nsw.gov.au accessed 11 February 2015).

Council also operates a community transport service offering social and shopping outings, including transport and mobility assistance to and from medical appointments and day centres, for older people and people with a disability.

The Kurri Kurri Prelude Early Intervention Centre also offers some support services to children with disabilities and their families.

4.5.3 Open space and recreational facilities

Cessnock City Council adopted the *Recreation and Open Space Strategic Plan* in 2009b.

Open space and recreational facilities within Cessnock include:

- » 3 aquatic centres, including one at Kurri Kurri
- » 3 large community/ indoor sporting facilities:
 - > Greta Arts and Sports Community Hall
 - > Cessnock Civic Indoor Sports Centre
 - > Kurri Kurri Community Centre.
- » 52 public parks
- » 41 playgrounds
- » 23 sports grounds (www.cessnock.nsw.gov.au accessed 11 February 2015).

The nearest facilities to Hydro Kurri Kurri site are a Kurri Kurri, which has:

- » 2 x cricket practice nets
- » 8 tennis courts
- » 8 netball courts
- » 1 skateboard park.

4.5.4 Conclusions

Cessnock LGA contains a wide range of social infrastructure, services and open space for existing residents, and many at Kurri Kurri are relatively close to the site. However, these facilities have been sized for the smaller population levels living in the area in recent decades and do not adequately cater for the needs of the area's growing or ageing population. In addition, the demographic and socio-economic characteristics of the area highlight specific needs for some population groups that are not currently being met.

4.6 Issues for the local community

The rezoning and future growth of this new community will transform this former industrial and rural area into a new residential community and employment area.

Potential social issues could include:

- » Distance and potential isolation of some members of the new community from facilities and services in larger town centres in Kurri Kurri, Cessnock and Maitland
- » Need for strategies to ensure this community can successfully integrate into the existing Kurri Kurri, Cessnock, Clifftleigh and Gillieston Heights communities, and does not create a potential social divide through being seen as being separate from, or more exclusive than, other parts of the LGA
- » Need for quality public transport to serve new growth areas such as Hydro Kurri Kurri site, particularly on weekends and evenings
- » Need to encourage connectivity and access to surrounding residential precincts to the east and south east and between the employment / industrial lands and residential precincts of the site
- » Demand created by the new community on existing community facilities and the potential to generate need for new community infrastructure.

5 Community engagement

The adopted subdivision layout has been developed in parallel with a community engagement process initiated when the decision was made to cease operations in 2012. A proactive Community and Stakeholder Engagement Plan was developed to guide the project during the investigations and future planning phases. It aims “to increase engagement with the local community and other stakeholders, to maintain good existing relationships and provide an ongoing two-way flow of information” (GHD March 2015).

The objectives of the Community and Stakeholder Engagement Plan are to:

- » Outline the most appropriate method for consulting with the community and identified stakeholders
- » Explore stakeholder perspectives in relation to the future use of the Kurri Kurri site and consult them during key milestones and decisions around project elements
- » Establish a project-specific community advisory group that will act as an advisory body
- » Work closely with Hydro management and key project stakeholders throughout the project
- » Maintain a thorough record of all communication undertaken with stakeholders
- » Ensure an internal system is in place for capturing and recording interactions that stakeholders have with members of the project team.

Community engagement activities undertaken to date are detailed in the GHD report and include identification and meeting with agencies, Councils, nearby residents and other key stakeholders, and establishment of a Community Reference Group (CRG). Communications materials including advertisements, media releases and a website have also been produced.

As of February 2015, feedback from the CRG and other stakeholders has identified the following issues of concern in the development of this project:

- » The Motorcycle Club and Speedway at Dickson Road, Loxford, are important to the community and provide economic benefit to the region. They should be considered when planning the future of the site
- » The community wishes to be kept informed of any and all impacts before and during the proposed works
- » There is support for retaining large scale employment uses on the site.

These issues have been taken into consideration in the assessment of socio-economic benefits and impacts of the proposed rezoning.

Hydro will continue to work proactively with the community through the future planning and redevelopment phases of this project. A key element in the Community Engagement Strategy will be public exhibition of the Planning Proposal during the assessment of process. Any comments made by the community during the exhibition will be considered in future planning and proposed redevelopment phases.

6 Population projections

This section considers the future population of the Hydro Kurri Kurri site in terms of its size, rate of growth and broad demographic characteristics. Assumptions about the future population will underpin the assessment of the socio-economic impacts on the area's existing communities and impacts of the development on the new community itself.

6.1 Forecast residential population

6.1.1 Proposed dwelling mix and yields

Three broad options have been considered for the gross developable area of 182.2 ha for residential uses, as shown in Table 6. The options reflect a range of possible densities for the site, with Traditional most closely representing current development patterns within the LGA, and Contemporary and Contemporary High representing increasingly more dense scenarios, such as might be found in newly planned precincts in western Sydney (pcb 2014).

Table 5 Range of possible housing types

Housing type	Traditional		Contemporary		Contemporary High	
	No.	%	No.	%	No.	%
Townhouses (180m ²)	0	0	305	11.3	680	22.8
Detached (350m ²)	0	0	666	24.7	742	24.8
Detached (450m ²)	250	12.1	784	29.1	742	24.8
Detached (600m ²)	1,647	79.5	754	28.0	655	21.9
Large lot (1000m ²)	175	8.4	183	6.8	167	5.6
Totals	2,072	100.0	2,692	100.0	2,986	100.0
Average lot size	616m ²		474m ²		427m ²	

Source: pcb December 2014

The combination of dwelling types included in these options would yield between 2,070 and 3,000 dwellings across a range of townhouse, smaller and medium sized detached dwellings and large lot styles. Within these options, 80% of dwellings would be detached dwellings on 600m² lots under the Traditional format, while smaller lot detached dwellings and townhouse style dwellings would comprise up to 50% of dwellings if more Contemporary formats were to be adopted.

The current subdivision plan is based on the Traditional yield and dwelling style option, providing for around 2,070 dwellings.

6.1.2 Projected population

In terms of estimating the likely size of the residential population, occupancy rates for different dwelling types across the Cessnock LGA (derived from the 2011 Census) have been applied, as

representative of trends across the area, although it is acknowledged that the average size of households for different dwelling types may vary over the 25 year development period. These occupancy rates are outlined in the following table.

Table 4: Average household size, Cessnock LGA 2011

Dwelling type	Average household size
Detached dwelling	2.7 persons
Semi-detached, townhouse, terrace	1.9 persons
Average all occupied dwellings	2.6 persons

ABS Census of Population and Housing 2011

Using the above options for dwelling yields and applying the Cessnock average household sizes, provides the following estimates of future population for Hydro Kurri Kurri.

Table 6 Estimated future population under yield options

Housing type	Av household size	Traditional		Contemporary		Contemporary High	
		No. dwellings	Future residents	No. dwellings	Future residents	No. dwellings	Future residents
Townhouses	1.9	0	0	305	580	680	1,292
Detached 350m ²	2.7	0	0	666	1,798	742	2,003
Detached 450m ²	2.7	250	650	784	2,038	742	1,929
Detached 600m ²	2.7	1,647	4,447	754	2,036	655	1,769
Large lot 1000m ²	2.7	175	473	183	494	167	451
Totals	2.6	2,072	5,569	2,692	6,946	2,986	7,444

Source: pcb 2014; ABS Census of Population and Housing 2011, Cessnock LGA

Based on these dwelling sizes and proposed housing styles, the future population of the Hydro Kurri Kurri site could range from around 5,500 to 7,500.

Adopting the Traditional development pattern and densities in the subdivision layout would result in the lower population forecast of around 5,500 residents when development is complete in around 30 years.

6.2 Characteristics of the future population

It is difficult to forecast the likely age and household characteristics for a development that will not be fully developed for another 25-30 years. Forecasting characteristics of a future population requires consideration of factors such as dwelling size and mix, market price and segment, experience in similar areas and the influence of other factors particular to the site. It is assumed that Hydro Kurri Kurri will appeal to a population with similar characteristics to that moving into other new release areas in Cessnock and Maitland LGAs with a similar mix of dwelling types.

Residents in this area are expected to share characteristics of populations of recent land releases in other parts of the Lower Hunter Valley, and to some extent in parts of western Sydney. Some common features of residents of these new release areas include:

- » Households will usually move into the area from within a 5-10 km radius
- » A high proportion of first home buyers
- » There is likely to be a general predominance of young families with young children and couples who have not yet started a family
- » Most adults will be in the 25-49 years age cohorts
- » There will be a small but significant number of single person households
- » Some older people wanting to live close to children and grandchildren
- » Larger numbers of home owners
- » Increasing family sizes over time, as couples have children.

Other projected population characteristics are expected to be as follows:

- » Predominantly middle income households, in keeping with housing being affordable to better off first-time buyers. A large proportion of household income is likely to be devoted to housing cost however, which may restrict the spending of residents on non-essentials and services
- » High levels of workforce participation, with two working parents in many families, and consequently high levels of commuting and a need for child care
- » High levels of car ownership
- » High levels of mortgaged home ownership. However, depending on general economic and investment conditions, some dwelling stock is likely to be privately rented
- » Increasing cultural diversity. Kurri Kurri Abermain, Cessnock and Maitland LGAs currently display moderate levels of cultural diversity, with around 12% of residents from overseas, mainly from German or Chinese backgrounds. However, these levels are lower than the NSW average

A number of other demographic trends in the wider population will have an impact on future demographics of the area. These include trends such as:

- » The ageing of the population, increasing life expectancy and growing numbers of people in the oldest age cohorts
- » Higher incidence of relationship breakdown
- » Smaller households and declining occupancy rates
- » Increasing numbers of people choosing not to have children
- » The later age at which people do have children
- » Increasing numbers of people choosing to live alone
- » Changing lifestyle trends, including increasing numbers of people working from home and the extent to which housing forms will attract particular lifestyle groups.

As land release areas develop over time, the peaks in the age distribution associated with a predominance of young families tend to reduce and the population will become more diverse in terms of age and household type. The proportion of the population who are young children and young adults will decline as the population ages and the proportion of older children with older parents grows. The proportion of the population aged 55+ will also increase considerably as the area matures and older people are attracted to the area to be near family, or to downsize to a smaller home.

In this way, the population profile at Hydro Kurri Kurri is likely to come to more closely approximate that of established areas with a variety of age and household characteristics, rather than a traditional new release area with particular age concentrations.

6.3 Size and characteristics of projected workforce

Industrial uses are proposed for 198 Ha of land in the south western portion of the Kurri Kurri site near the Hunter Expressway. The size of the projected workforce has been broadly estimated using analysis by Urbis (2013) which notes an average employment density of 20 employees per ha for industrial land. This would equate to a workforce of approximately 3,960 people when the site is fully developed.

Industrial sectors forecast to generate demand for future industrial uses include:

- » Mining services
- » Construction
- » Transport, postal and warehousing (Urbis 2013 p. iii).

Freight and logistics and building services are the most likely industrial segments that would be attracted to this site, while other segments such as intermodal and rail maintenance facilities could also show interest.

7 Key social issues and impacts

7.1 Introduction

A review of the adopted subdivision layout, discussions with our client, examination of other project documentation and consideration of the social issues raised in public consultation and typical of new master planned communities, have highlighted the ways in which the project has been developed in order to successfully minimise the major social concerns and provide social benefits for the Kurri Kurri and wider Cessnock and Lower Hunter communities.

Identified benefits of the proposal for the local community include:

- » Enabling the provision of new housing stock in a range of sizes, styles and price points, which will directly contribute to the NSW Government target for new housing, as well as State Government and Council policies for new housing
- » A subdivision layout that extends, consolidates and links into, existing communities rather than creating new, stand-alone, isolated residential areas
- » Provision of new community infrastructure and open space which will support an active community and encourage healthy lifestyles
- » The potential for much needed local employment opportunities and economic growth through the inclusion of areas zoned as Business Park, General Industry and Heavy Industry, and through the subsequent construction of the proposed developments
- » Planning will support a community with a unique sense of place
- » Permeability and access within the site layout and between these new communities and surrounding areas
- » A site layout that will be accessible to people of all ages and abilities and a range of income groups
- » Road layout that will be accessible for buses
- » Design principles that support creation of a socially sustainable community.

Aspects of the current proposal which may nevertheless have the potential to create some social impacts include:

- » An increase in population size in areas not currently identified for urban growth
- » The potential for isolation from established communities, support networks, services and facilities
- » Challenges for community integration and social cohesion
- » Impacts on demands for community facilities, services and open space.

The ways in which these social impacts have been addressed in the current proposal are discussed later in this section. The ways in which community facilities will be provided to meet the needs of future residents and the workforce are discussed in Section 8.

7.2 Identified social and economic benefits

7.2.1 Increased housing stock

Cessnock LGA has been identified as an area of high housing need and deteriorating affordability. Recent increases in house prices and rents coupled with comparatively low average incomes contribute towards social disadvantage and make housing unaffordable for those on lower incomes, including key workers. The issue also arises because of shortages in social housing and severely limited access to the social housing available (Cessnock 2010b).

One of the main objectives of the rezoning is to contribute towards the development of new housing within the Lower Hunter region, and Cessnock in particular:

“The ... intent of the proposed development is to become a contemporary residential community, reflective of the site’s location within the region, the constraints and opportunities of the site, and the need to deliver affordable residential product” (pcb 2014, p. 11).

In order to achieve this objective, detailed consideration has been given in the subdivision design to the range of proposed lot sizes, dwelling styles and infrastructure design (pcb 2014). The design addressed many of the Neighbourhood Planning Principles within the Lower Hunter Regional Strategy (NSW Department of Planning 2006).

The proposal will provide for around 2,070 dwellings which would accommodate around 5,500 residents. This increase in dwellings will contribute around 10% of the target number of 21,700 new dwellings within Cessnock LGA by 2031 (NSW Department of Planning 2006; 2010).

The adopted subdivision layout is based on sound social and environmental sustainability principles, extending the reach of existing residential communities rather than creating new isolated communities with new demands for social infrastructure. The design and provision of open space takes advantage of the site’s topography, orientation and rural setting.

In preparing the subdivision layout, traditional development styles within the Hunter region were compared with more contemporary and higher density development patterns such as are being constructed in western and south western Sydney. The subdivision is flexible enough to allow for a range of housing styles and lot sizes. A large proportion of the lots would be suitable for low density residential housing and will appeal to households across a range of different stages of the life cycle. The adopted subdivision plan also incorporates lots in a diversity of sizes and could accommodate smaller lot dwellings suitable for smaller households, such as younger or older couples, single people and smaller families. These higher density, smaller lot, styles may be more attractive, and more affordable, to buyers, particularly later in the development horizon.

A range of lot sizes would enable properties to come on the market at a range of prices, with the smaller lots generally being more affordable than the larger lots.

The range of lot sizes would also allow some dwellings to be designed to be adaptable to changing household needs, including those of an ageing population. The arrangement and site topography will not preclude access for those with a disability to live at or travel to the area. As a result, the rezoning is likely to have appeal across a wide variety of household types and income groups and will contribute to diversity across the community.

7.2.2 Employment opportunities

The inclusion of employment lands in the proposal will support the long term social sustainability of the new community and contribute to the economic well-being of the local workforce by providing employment opportunities for a range of age groups and experience levels.

The adopted subdivision layout provides for around 200 ha of Business Park and Industrial zoned land across the site, and, as noted above, a small neighbourhood retail centre within the residential component.

The quantity of industrial and employment lands proposed is significant in the context of existing demand and supply in the region. Analysis indicates that the proposed area of Industrial Lands would meet more than 80% of forecast demand for the entire Lower Hunter region for the next 15 years, although full development would be expected to take longer to achieve, given the need for servicing, development costs, the size of the population and the presence of alternative sites, amongst other factors (pcb 2014; Urbis 2013).

However, the market assessment of employment lands (Urbis 2013) found that there will be demand for new industrial land, particularly for "freight and logistics and building services as the most likely industrial segment targets for the site". While there is a supply of vacant industrial land in the Lower Hunter region, the location of the Hydro Kurri Kurri site could be attractive to some operators and fill gaps in the existing supply of employment lands (p. iii). Other opportunities, such as intermodal / rail maintenance facilities are dependent on infrastructure investments elsewhere, such as at the Port of Newcastle or coal rail freight network connections (p. i). The proximity of the sites to the Hunter Expressway would be expected to support the viability of the industrial land and local employment uses, as would provision of large land parcels (p. 66).

These spaces will attract a range of commercial and industrial uses to the locality and some small scale retail. Residents of the new community would benefit through increased diversity of employment opportunities near their homes, reducing the distances and journey times to workplaces. This is an important issue for residents of the Kurri Kurri area, where unemployment levels are relatively high and most people are employed in the types of blue collar jobs that would locate within a Business Park or Industrial area. The local workforce is therefore likely to be well matched to the opportunities offered by the Industrial and Business Park rezoning.

The *Industrial Lands Supply Analysis* (Urbis 2013, pp. ii) notes that around 76% of workers in Cessnock live in either Cessnock or Maitland LGAs. This suggests that most of the new employees working at the Industrial and Business Park sites would also live in these areas, ensuring the project could increase the proportion of locally available jobs.

Based on an average employment density of 20 employees per hectare for industrial land, the 200ha allocated within the adopted subdivision plan to Business Park and Industrial zones would create around 4,000 jobs when fully developed. As foreshadowed above, this workforce will require access to a range of services and facilities, including:

- » Shops for daily convenience needs, including snacks, meals, chemist supplies and so on
- » Other everyday services, such as a post office, bank or ATM
- » Pleasant spaces away from the workplace to eat lunch or have a break
- » Places to socialise and gather after work, or to network with those from other firms, such as cafes and pubs
- » Childcare for parents with pre-school aged children and babies
- » Access to training and lifelong learning opportunities
- » Access to library services
- » Business support services, including places for meetings and access to resources such as photocopying or IT support.

In addition, open space areas will be required within the business park and other employment to cater for recreation, exercise and fitness before or after work or during lunch breaks.

The precise location of these types of facilities does not need to be identified as part of this rezoning proposal, as most would be permissible within the proposed zonings. However, consideration should be given to the potential to include these services and uses within the industrial and business zones in planning for individual subdivisions, given the distance of the site from town centres such as Kurri Kurri or Cessnock.

7.2.3 Expected economic benefits

The proposal would generate significant economic benefits locally and for the wider region. Urbis (2015) has estimated the economic benefits of the project to include:

- » "Ongoing jobs expansion of approximately 6,900 jobs, with 3,840 blue collar jobs and 3,060 white collar jobs (full-time, part-time and casual direct jobs)
- » 13,160 direct construction jobs and 20,710 indirect supplier jobs, for a total construction phase employment benefit of 33,870 jobs (full-time, part-time and casual jobs)
- » Expansion of ongoing jobs will result in an additional \$448.6 million worker income per annum
- » The expansion in population from the delivery of new housing and subsequent population growth is expected to expand local retail spend by \$58.4 million at full development" (Urbis 2015, p. 1).

The economic models indicate that around one third of these jobs would be in the manufacturing sector, but most industries would benefit in some way, particularly the professional, scientific and technical services, transport, postal and warehousing and construction industries.

In addition, there is evidence that conservation areas can provide significant benefits to their local areas. Evidence from the NSW Office of Environment and Heritage (OEH) suggests that a conservative estimate of these benefits could be around \$1.0 million in regional value added activity and around 10 jobs.

7.2.4 Creation of a community with a unique sense of place

The adopted subdivision plan has been designed with the aim of creating a desirable and attractive community that recognises the site's important heritage while also building on the community's expressed values and established development characteristics.

For example, by preserving almost 1,350ha of Environmental land under an E2 zoning and another 162ha of Rural Landscape (RU2) zoning, the great majority of the overall site would change little from its existing character and would enable ongoing conservation or environmental uses.

Inclusion of industrial and business uses would also confirm the ongoing role of Hydro Kurri Kurri site as an industrial area, offering employment opportunities and income for local residents.

Many new masterplanned communities employ a community development worker charged with introducing new residents to their neighbours and organising social events to encourage interactions and social cohesion from the early stages of moving into the new area. These, and many other practical measures for defining and developing a sense of place in a new community can only be undertaken after the DA stage of planning, when residents are moving into the new community.

However, the preliminary planning through this rezoning process will lay the groundwork for these important community building strategies from the DA stage onwards. Ongoing community engagement will continue to provide opportunities to obtain local community and business inputs to a design which reflects the area's character and landmarks. Hydro intends to use this

community feedback to ensure the new development reflects local community values and history and culture through features such as street naming and landmarks.

7.2.5 Permeability and access

The proposed rezoning has been carefully planned to recognise and complement the existing and planned urban form of neighbouring communities of Cliftleigh and Loxford / Heddon Greta, as well as the topography of the site. The sub-division layout responds to the existing communities by extending existing or planned road networks so that residents of the new community can access established transport patterns and connections to the wider region. In particular, the Residential Central community would link into Cliftleigh via William Tester Drive and Residential Southern community would link into Loxford and Heddon Greta via McLeod Avenue. Access to and from the industrial and business park precincts is via Harts Road.

Following preparation of the Planning Proposal, a masterplan will be prepared that incorporates shared pedestrian / cycleways to encourage pedestrian and cycle movements and community use of open space and recreational facilities. As with the road network, there will be pedestrian and cycling links into Cliftleigh and Loxford / Heddon Greta and through to Main Road.

In finalising the subdivision layout, the internal road layout would be designed to accommodate possible future bus services through the site which would better link the new community and employment areas to adjacent residential and commercial areas such as Kurri Kurri, Cessnock and Maitland.

7.3 Potential social and economic impacts

In addition to the socio-economic benefits from the proposed rezoning that have been outlined above, this proposal would be expected to contribute towards a number of social issues and impacts.

Social impacts are assessed against the NSW Health *Healthy Urban Development Checklist* (2009) and Crime Prevention through Environmental Design (CPTED) principles in accordance with Cessnock Council's DCP 2010c (see Appendix A).

The main social and economic issues and impacts expected to arise from the current proposal are summarised below. Many of these issues will be addressed and carefully managed at the DA stage.

7.3.1 Changes to population size and location

The most notable impact of the proposed rezoning would be an increase in the local population that would be made possible by the future development of new residential communities. The adopted subdivision layout shows three distinct residential precincts, with each adjoining existing or planned residential communities rather than creating a single self-contained residential area. Within Cessnock City Council, the Residential Southern precinct represents a northern extension of the Loxford / Heddon Greta residential area and the Residential Central precinct represents a western extension to the Cliftleigh development. The Residential Northern precinct represents a southern extension to the Gillieston Heights residential area, within Maitland City Council.

Evidence from other greenfield development projects in the Lower Hunter region provide a good indication of the characteristics of households that would be likely to live in the Hydro Kurri Kurri site. As discussed in Section 6.2, these developments have typically attracted first and second home buyers, often from nearby areas or the Central Coast. This trend confirms findings in many other new developments, where residents are often attracted from other residential areas within around 10kms.

7.3.2 Potential for isolation from established communities

In isolated rural areas such as the Hydro Kurri Kurri site, there is the potential for residents to feel physically and / or socially isolated from friends, family and other residents of the area, or from community services and facilities. This is a particularly important consideration for some segments of the population such as older people, new parents, teenagers, households or individuals without a car, people with limited physical mobility, from non-English speaking backgrounds or with few family or friends for support. Causes of isolation could be a lack of transport, a very low income, delays in construction of surrounding properties, language or cultural barriers, an absence of social or sporting activities and clubs or places where residents can meet and socialise. Isolation can also lead to a community with high levels of car dependency and poor transport connections.

The potential for social isolation was a key issue raised in discussions with Cessnock City Council and building social cohesion is a fundamental principle in Council's CWSS social sustainability framework.

Risks of social isolation and exclusion are typically managed through careful masterplan design which focuses on:

- » Promoting connectivity, permeability and physical integration of the site
- » Design elements that encourage safety and security for new and existing residents
- » Provision of high quality sporting and recreational facilities.

The adopted subdivision layout shows road connections and physical integration of the Residential Central precinct to Cliftleigh via William Tester Drive and the Residential Southern Precinct to Loxford and Heddon Greta via McLeod Avenue. These connections will specifically avoid the creation of physical barriers to integration between the new communities and other masterplanned or established areas. In addition, the positioning of the neighbourhood centre near the Cliftleigh boundary will encourage permeability through attraction of some residents from that community to use the shopping and services available and thus interact with residents of Hydro Kurri Kurri.

Good quality and affordable transport connections are essential to overcome the potential for social isolation. The proposed subdivision layout incorporates a network of local roads, open spaces and pathways that will physically integrate the development with surrounding areas of Cliftleigh and Loxford / Heddon Greta and create opportunities for residents to move easily around the site. The adopted subdivision layout will ensure the local pedestrian and cyclist network can facilitate safe movement and attractive environments through each residential precinct that link into established road networks and public transport routes and will assist in providing some connections and opportunities for social integration. In time, there is the potential for the new residential and workforce populations to support an extension of existing public transport services. In the interim, a shuttle bus service between employment areas and Cessnock train station could meet community needs for connections to overcome the potential for isolation.

Social isolation can also develop if there are insufficient opportunities for people to meet friends and neighbours and develop support networks and friends with similar interests. This applies to people of all ages, ethnic or cultural backgrounds, income levels and ability. There is therefore a need to consider the needs of a wide range of community groups, including those most likely to be marginalised, when planning physical connections, meeting places and social infrastructure. The proposed rezoning is not expected to impact adversely on any specific groups within the Cessnock community.

The risk of social isolation can also be minimised by creating opportunities for social interaction and the development of social networks through design of public spaces and community facilities or through provision of community facilities in which activities and programs can be held. Many new residents develop social networks over time through their involvement in local schools, sports

and clubs, and through their local contacts and past experiences in the area. However, casual / incidental contacts can be facilitated in design of open spaces and shopping areas. A community facility can run activities and programs (classes, courses, exercise programs, educational sessions) and host community events, which encourage people to meet others with similar interests or skills. As noted above, community integration and cohesion can also be fostered through strategies that supplement physical design with activities to encourage interaction between existing and new residential communities. It is common practice in many masterplanned communities to employ a community development worker in the early stages of settlement to plan activities to connect residents to each other and local facilities and services, as a practical way to encourage interactions and build social cohesion.

The potential for these community development strategies to be incorporated into detailed design and planning for this community will continue to be explored as planning for this site proceeds.

7.3.3 Potential barriers to accessibility

Accessibility relates to transport access, the avoidance of physical barriers and the ability for residents of all ages, backgrounds, income levels and abilities to be included in social groups and networks are two key aspects of accessibility. Many of these concepts of inclusion and permeability have been discussed above.

The adopted rezoning layout will be physically accessible to all levels of ability, given the relatively gentle topography and physical connections between each precinct and surrounding areas. There is no intention for the development to be restricted to high income earners or developed as a 'gated community'. Rather, the range of lot sizes will encourage a diversity of residents and households from across life cycle stages to locate within the site, and many would be expected to be attracted from other nearby communities.

Within the overall development, it is likely that private transport options would be required for residents to access the employment areas, due to the site's topography which limits direct connections across the railway line and creek. These site constraints will create challenges for residents without a car or those hoping to walk or cycle to work. This constraint could be addressed once the area is under development through extensions to existing bus services or through new private or community bus services serving the industrial and business areas and these new residential precincts.

7.3.4 Potential for crime and crime prevention

As detailed in Section 3, Kurri Kurri and Cessnock LGA more generally have been identified as crime hotspots, and have seen large increases in some types of crime in recent years. The potential for crime is a serious issue in parts of the LGA. While it is not expected that there will be particular issues with crime in the Hydro Kurri Kurri site, there is a need to ensure planning for safety and crime prevention is integral to all stages of planning for this new community.

Crime Prevention Through Environmental Design (CPTED) is one approach reducing the risk of crime. CPTED seeks to reduce the opportunities for crime through the design and management of the built and landscaped environment. It utilises a variety of techniques such as lighting; placement of infrastructures and Closed-Circuit Television monitoring in order to deter or apprehend offenders. CPTED appears to be an appropriate strategy to address malicious damage because many offenders are generally opportunistic (Australian institute of Criminology 2012).

The adopted subdivision layout meets many of the CPTED criteria for crime prevention. However, many strategies apply only at the more detailed masterplanning and DA stages of project development and would be incorporated at that time.

The NSW Bureau of Crime Statistics and Research (BOCSAR) (2011) has identified a causal relationship between a lack of employment opportunities and involvement in some types of crime. Considering the relatively low socio-economic profile of the LGA, new employment opportunities, particularly for younger people, could have a significant impact on criminal activity in the area. The rezoning of large portions of the site for commercial, business and industrial uses will help provide opportunities for employment for local residents. In addition, the rezoning and subsequent development would create employment through construction and flow on income and employment benefits. In addition, there is the potential for employers and employees to access training programs available through the adjacent TAFE College, to help improve skills and provide further education opportunities, which may also assist in reducing the incidence of crime.

7.3.5 Potential for noise and vibration impacts

Noise sources have the potential to create nuisance and disturbance to daily activities and sleep for some people when located near homes of other sensitive receivers such as schools.

Pcb (2014) has considered the potential for noise and vibration impacts in developing the proposed subdivision layout. Areas that could be affected are properties adjoining the South Maitland rail corridor and those alongside Cessnock Road.

Lots along the rail corridor have been designed with 60m depth to provide space for incorporation of "noise attenuation mounds, landscaping or fencing / walls within the rear of lots" (pcb 2014, p. 3). The report indicates that this railway line is seldom used (p. 6).

Internal roads parallel to Cessnock Road were also designed to "provide adequate acoustic setback from Cessnock Road for residential development" together with landscaped noise mounds and setbacks (pcb 2014, p. 3).

Further noise attenuation measures could be incorporated into the design of homes or community uses when plans are developed for individual subdivisions.

7.3.6 Summary

Having considered the key socio-economic issues, benefits and impacts of the proposed rezoning, the major social impacts to be addressed in the next stage of planning are:

- » Distance from established communities and the potential for isolation. This points to a need to foster physical connections (roads, pathways, public transport, community facilities) and social connections (community development worker, community activities, placemaking and social cohesion) to build a strong and well integrated local community
- » Planning for accessibility including future public transport connections and / or a community bus
- » Planning for industrial areas.

Strategies to mitigate the identified social impact issues are outlined in Section 9.

Strategies to address the expected needs of future residents and the workforce are discussed in the following section.

8 Provision for social infrastructure and open space

8.1 Identifying social infrastructure needs

A population of around 5,500 residents and workforce of around 4,000 people will need access to a range of community facilities and open spaces for interaction, meeting friends and family and daily activity and exercise needs, as well as schools, childcare and health services.

As noted in Section 4.5, a range of social infrastructure is provided by government agencies, non-government organisations and the private sector in the surrounding area.

At the rezoning phase, the focus needs to be on facilities that will have land requirements within the proposed Residential zones, to ensure that sufficient land is identified in appropriate locations to meet future need. This focuses particularly on facilities and services provided by local government and State Government agencies (such as schools). Services provided by the Commonwealth Government have land requirements that are likely to be relatively modest, and most likely will use available commercial office space within designated town centres.

Sites for facilities provided by the non-government and private sectors can often be accommodated in residential or commercial zonings, and do not need to be specially identified at the rezoning stage. They are usually acquired through the private market and will need to be considered at a later stage of development as demand is established. Types of private / non-government facilities that may have land requirements include private schools, private health care services, churches, childcare services, commercial gym and fitness facilities, residential aged care facilities and entertainment facilities such as cinemas, hotels and restaurants. The subdivision layout will need to allow sufficient scope and flexibility to accommodate such uses, should demands emerge.

At Hydro Kurri Kurri, the proposed Business and Industrial zones provide further opportunities for the provision of social infrastructure and open space. At this stage, it is too early in the planning process to confirm the range of facilities that might be included within these zones, or commit to any provision. However, in the longer term the development may present a variety of opportunities to provide access to community or recreational facilities, activities and lifestyle opportunities that could be linked to and integrated with the residential components. The extent to which this potential may be realised, and the nature of such integration, will be matters for future consideration.

The following sections identify the types of social infrastructure and open space needs that would be generated by the proposed rezoning, and the ways in which these needs are proposed to be met through this proposal.

8.1.1 Likely needs of future residential population

Overall, a forecast of population of around 5,500 people would provide a catchment of sufficient size to support a small number of local level facilities. However, the division of the residential population into three distinct and geographically separate precincts will impact on the timing and location of future facilities.

At the local level, residents will require access to the following:

- » Neighbourhood retail and commercial services
- » Spaces for informal social interaction, such as cafes
- » Medical services such as GPs
- » Childcare and out of school hours care
- » Local leisure and entertainment facilities
- » Local parks and sporting facilities
- » Indoor spaces for community activities, programs and services
- » Pre-schools and primary schools
- » Places of worship.

The expected future population will not be large enough, however, to warrant the provision of higher order district level facilities and will rely primarily on those to be provided within the neighbouring towns of Kurri Kurri and Cessnock. Such facilities will include:

- » A range of higher order retail and commercial services
- » Information and library resources
- » Specialist medical, community health, allied health and hospital services
- » High schools and technical and further education
- » A range of family and individual support services, including youth, family, disability and aged care services
- » Larger parks and major sport and recreational facilities
- » Cultural and entertainment facilities (theatres, cinema etc)
- » Emergency services.

8.2 Addressing community needs

The proposed rezoning and subsequent development will allow social infrastructure to be provided to meet the community needs outlined above. The *Healthy Urban Design Checklist* principles aim for a residential community to have reasonable access to a mix of facilities such as local shopping, health, education, leisure and recreational spaces. Social infrastructure is also ideally centrally located, easily accessible and linked into public transport routes.

Social infrastructure proposed for the proposed rezoning includes:

- » A neighbourhood centre
- » A network of parks and areas of open space
- » Pedestrian and cycling routes through the proposed new residential and open space areas, with connections into adjoining communities.

These facilities are described below.

Neighbourhood centre

The adopted subdivision layout incorporates a neighbourhood centre of around 5,046m² that is centrally located within the Residential Central precinct and easily accessible to the Cliftleigh development. The neighbourhood centre would provide residents with access to daily shopping and local services, as well as opportunities for social interaction.

The actual range of facilities to be located at the Centre would be determined by the private market, but would be expected to include a range of businesses, services and other uses such as a medical centre, café or restaurant, a plaza and possible childcare or children's play area. These facilities would attract residents, activate the space at different times of the day and night, and encourage formal and informal gatherings. The site would also be accessible by public transport, should a bus route be extended into the area in the future.

Childcare centre

Privately operated childcare centre/s could be established within the proposed neighbourhood centre should an operator determine that there is demand for such a facility. There is also the opportunity for a childcare centre to be located within areas with a residential zoning.

Medical centre and GPs

Space within the neighbourhood centre could be occupied by local medical practitioners, such as a privately operated medical centre.

Leisure and entertainment

Local leisure and entertainment opportunities targeted at families, children and/or teenagers could be provided within the neighbourhood centre or areas of open space. This could include commercial activities such as shopping and cafes; locally provided facilities such as playgrounds, skate parks, wifi hubs, barbecues; and organised activities such as fitness, classes and social activities.

Community centre

Consideration has been given to provision of a community facility within the neighbourhood centre. As outlined in Section 3, the closest community space to the Hydro Kurri Kurri site is the Kurri Kurri Community Centre, which is already operating at capacity and in need of an upgrade to meet contemporary standards for flexible facilities. A new community facility is also planned for the adjacent Cliftleigh community, but this has been sized to cater only for the local population.

Although the total population and workforce expected within the Hydro Kurri Kurri site would support a new local level community centre, the dispersed development pattern across three precincts and distance to the employment zones would not support a single new centralised multi-purpose facility. In addition, there are important questions around the way a facility would be used, given the proposed Cliftleigh facility and proposed upgrades to the Kurri Kurri Community Centre.

Advice from Cessnock City Council indicates that Council would prefer to receive contributions towards upgrades to the existing community centre at Kurri Kurri. Further information about the timing and scale of contributions may be available within the foreshadowed Community Facilities Strategic Plan. However, based on the VPA for Cliftleigh and plans for the future Kurri Kurri Community Centre, a population and workforce of this size would create demand for some space within a new multi-purpose community centre. By upgrading the existing centre at Kurri Kurri, the principles of centrality, visibility, accessibility, clustering, safety and security, and availability of parking would be met at the existing location in Kurri Kurri. The appropriate level of development contributions towards the planned upgrade of the Kurri Kurri Community Centre would be determined by Cessnock Council and collected at the DA stage of development.

Facilities for young people

Within the Hydro Kurri Kurri site, there will be a need for "things for young people to do" at the local level, within walking distance, given likely limitations on public transport services.

Leading practice now steers away from providing separate facilities just for young people, on the grounds of their under-utilisation for much of the time while young people are at school or work. Instead, the focus is now on ensuring that facilities and spaces are multi-purpose and able to meet the needs of the whole community, including young people. Activities for young people will therefore be best addressed through the upgraded Kurri Kurri Community Centre, provided it is accessible by bicycle or public transport services.

At the local neighbourhood level, the needs of young people for space for social and leisure activities may be met through a well-designed public domain, and open space, sporting and recreation facilities described below.

Places of worship

Places of worship would be provided by relevant organisations subject to demand and are generally permissible within residential areas

Open space, recreation and active living

Parks, walkways and playing fields encourage social and recreational activities and make it attractive for future residents to adopt healthy patterns of living, which together meet many of the objectives of the *Healthy Urban Development Checklist*. Opportunities for residents to engage in sports and recreational activities, interact with nature or enjoy quiet contemplation contribute towards community and individual health outcomes.

A population of around 5,500 residents would generate need for open space and recreational facilities. The proposed rezoning Subdivision Design Report (pcb 2014) draws on the Landcom Design Guidelines in planning for open space at the site. The quantity of open space is derived from the Department of Planning *Open Space Guidelines* (2010) default rate of 2.83 ha per 1,000 people, of which 1.21 ha per 1,000 people is devoted to active open space. Using an estimated resident population of around 5,400, pcb has noted there is a need to allocate around 15 ha of open space in total (pcb 2015).

The adopted subdivision layout incorporates around 14.17ha of open space made up of four local parks, one double playing field and other areas of open space along drainage corridors and the railway line. The slightly higher population of 5,500 estimated in Table 6, would indicate that the total area of open space should be slightly higher at 15.565 ha using Department of Planning guidelines, of which around 6.7ha should be allocated to active open space such as sports grounds and courts. Pcb notes that given the considerable passive open space available in surrounding areas, "the subdivision easily meets and exceeds these targets" (p. 8.).

The proposed rezoning will also encourage active transport options such as walking and cycling along local paths and roads, links to the neighbourhood centre and safe and easy access to other nearby pedestrian and cyclist routes (such as in Cliftleigh) and parks, where social interaction and recreational activities can take place.

The precise locations, size and functions of the areas of open space within the subdivision layout are indicative and will be further detailed in the next stage of planning. During this next phase of planning there will be opportunities to ensure that requirements for equity and accessibility included in Cessnock Council's *Open Space Guidelines* (see Table 2) are met.

Should the development ultimately take a higher density format, such as the Contemporary or Contemporary High options, this would have direct implications for the quantum of open space required.

Schools

According to the DEC Guidelines, a development of this size would suggest that the Hydro Kurri Kurri site on its own would generate a need for around one new primary school. However schools

planning also takes account of capacity in the surrounding area and opportunities to augment existing schools, rather than providing new schools in every new development.

DEC has advised that between the two existing primary schools at Kurri Kurri and Weston, and a new primary school planned for Gillieston Heights in the future, there will be sufficient capacity to absorb the students living at this site. Kurri Kurri High School also has some spare capacity and could be expanded if necessary in future. DEC is monitoring student numbers in the area and will time its school developments to ensure all students can be accommodated.

There would also be an opportunity for an independent school to locate within the site.

Higher order retail, commercial and cultural services

Beyond the new residential precincts, community needs for higher order retail shopping, business and personal services and cultural activities would be met through the larger town centres near the site. Many of these facilities are available within Kurri Kurri and Cessnock. We understand Cessnock Council is planning to upgrade ageing facilities such as the Kurri Kurri Community Centre and Library to meet current standards and expectations, and to accommodate the demands of the region's growing population.

The ways in which the future population of the Hydro Kurri Kurri site could best contribute towards the costs of these higher order facilities would be a matter for further discussions with Cessnock Council during the next stages of planning.

Health services

The future population of Hydro Kurri Kurri will not be large enough to justify provision of any community health facilities other than possibly a privately operated medical centre, as described above.

Development made possible by this proposed rezoning would instead rely on district and regional level health services available within the wider region. The nearest community health centre to the site is located at Kurri Kurri, which is co-located with the Kurri Kurri Hospital.

As noted above, major upgrades to health services in the Lower Hunter region are planned and these would benefit future residents and the workforce of this site.

Emergency Services

Bases for existing emergency and justice services (including police, ambulance, fire and rescue, rural fire and SES) were identified in Section 4. Future plans for services provision within this part of the Lower Hunter Valley would be made by each agency, taking into consideration the growing and changing needs of the population and workforce. It will also depend on the future road network, given that response times are a key driver of need.

8.3 Likely needs of future workforce

Societal expectations are increasing that workplaces should provide an attractive and pleasant environment to support the health and well-being of their workforce, giving rise to higher expectations about the range of services and facilities that can be accessed during the working day and the level of amenity of the working neighbourhood.

To help attract companies, the workforce is likely to require access to the following range of facilities at the local level:

- » Shops and personal services for daily convenience needs such as snack bars and sandwich shops, banking facilities and post offices

- » Spaces to have a break and relax away from the workplace and to socialise and network at lunchtime or after work. This includes cafes, pubs, restaurants, entertainment and leisure facilities
- » Childcare for parents with babies and pre-school children, and vacation care for workers with primary school aged children
- » Access to medical services, both for accidents / illness at work and to support busy lifestyles
- » Spaces for corporate events, functions, business meetings, training courses
- » A workforce may also make use of local libraries and hobby / interest / personal development classes and groups after work in the local area.

Some companies moving to the Business Park or Industrial areas may provide some of these facilities in-house. It is too early to determine specific requirements for public facilities at this stage. However, these issues will require further consideration in subsequent stages of planning for the site.

Ideally, when more detailed planning of the Industrial areas takes place, it will make provision for:

- » Open space areas with embellishments appropriate for gathering and eating, within walking distance of most businesses. Open space areas should be pleasant and inviting, with seating and shade, protected from wind and away from traffic or other noise and air pollutants
- » Fitness opportunities
- » Pedestrian and cyclist links within precincts and between precincts and nearby areas, including open space areas such as creek corridors and walking areas.

The provision of some open space, recreational or fitness facilities within the industrial or business zoned lands would also act to activate these areas at weekends and at night. This could help to minimise the potential for vandalism or anti-social behaviour.

As noted above, the precise quantum of open space and allocation between active and passive uses is a matter for the more detailed DA stage of planning, and would also need to consider other open space resources in surrounding areas and across the Cessnock LGA.

9 Mitigation measures

Having considered the key socio-economic issues, benefits and impacts of the proposed rezoning, the major social impacts to be addressed in the next stage of planning are:

- » Distance from established communities and the potential for isolation. This points to a need to foster physical connections (roads, pathways, public transport, community facilities) and social connections (community development worker, community activities, placemaking and social cohesion) to build a strong and well integrated local community
- » Planning for accessibility including future public transport connections and / or a community bus
- » Meeting social infrastructure needs of future residents and the workforce for an equitable and accessible network of open spaces consistent with Council’s *Recreation and Open Space Strategic Plan* and other best practice open space planning principles
- » Planning for industrial areas.

As noted in Section 4, Cessnock’s SIA and Crime Prevention Guidelines aim to structure mitigation measures to ensure proposals address the *Healthy Urban Development Checklist* (NSW Health 2009).

9.1 Designing healthy communities

The *Healthy Urban Development Checklist* has a particular focus on planning for social infrastructure provision, and strengthening accessibility and connectivity within new communities.

The following table details the ways in which the proposal contributes towards a healthy and socially sustainable community at the Hydro Kurri Kurri site. Where we have identified the potential for social impacts, comments are provided on how these have been minimised or avoided through the current design, or how they will need to be addressed in the next phase of planning approvals.

Table 7 Impact mitigation – Healthy Urban Design factors

Issue		Approach to mitigation
a) Social Infrastructure		
1. Social infrastructure should be centrally located and easily accessible	✓	<p>The neighbourhood centre commercial zoning will provide opportunities for social infrastructure such as local shops, a medical centre, cafes, child care and places for meeting friends. The proposed location is central to the development and near the adjacent Cliftleigh community.</p> <p>Open space is provided according to accepted standards, although more detailed planning at the DA stage would confirm the locations and sizing of facilities in accordance with Cessnock Council and other best practice guidelines (see Appendix A).</p> <p>Other needs will be met through facilities in surrounding areas. Local schools will have capacity to absorb future demand from this development.</p>

Issue		Approach to mitigation
		Higher order needs would be met through existing or upgraded facilities within Kurri Kurri or Cessnock. Contributions towards these facilities would need to be agreed in the next stage of planning.
2. Social infrastructure should link to existing and/or proposed public transport routes		A possible bus route could be established along the main internal road from Cessnock Road, through the adjoining Winten Development, running past the commercial area, through into the northern precinct and back out onto Cessnock Road.
3. Building design, in terms of access to social facilities should respond to the lifestyle needs of the community		For DA stage
4. Building design should be flexible so that it can be adapted to accommodate changing demographics of an area or community.		For DA stage
5. Social infrastructure should include (where possible) the implementation of sustainable development principles, such as the use of solar power and recycled materials.		For DA stage
6. In the case of residential development, there should be reasonable access to a mix of facilities including local shopping, health services, educational institutions, leisure and recreational space.	✓	<p>Facilities are planned to suit population size and fit with existing services provision. Rates of provision will be consistent with best practice guidelines</p> <p>The adopted subdivision layout provides for neighbourhood centre and local parks suitable for a population of around 5,500 residents. The neighbourhood centre would allow a range of local shopping, local medical facilities and some leisure / recreational spaces.</p> <p>DEC is monitoring take up across this catchment. It has advised that there will be capacity for students from this site to be accommodated within local primary schools at Kurri Kurri and Weston, and in a new school planned at Gillieston Heights. Kurri Kurri High School also has some spare capacity.</p> <p>Industrial and employment zones could also incorporate quality spaces suitable for outdoor recreation, seating and walking paths, particularly as the area is surrounded by bushland. These facilities would be incorporated into a DCP at a later stage and designed within the future subdivision.</p>
b) Social Cohesion, Social Connectivity, Sense of Place		
1. Communal areas should be provided within large housing		n/a

Issue		Approach to mitigation
developments.		
2. The Development should promote physical integration with adjacent areas and existing Developments, through for example road connections, layout and open space.	✓	The adopted subdivision layout responds to surrounding developments in Cliftleigh and Gillieston Heights with local road connections to encourage social integration and areas of open space that could be used by residents of nearby communities.
3. The Development should encourage social integration across communities, for instance through provision of shared community facilities that can also benefit adjacent areas.	✓	See above The neighbourhood centre will attract some residents from nearby Cliftleigh, thus encouraging interaction between these communities
4. Building design should respond to the social context and needs of the local community.		The range of lot sizes will encourage diversity in housing types, sizes and prices. Specific building design issues will be addressed at the DA stage.
5. Where appropriate, incorporate and enhance local symbols and/or landmarks within the building design and finish.		For DA stage
c) Housing, including Affordable Housing		
1. The development offers a range of housing options which target a diverse population.	✓	A range of lot sizes and arrangements of blocks will cater for different dwelling styles and price points and assist in attracting people at different life stages and income levels.
2. Affordable housing should be distributed throughout the development and not concentrated in an identifiable cluster.		While there is no specific intent to include a component of affordable housing within the development, the adopted subdivision layout incorporates a range of lot sizes across a number of residential precincts. A subsequent DA for the subdivision will dictate the final lot configurations. It is understood that some affordable housing is being provided within the adjacent Cliftleigh subdivision through small lot housing development.
3. Affordable housing design should not be distinguishable from other forms of housing.		There is no specific intent to include a component of affordable housing within the development.
d) Employment, Work Places and Commercial Space		
1. District centres should be designed to be mixed use (including providing employment, residential, open space, education, and training facilities).	n/a	n/a
2. Places of employment should		For DA stage

Issue		Approach to mitigation
include the option of staircases to access multiple levels of the workplace.		
3. Placement of employment should include amenities that encourage people to walk or cycle to work (such as showers and bicycle parking).	✓	Walking and cycling connections will be possible within the employment areas. However, the employment areas are not directly linked into planned residential areas . Inclusion of showers and bike parking would be at DA stage
4. Retail and commercial areas to be designed to encourage physical activity and active transport.	✓	The neighbourhood centre will be accessible by pedestrian and cyclist links from the central residential precinct and linked by paths and roads to the northern and southern precincts
e) Health, including Physical Activity		
1. The Development is within a comfortable walking distance (approximately 400-500 metres) to destinations which are frequented to meet everyday basic needs such as shops, schools, parks, transport stops.		The adopted subdivision layout shows the possible arrangement of the neighbourhood centre, parks and other areas of open space. The final placement of facilities would occur at the DA stage.
2. Land use is arranged to encourage walking, cycling and other forms of active transport.	✓	Within the residential area, there is a network of open space intermingled within the broader road layout. The commercial precinct is designed to meet day to day needs of the surrounding community and could be reached without reliance on motor vehicles.
3. Streetscapes are designed to be attractive, interesting and welcoming to pedestrians, and cyclists, including the provision of enjoyable scenery, appropriate amenities and shelter.	✓	Active transport has been considered in adopted subdivision layout design. Further details of plantings and materials will be provided at DA stage
4. Bicycle use is encouraged by providing ample, safe, attractive and convenient access to key destinations.	✓	Within the residential area, there is a network of open space intermingled within the broader road layout. Access to the neighbourhood centre, parks and open spaces by bicycle would be an attractive option for some residents.
5. The design should allow people including those with a disability, opportunity to equally access the site.		The future road corridors and pathways will meet engineering standards in relation to disabled access. The local topography is gentle to undulating and would not present a barrier to people with limited mobility.

Issue		Approach to mitigation
f) Public Open Space		
1. Public open space should be connected to a network of footpaths, trails and public transport.	✓	The adopted subdivision layout includes pedestrian and cyclist links between residential areas and parks and along natural areas. Pedestrian and cyclist links from the central residential precinct and neighbourhood centre will also connect to roads to the northern and southern precincts.
2. Public transport stops should be within easy walking distance (approximately 400-500 metres or up to 800-1000 metres for a railway station) of key public open spaces.		For later stage
3. People, including children should have the opportunity to walk and cycle safely from major residential areas to a local park, playground or natural area.	✓	The adopted subdivision layout includes opportunities for walking, cycling between residential areas and parks and along natural areas
4. Children's play areas are easily observable by care givers.	✓	For the DA stage
5. All people, including those who require mobility aids such as a wheel chair and caregivers with prams/strollers should be able to access and move within the open space.		The future open space areas and pathways will meet engineering standards in relation to access for people with disabilities
6. Open space to be sufficiently buffered from traffic in terms of noise, fumes and pedestrian safety.	✓	Areas of open space are not located on arterial roads or areas where excessive noise and fumes would endanger public health.
7. Open space should include seating. Amenities such as picnic areas, toilet and cooking facilities (barbeques) should also be considered.		For DA stage
8. Public open spaces to be designed so to accommodate community celebrations, festivals and other events.	✓	Size of open space areas and neighbourhood centre are sufficient to enable hosting of local events. Design will be addressed at DA stage

9.2 Designing safe and secure communities

CPTED design principles will be incorporated as a means of planning to mitigate potentially adverse social impacts. These are generally a matter for the DA stage of a development. Factors which would assist in mitigating socio-economic impacts at this rezoning stage are summarised below:

Table 8 Impact mitigation – Crime Prevention Through Environmental Design

Issue		Approach to mitigation
a) Surveillance		
Natural surveillance » Avoid blind corners in pathways » Pathways should be direct. Landscaping, lighting and technical surveillance are detailed design matters for the DA stage	✓	The subdivision pattern is regular and broadly grid shaped to facilitate access and connectivity with surrounding areas and create good lines of sight.
b) Access control		
Access control » Use of walkways to guide people and vehicles » Building entry points, lighting, signage and landscape are matters for the DA stage	✓	The subdivision pattern is regular and broadly grid shaped to facilitate access and connectivity with surrounding areas and create good lines of sight.
c) Territorial reinforcement		
» Distinction between public and private spaces	✓	The adopted subdivision plan makes a clear distinction between public and private spaces. Development at the DA stage will further reinforce territorial boundaries between public and private areas, and will also include signage and security arrangements
d) Space management		
» Use and maintenance of the site, including building materials, finishes and lighting, and site management	✓	These are matters for the DA stage.

9.3 Designing quality open spaces

Planning for quality open space will need to address the principles within Council's *Recreation and Open Space Strategic Plan*, some of which are provided in Table 2.

A comprehensive set of best practice planning principles for open space and recreational areas that have been adopted in many new developments is provided below. These principles should be considered in the next stages of open space planning at the Hydro Kurri Kurri site.

- » Open space should be well distributed and include a range of offerings (from smaller local parks within walking distance of residents to district active open space and regional level parklands and sporting facilities catering to a wider region)
- » Cater to existing and future community needs by providing for all age groups, genders, cultural diversity, physical abilities and socio-economic status
- » Provide, protect and maintain a diverse range of open space and recreation opportunities to cater for a range of uses and activities
- » Avoid exerting pressure on existing and planned open space, sport and recreation facilities in surrounding areas
- » Focus on quality rather than quantity of open space. This includes providing higher levels of embellishment and good quality amenities (as opposed to extensive areas of 'just grass'). This approach, involving a greater concentration of resources, has proven to be a more cost effective means of providing and maintaining open space for many local governments
- » Provide multipurpose facilities and open space able to accommodate a range of sports and activities in different seasons and different times of the week
- » Cluster multipurpose fields to enable the establishment of larger sporting clubs and increase their functionality as competition venues
- » Focus on programming and management of active open space and facilities to achieve high levels of utilisation and greater shared-use by multiple sporting groups
- » Ensure open space is connected physically and visually. Establish a non-vehicular system that connects major activities and open spaces to encourage walking and cycling
- » Incorporate universal access principles
- » Reflect and complement the natural and visual character of the local topography, vegetation, riparian corridors and other natural features
- » Retain existing vegetation and fauna habitat for visual amenity, to protect biodiversity and for wildlife corridors
- » Capitalise on features unique to the area, such as views from elevated areas
- » Protect and conserve watercourses, water bodies and wetlands and incorporate natural areas and riparian corridors into the open space system where possible
- » Provide public open space along drainage lines to create multi-use corridors
- » Integrate a network of open space with stormwater management and water-sensitive urban design and balance usable and accessible open space with stormwater management
- » Respect and protect indigenous and historical cultural heritage items and landscape
- » Reflect Crime Prevention through Environmental Design (CPTED) principles, with parks having a frontage to a road where possible for passive surveillance.
- » Seek opportunities for partnerships between community organisations other local governments in the delivery and/or management of sport and recreation facilities.

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Appendices

A Healthy Urban Development and CPTED Principles

A Healthy Urban Development and CPTED Principles

A-1 Healthy Urban Development Principles

a) Social Infrastructure

1. Social infrastructure should be centrally located and easily accessible.
2. Social infrastructure should link to existing and/or proposed public transport routes.
3. Building design, in terms of access to social facilities should respond to the lifestyle needs of the community.
4. Building design should be flexible so that it can be adapted to accommodate changing demographics of an area or community.
5. Social infrastructure should include (where possible) the implementation of sustainable development principles, such as the use of solar power and recycled materials.
6. In the case of residential development, there should be reasonable access to a mix of facilities including local shopping, health services, educational institutions, leisure and recreational space.

b) Social Cohesion, Social Connectivity, Sense of Place

1. Communal areas should be provided within large housing developments.
2. The Development should promote physical integration with adjacent areas and existing Developments, through for example road connections, layout and open space.
3. The Development should encourage social integration across communities, for instance through provision of shared community facilities that can also benefit adjacent areas.
4. Building design should respond to the social context and needs of the local community.
5. Where appropriate, incorporate and enhance local symbols and/or landmarks within the building design and finish.

c) Housing, including Affordable Housing

1. The development offers a range of housing options which target a diverse population.
2. Affordable housing should be distributed throughout the Development and not concentrated in an identifiable cluster.
3. Affordable housing design should not be distinguishable from other forms of housing.

d) Employment, Work Places and Commercial Space

1. District centres should be designed to be mixed use (including providing employment, residential, open space, education, and training facilities).
2. Places of employment should include the option of staircases to access multiple levels of the workplace.

3. Placement of employment should include amenities that encourage people to walk or cycle to work (such as showers and bicycle parking).

4. Retail and commercial areas to be designed to encourage physical activity and active transport.

e) Health, including Physical Activity

1. The Development is within a comfortable walking distance (approximately 400-500 metres) to destinations which are frequented to meet everyday basic needs such as shops, schools, parks, transport stops.

2. Land use is arranged to encourage walking, cycling and other forms of active transport.

3. Streetscapes are designed to be attractive, interesting and welcoming to pedestrians, and cyclists, including the provision of enjoyable scenery, appropriate amenities and shelter.

4. Bicycle use is encouraged by providing ample, safe, attractive and convenient access to key destinations.

5. The design should allow people including those with a disability, opportunity to equally access the site.

f) Public Open Space

1. Public open space should be connected to a network of footpaths, trails and public transport.

2. Public transport stops should be within easy walking distance (approximately 400-500 metres or up to 800-1000 metres for a railway station) of key public open spaces.

3. People, including children should have the opportunity to walk and cycle safely from major residential areas to a local park, playground or natural area.

4. Children's play areas are easily observable by care givers.

5. All people, including those who require mobility aids such as a wheel chair and caregivers with prams/strollers should be able to access and move within the open space.

6. Open space to be sufficiently buffered from traffic in terms of noise, fumes and pedestrian safety.

7. Open space should include seating. Amenities such as picnic areas, toilet and cooking facilities (barbeques) should also be considered.

8. Public open spaces to be designed so to accommodate community celebrations, festivals and other events.

A-2 Crime Prevention Through Environmental Design Principles

Crime Prevention through Environmental Design principles are grouped under four themes:

a) Surveillance

Crime can be reduced by providing opportunities for effective surveillance, both natural and technical. Good surveillance means that people can see what others are doing. From a design perspective, the following Surveillance principles apply.

Natural Surveillance

Good design principles which promote natural surveillance include:

1. Avoid blind corners in pathways, stairwells, hallways and car parks.
2. Pathways should be direct. All barriers along pathways should be permeable (see through) including landscaping, fencing etc.
3. Consider the installation of mirrors to allow users to see ahead of them and around corners.
4. Where elevators or stairwells are provided, open style or transparent materials are encouraged on doors and/or walls of elevators/ stairwells.
5. Waiting areas and entries to elevators/stairwells should be close to areas of active uses and should be visible from the building entry.
6. Seating should be located in areas which attract active uses of the space.

Landscaping

Avoid landscaping which obscures natural surveillance. Large size vegetation can obstruct visibility and make people feel uneasy and unsafe. As a result, this can discourage genuine use of a space. Good landscaping design principles include:

7. Avoid medium height vegetation with concentrated top to bottom foliage. Plants such as low hedges and shrubs, creepers, ground covers or high canopied vegetation are good for natural surveillance.
8. Trees with dense low growth foliage should be spaced or have the crown raised to avoid a continuous barrier.
9. Use low ground cover or high canopied trees, clean trunked to a height of 2 metres around children's play areas, car parks and along pedestrian pathways
10. Avoid vegetation that conceals the building entrance from the street.
11. Landscaping that makes places appealing, but does not provide offenders with a place to hide.

Lighting

Adequate lighting is essential in making people feel safe and in deterring illegitimate users. Good lighting design includes:

12. Care should be taken to ensure lighting does not produce glare or dark shadows.
13. Entrances, exits, service areas, pathways and car parks should be well lit after dark, particularly in situations where they are likely to be used.
14. Lighting should be directed towards access/egress routes to illuminate potential offenders, rather than towards buildings or resident observation points.
15. Avoidance of lighting spillage onto neighbouring properties as this can cause nuisance and reduce opportunities for natural surveillance.
16. Use wide beam lighting illumination which reaches to the beam of the next light, or the perimeter of the site or area being traversed.

Technical Surveillance

Technical surveillance such as CCTV and alarms may assist to make people feel safe and could also be a crime deterrent. Good design principles include:

17. CCTV systems should be carefully planned and assessed in regards to camera position, placement and capability.
18. The installation of an alarm system for commercial and/or industrial premises (in particular) should be considered.

b) Access Control

Physical barriers can be used to attract, channel or restrict the movement of people, making it clear where people are permitted to go or not go.

Effective access control can be achieved by:

1. Use of walkways, lighting, signage and landscape to clearly guide people and vehicles to and from the proper entrances.
2. Restricting access through the use of physical barriers, for example bollards, fencing etc.

Entry Points

Entrances should be at prominent positions within the building design, easily accessible from well-lit street areas and within areas providing natural surveillance opportunities. Good design principles for entry points include:

3. Natural surveillance of the street.
4. Clear line of sight from both inside and outside the premises.
5. Emergency services are able to access the property rapidly.

c) Territorial Reinforcement

The purpose of this principle is to create a clear distinction between public and private property. People often feel comfortable and are more likely to visit places which feel owned. As a result, well used places can reduce opportunities for crime and increase risk to criminals. Territorial reinforcement can be achieved through:

1. Good design with clear transitions and boundaries between public and private space.
2. Visible and well maintained security signage at all entrances.

d) Space Management

Space management ensures that the area is appropriately utilised and well maintained. Good design principles include:

1. Strong, wear resistant laminate, impervious glazed ceramics, treated masonry products, stainless steel materials, anti-graffiti paints and clear over sprays will reduce the opportunity for vandalism.
2. Where large walls are unavoidable, consider the use of vegetation or anti-graffiti paint. Alternatively, modulate the wall, or use dark colours to discourage graffiti on vulnerable walls.
3. External lighting should be vandal resistant. High mounted and/or protected lights are less susceptible to vandalism.
4. Communal street furniture should be made of hard-wearing vandal resistant materials and secured by sturdy anchor points or removed after hours.

Other space management strategies include:

5. Policy direction which promotes the rapid repair of vandalism and graffiti.
6. Site Management Plan which includes principles of site cleanliness and immediate removal or refurbishment of decayed physical property.
7. Site Management Plan which promotes the immediate replacement of burned out and/or damaged pedestrian and car park lighting.



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