Hawkesbury City Council

attachment 1
to
item 114

Structure Planning - Kurmond and Kurrajong Investigation Area

date of meeting: 28 July 2015
location: council chambers
time: 6:30 p.m.

AT - 1 - Structure Planning - Kurmond and Kurrajong Investigation Area

Introduction

The structure planning work undertaken shown below is in draft form and is subject to change as new information and analysis is undertaken on the following:

1. What land may be suitable for large lot residential / rural residential development.

2. What land may need to be protected or conserved (e.g. land containing threatened species or endangered ecological communities, riparian areas, land with significant slope, significant view lines).

3. The nature and location of future development (e.g. the type of residential development and minimum lot size requirements).

4. Likely development yield and take up rate.

5. The extent of rural village expansion and limits to growth.

6. The nature and location supporting public infrastructure (e.g. roads, intersections, drainage infrastructure, community facilities, parks and recreation facilities).

7. Mechanisms to fund and provide supporting public infrastructure.

So far detailed consideration has been given to items 1 and 2, and in part items 6 and 7.

Kurmond and Kurrajong Investigation Area

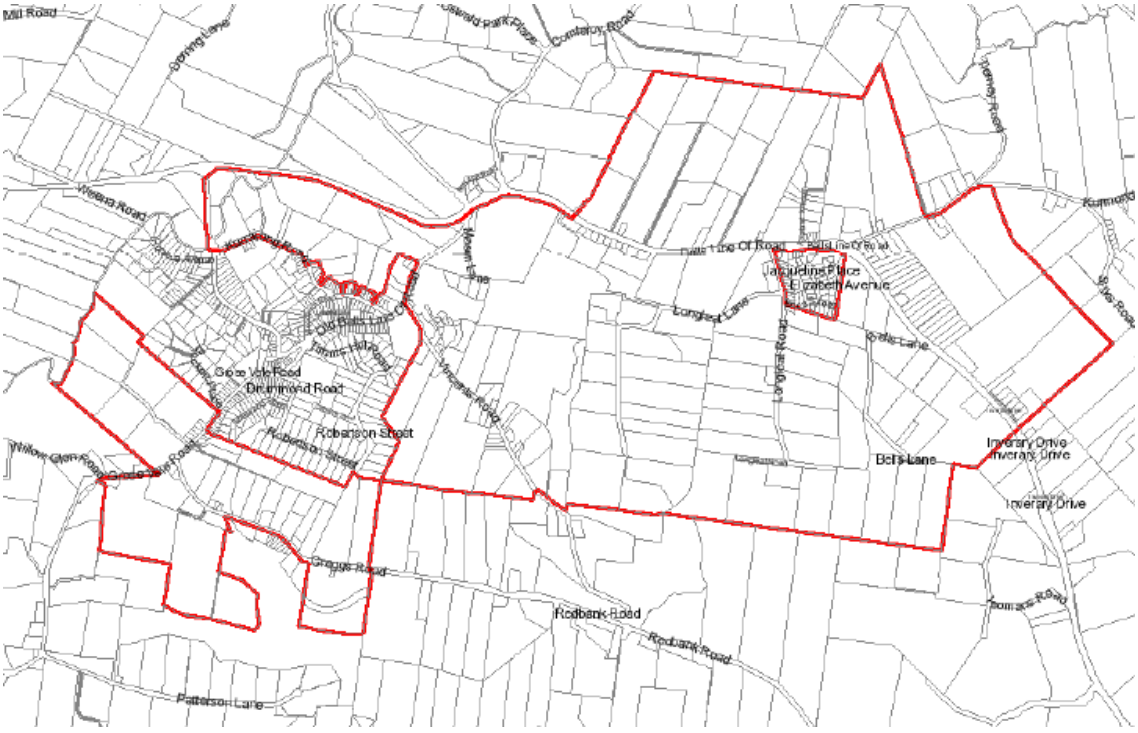


Figure 1: Kurmond and Kurrajong Large Lot Residential Investigation Area (with cadastral data)

Figure 2: Kurmond and Kurrajong Large Lot Residential Investigation Area (with aerial photo 2014)

Progress of Study of Investigation Area

Study of the investigation area so far has included examination of the broad State and local planning framework, demographic analysis, consideration of the physical environment, and identification of infrastructure and services within and surrounding the investigation area.

The following tables provide a summary of physical environment, and infrastructure and servicing matters that have been considered. Accompanying each matter is an assessment of the degree of constraint to development and recommendations to address or mitigate that constraint.

The classifications for Degree of Constraint to Development are fundamental, major, moderate, minor and nil and these are defined as follows:

Fundamental:	Legislative requirement to be met or State Government agency concurrence required to address a fundamental development constraint. Council or State Government consent cannot occur until solution is provided or delivery mechanism is in place to meet legislative requirement. CSI rating of -5.
Major:	In terms of physical characteristics of the land the matter is so significant that development should be avoided. In terms of required infrastructure and servicing the matter is so significant that development should not occur until a solution has been identified and delivery mechanism achieved. CSI rating of -4 or -5.
Moderate:	The matter should be carefully considered when preparing and assessing planning proposals or development applications. Referral to State government agencies may be required during the assessment of the application and specific responses or conditions of consent are likely CSI rating of -3.

Minor:	Detailed consideration typically not required as it is expected this matter can be readily addressed by way of standard conditions of development consent or payment of developer contributions. CSI rating of -1or -2
Nil:	No specific action required. Positive CSI rating (1-5).

This structure plan summary includes an examination of

- Physical Environment eg. slope of land, vegetation, watercourses and bushfire
- Infrastructure and Services eg. road network

Preliminary work has been undertaken on Development Principles for Kurmond and Kurrajong that respond to constraints (-CSI) and opportunities (+CSI). These are summarised below:

Preliminary Development Principles Based on Constraints (-CSI)

1. Essential services under LEP 2012 and fundamental development constraints are resolved.

2. Building envelopes, asset protection zones (APZs), driveways and roads are located on land with a slope less than 15%.

3. Removal of significant vegetation is avoided.

4. Fragmentation of significant vegetation is minimised.

5. Building envelopes, APZs, driveways and roads (not including roads for the purposes of crossing watercourse) are located outside of riparian corridors.

6. Road crossings of water courses is minimised.

7. Fragmentation of riparian areas is minimised.

8. Removal of dams containing significant aquatic habitat is avoided.

Preliminary Development Principles Based on Opportunities (+CSI)

1. Be able to have onsite sewerage disposal.

2. Cluster around or on the periphery of villages.

3. Cluster around villages with services that meet existing neighbourhood criteria services as a minimum (within 1km radius).

4. Address environmental constraints and with minimal environmental impacts.

5. Within the capacity of the rural village.

Table 1: Physical Environment

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Terrestrial Biodiversity Impact of development on threatened or endangered flora and fauna	Fundamental -Major	Legislation applies to threatened and endangered species. OEH concurrence may be required. Removal of significant vegetation is to be avoided Fragmentation of significant vegetation is to be minimised	Flora and fauna species extinction
Watercourses and Riparian Areas Impact of development on watercourses and riparian areas	Fundamental -Major	Legislation applies to threatened and endangered species. OEH concurrence may be required. Building envelopes, APZs, driveways and roads (not including roads for the purposes of crossing watercourses) are to be located outside of riparian corridors Road crossings of watercourses are to be minimised Fragmentation of riparian areas is to be minimised	Water pollution Bank and gully erosion Loss of aquatic habitat
Dams Impact of development on aquatic habitat. Proximity of dams to effluent disposal systems	Fundamental - Minor	Legislation applies to threatened and endangered species. OEH concurrence may be required. Removal of dams containing significant aquatic habitat is to be avoided. Minimum required buffer distances for effluent disposal systems is to be adhered to	Water pollution Loss of aquatic habitat
Bush Fire threat Impact of the location and management of APZs and perimeter roads	Fundamental - Major	RFS concurrence may be required. Building construction and water supply is to comply with NSW Rural Fire Service's *Planning for Bushfire Protection 2006*. eg. APZs and roads.	Loss of life Loss of property

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Bush Fire threat Requirements for building construction and water supply for fire fighting purposes	Moderate	Building construction and water supply is to comply with NSW Rural Fire Service's *Planning for Bushfire Protection 2006*. eg. APZs and roads.	Loss of life Loss of property
Landforms and soils Suitability of land for development given the slope of the land	Major	Building envelopes, asset protection zones (APZs), driveways and roads are to be located on land with a slope less than 15% Clause 6.2 of LEP 2012 applies.	Landslip
Traffic Noise Suitability of land to be developed given traffic noise from Bells Line of Road	Moderate	Council and developers are to consider relevant provisions of *State Environmental Planning Policy (Infrastructure) 2007* when preparing and considering development applications	Loss of acoustic privacy
Agriculture Land Uses and Agricultural Land Use Classifications Impact of development on existing agricultural uses and suitability of land to be retained for existing or future agriculture uses	Minor - Moderate	Council and developers are to consider potential conflict between large lot residential and agricultural land uses when preparing and considering development applications	Loss of agricultural land Reduced agribusiness and food supply Increased land use conflicts with dwellings (eg. noise, traffic, spray drift, lighting)
European Heritage Impact of development on European heritage items	Fundamental - Moderate	Council and developers are to consider relevant provisions of *Heritage Act 1977* when preparing and considering development applications. Heritage office approval may be required. Where relevant development applications are to be assessed with respect to Clause 5.10 Heritage Conservation of the Hawkesbury Local Environmental Plan 2012 (LEP 2012) and Heritage Chapter of the Hawkesbury Development Control Plan 2002 (DCP 2002)	Loss of European heritage Loss of streetscape character

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Aboriginal Heritage Impact of development on Aboriginal heritage items	Fundamental - Moderate	National Parks and Wildlife Act 1974 applies. Council and developers are also to consider relevant provisions of *Heritage Act 1977* when preparing and considering development applications	Loss of Indigenous heritage Loss of landscape character
Land Contamination Suitability of land to be developed given potential for land to be contaminated	Fundamental - Minor	Remediation action plans and validation may be required. Council and developers are to consider relevant provisions of *State Environmental Planning Policy No 55—Remediation of Land* when preparing and considering development applications.	Risk to public health
Flooding Suitability of land to be developed given potential for flooding	Fundamental - Minor	DPE, OEH & SES concurrence may be required. Clause 6.3 of LEP 2012 applies and regional flood evacuation plans may be required. Council and developers are to consider potential impact of localised flooding on life and property when considering development applications.	Loss of life Loss of property
Acid Sulfate Soils Impact of disturbance of acid sulfate soils on the environment and development	Fundamental to Minor	Development proposals and land class are to be assessed with respect to Clause 6.1 Acid Sulfate Soils of LEP 2012. Acid sulfate soils management plans required.	Salinity Loss of useable land
Groundwater and Bores Proximity of groundwater and bores to effluent disposal systems	Minor	Minimum required buffer distances for effluent disposal systems to be adhered to	Groundwater contamination Downstream flora and fauna impacts

Table 2: Infrastructure and Services

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Road network Capacity and safety of existing road network	Fundamental - Major	RMS concurrence may be required. Development contributions are to be levied for road improvements Council and developers are to consider relevant provisions of *State Environmental Planning Policy (Infrastructure) 2007* when preparing and considering development applications	Traffic congestion Loss of life Council budget required to fund road maintenance and intersection works
Road network Location and funding of new roads to serve future development	Major	RMS concurrence may be required. New roads and intersection works are to be provided by developer as part of subdivision of land. Where new roads do not front land to be developed, roads are to be funded by development contributions Council and developers are to consider relevant provisions of *State Environmental Planning Policy (Infrastructure) 2007* when preparing and considering development applications	Traffic congestion Loss of life Council budget required to fund road maintenance and intersection works
Wastewater Capacity of land to cater for on-site effluent disposal	Fundamental	Sydney Water concurrence may be required. Developers are to demonstrate that waste water can be disposed of on site in an environmentally sensitive manner. Alternatively developers may provide reticulated sewer service to new lots in accordance with relevant licences and/or authority requirements Clause 6.7 - Essential Services under LEP 2012 applies.	Contamination of land and water

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Public Transport Services Provision of bus service to cater for the needs of incoming population	Fundamental - Moderate	Transport NSW and RMS concurrence may be required. Possible levying of development contributions for bus services Clause 6.7 - Essential Services under LEP 2012 applies.	Traffic congestion Isolation of residents from facilities
Stormwater drainage Quantity and quality of stormwater run-off entering watercourses	Fundamental - Moderate	Developers are to demonstrate that stormwater can be captured, treated and released in an environmentally sensitive manner Possible levying of development contributions for stormwater purposes. Clause 6.7 - Essential Services under LEP 2012 applies.	Contamination of watercourses Erosion of watercourses Loss of flora and fauna
Water Supply Provision of reticulated water supply to new lots	Fundamental - Moderate	Sydney Water concurrence may be required. A reticulated water service is to be provided to new lots by developers in accordance with relevant authority requirements Clause 6.7 - Essential Services under LEP 2012 applies.	Isolation of residents from facilities
Emergency Services Capacity of RFS, Police and Ambulance services to respond to emergency situations.	Minor - Moderate	Possible levying of development contributions for emergency services	Loss of life Isolation of residents from facilities

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Education Establishments Capacity of existing education establishments to cater for needs of incoming population	Minor - Moderate	Council is to ensure education establishments are permissible land uses in and/or within the vicinity of the investigation area Possible levying of development contributions for education establishments	Isolation of residents from facilities
Electricity Provision of electricity service to new lots	Fundamental	Electricity provider concurrence may be required. Electricity services are to be provided to new lots by developers in accordance with relevant authority requirements. Clause 6.7 - Essential Services under LEP 2012 applies.	Isolation of residents from facilities
Waste Collection Provision of garbage and recyclable collection services to new lots	Minor	Subdivision and building designs are to allow for the orderly and efficient collection of waste from premises	Isolation of residents from facilities
Telecommunications Provision of telephone and NBN services to new lots	Minor	Telephone and NBN services are to be provided to new lots by developers in accordance with relevant authority requirements	Isolation of residents from facilities
Parks and Reserves Capacity and extent of existing parks and reserves to cater for needs of incoming population	Minor	Council is to ensure adequate provision of parks and reserves to cater for demands of incoming population Possible levying of development contributions for parks and reserves	Isolation of residents from facilities
Community Buildings and Facilities Capacity and extent of existing community buildings and facilities	Minor	Council to ensure adequate provision of community buildings and facilities to cater for demands of incoming population Possible levying of development contributions for community buildings and facilities	Isolation of residents from facilities

Factor	Degree of Constraint to Development	Recommendation	Risk / Consequence
Child care centres Capacity of existing child care centres to cater for needs of incoming population	Minor	Council to ensure home based child care and child care centres are permissible land uses in and/or within the vicinity of the investigation area	Isolation of residents from facilities
Aged Care and Senior Living Developments Capacity of aged care facilities to cater for needs of incoming population	Minor	Council to ensure aged care and senior living developments are permissible land uses in and/or within the vicinity of the investigation area	Isolation of residents from facilities
Footpaths and Bicycle paths Capacity and extent of footpaths and bicycle paths to cater for needs of incoming population	Minor	Council to ensure adequate provision footpaths and bicycle paths to cater for demands of incoming population Possible levying of development contributions for footpaths and bicycle paths	Isolation of residents from facilities

Primary Physical Constraint Discussion

As can be seen in the above table, the primary physical constraints to future development in the investigation area are the slope of land; the presence of threatened or endangered flora and fauna; watercourses and dams; managing the threat of bushfire; the capacity and the existing road network; and requirements for waste water disposal. Below is a brief discussion of these matters.

Slope of Land

Throughout the investigation area there is a relatively uniform occurrence of land with slope in excess of 15%. The RLS recognises land in excess of 15% as unsuitable for urban development as beyond this slope, soil erosion becomes an increasingly difficult problem to manage and may even expose development to landslip and mass movement hazards. This is supported by the State government's *Soil and land assessment constraint for urban and regional planning*, 2010 states:

> *The greater the slope (gradient), the greater the potential for erosion due to the increase surface water velocity, increase water runoff compared to infiltration and the increased gravitational force on the soil particles. Steeper slopes mean access is more difficult and cumbersome, especially where heavy machinery is required or heavy loads are being transported. Site preparation for construction work is more difficult, requiring greater cut and fill operations.*

Furthermore this assessment defines land in excess of 15% as being highly constrained due to potential for failure of ground and structures and the increase in complexity of construction and long-term access

Figure 3 shows land that is in excess of 15% and 20% in slope.

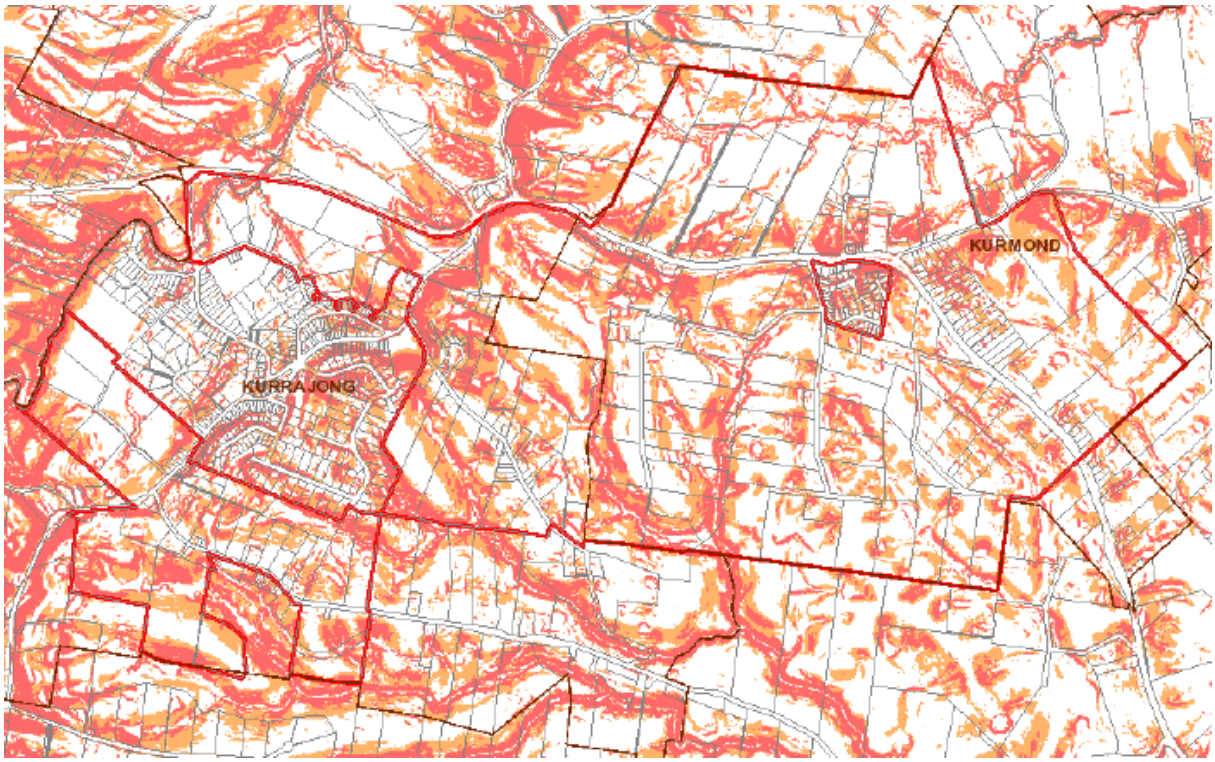


Figure 3: Slope of Land

Slope 15% to 20% - Orange
Slope greater than 20% - Red.

Presence of Threatened or Endangered Flora and Fauna

Much of the land within the investigation area has been cleared of native trees, shrubs and groundcover. However significant stands and corridors of native vegetation do remain throughout the investigation area.

Substantial areas of the investigation area are shown as being classified either *Significant Vegetation* or *Connectivity Between Significant Vegetation* under LEP 2012. The categorisations are based on high level vegetation mapping undertaken on behalf of Council in 2007 and are shown in Figure 4.

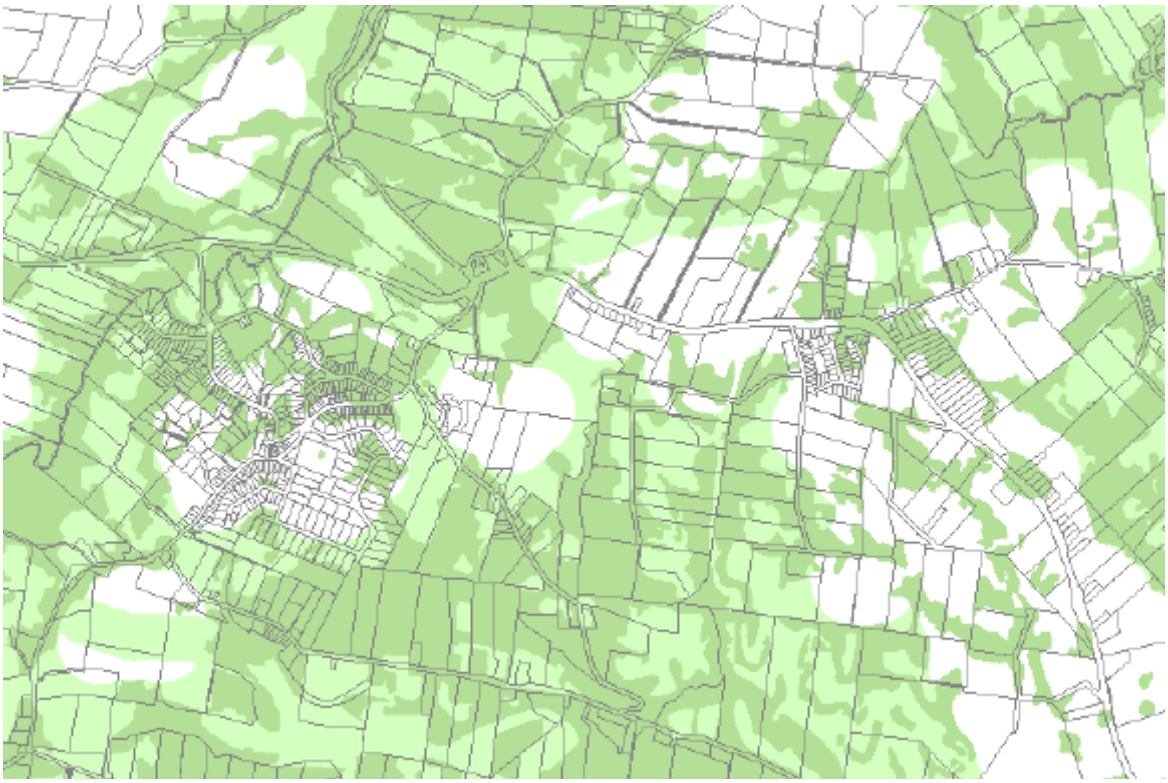


Figure 4: Significant Vegetation and Connectivity between Significant Vegetation

Significant Vegetation - Dark green
Connectivity Between Significant Vegetation - Light green.

The land that is classified as *Significant Vegetation* typically contains critically endangered ecological communities or endangered ecological communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The majority of these vegetation communities and their classifications under both Acts are shown in the table below.

Table 3: Vegetation community classifications

Vegetation Community	TSC Act Classification	EPBC Act Classification
Shale Sandstone Transition Forest	Critically Endangered Ecological Community	Critically Endangered Ecological Community
Sydney Turpentine Ironbark Forest	Endangered Ecological Community	Critically Endangered Ecological Community
Shale Plains Woodland	Critically Endangered Ecological Community	Critically Endangered Ecological Community
Western Sydney Dry Rainforest	Endangered Ecological Community	Critically Endangered Ecological Community

A search of the BioNet Atlas of NSW Wildlife website reveals that individual 23 fauna and 4 flora species listed under the TSC Act have been recorded within a 10km radius of the investigation area.

The TSC Act also provides a definition of "threatening processes". These are processes that threaten, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes of most relevance to future large lot residential within the investigation area are:

- Alteration to the natural flow regimes of streams
- Bushrock removal
- Clearing of native vegetation
- High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition
- Invasion and establishment of exotic vines and scramblers
- Invasion of native plant communities by exotic perennial grasses
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants
- Loss of hollow-bearing trees
- Removal of dead wood and dead trees

Accuracy of Vegetation Mapping

The high level vegetation mapping undertaken in 2007 covered most of the LGA and hence due to the extensive area involved it was subject to only selective and representative groundtruthing. Some planning proposal applicants have questioned the accuracy of the vegetation mapping. Typically this questioning has been in the absence of a detailed flora and fauna assessment of the respective site. Where assessments have been carried out the 2007 vegetation mapping has been shown to be quite accurate. Hence, at present the vegetation mapping is considered by Council officers to be accurate in identifying the broad areas where future development may or may not occur. Hence widespread groundtruthing of the vegetation mapping within the investigation area is not considered necessary. It is however forecast that groundtruthing of some locations within the investigation area may be required at a later stage in the structure planning process.

Watercourses and Dams

The investigation area is traversed by many watercourses and can be divided into three general water catchment areas. These are as follows:

Redbank Catchment

Land to the south of Bells Line of Road and to the east of Old Bells Line of Road/Grose Vale Road. This land drains to the south-west into Redbank Creek which flows into the Hawkesbury River approximately 1.5km downstream of the North Richmond bridge.

Little Wheeny Creek Catchment

Land to the north-west of Old Bells Line of Road/Grose Vale Road. This land drains to the north into Little Wheeny Creek. Little Wheeny Creek flows into Wheeny Creek which in turn flows into the Colo River approximately 1.1 kilometres upstream of the Putty Road bridge over the Colo River

Howes Creek Catchment

Land to the north of Bells Line of Road and east of Comleroy Road. This land drains easterly into Howes Creek. Howes Creek flows in Currency Creek which in turn flows into the Hawkesbury River approximately 400m upstream of the Sackville Ferry crossing.
Watercourses within the investigation area and their corresponding Strahler watercourse order class are shown in Figure 5.

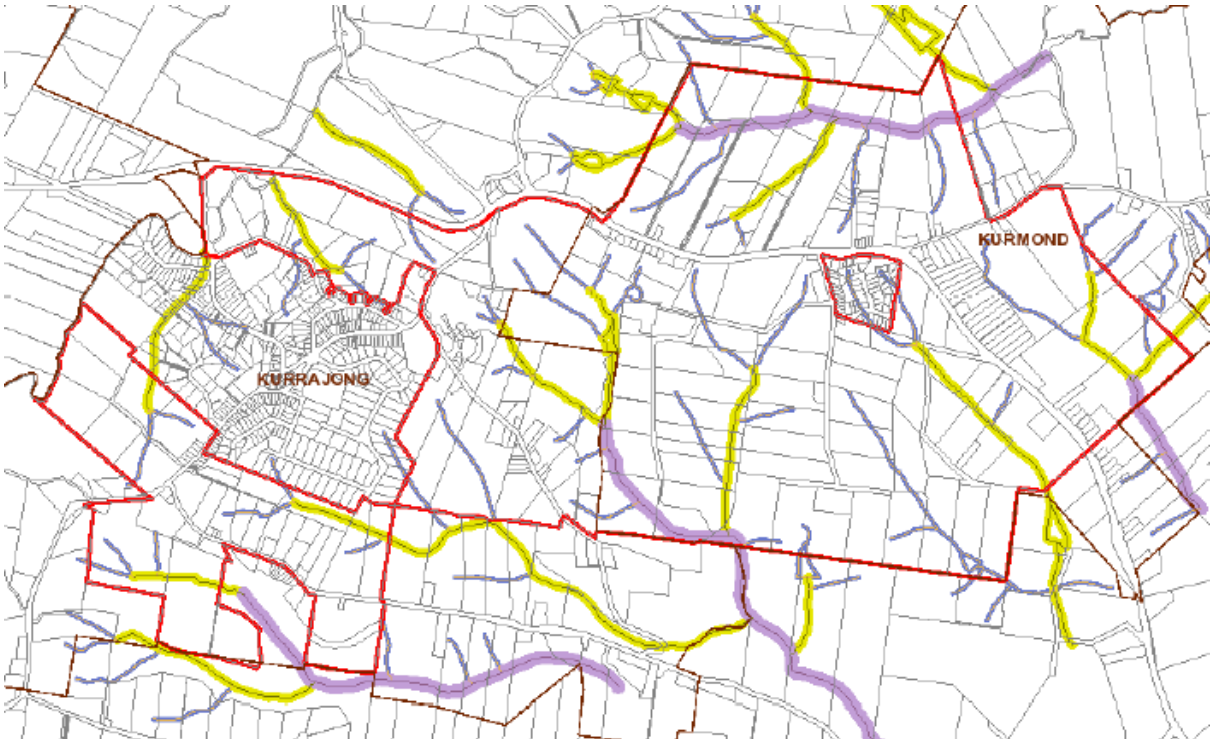


Figure 5: Watercourses and riparian areas

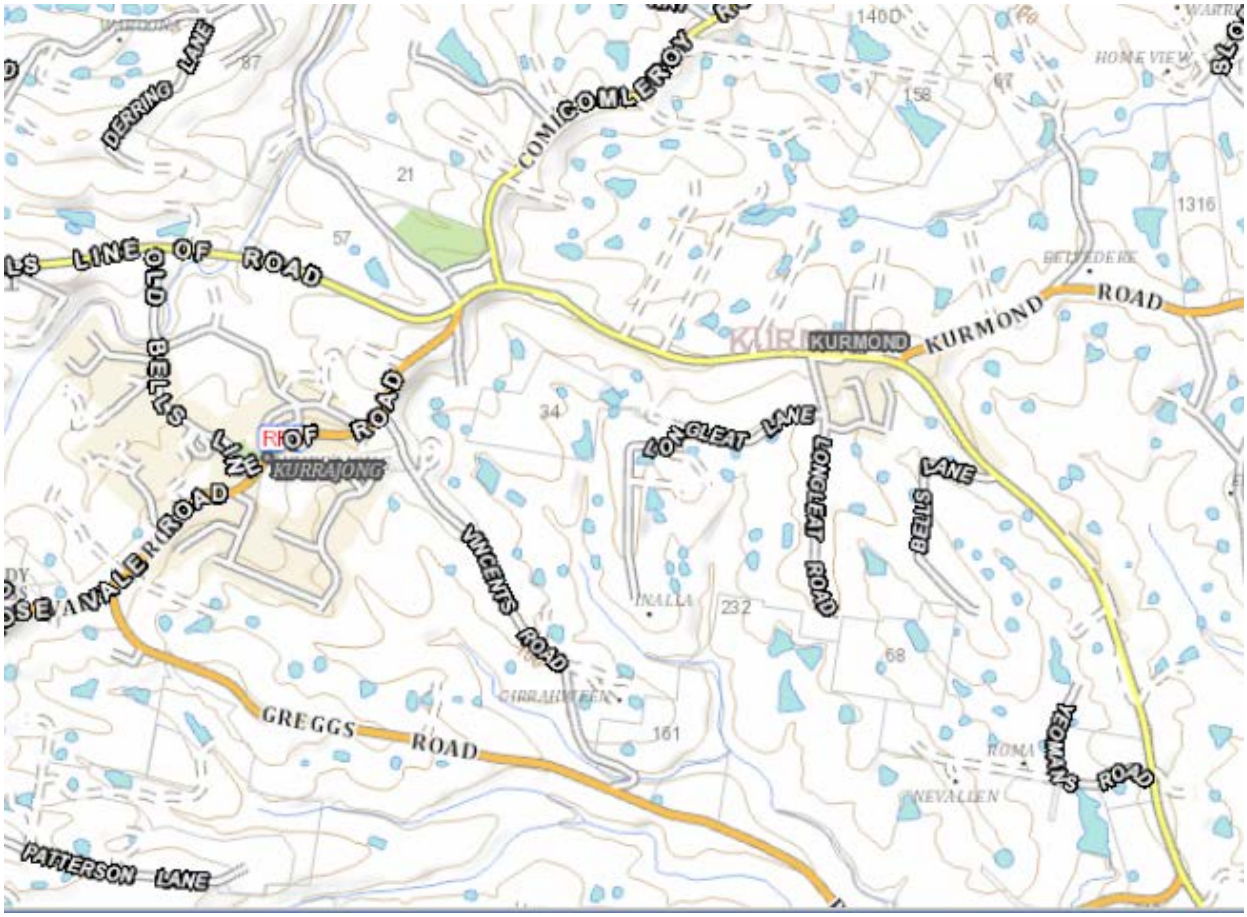
1st Order Stream - Blue band
2nd Order Stream - Yellow band
3rd Order Stream - Purple band

The Office of Water's *Guidelines for riparian corridors on waterfront land* contains recommended minimum riparian corridor widths based on stream order. These are as shown in Table 4 below. The Guidelines recommend that these riparian corridors be maintained or rehabilitated with fully structured native vegetation, disturbance and harm is minimised, the number of creek crossings is minimised and perimeter roads separate development from the riparian corridors, services and infrastructure is located outside of the riparian corridor, and stormwater run-off is treated before discharging into the riparian corridor.

Table 4: Recommended riparian corridor (RC) widths

Watercourse type	Vegetated Riparian Zone width (each side of watercourse)	Total RC width
1st order	10 metres	20m plus channel width
2nd order	20 metres	40m plus channel width
3rd order	30 metres	60m plus channel width

A significant number of dams are located in the investigation area, generally west of the Kurrajong residential area. These dams are typically small and appear to be located on or adjacent to watercourses. The location of these dams is shown in blue in Figure 6.



Source: https://maps.six.nsw.gov.au/

Figure 6: Dams

Dams can have a major impact on development, primarily due to required minimum setbacks for on-site waste water treatment facilities and due to being a possible significant aquatic habitat. Where dams do not provide a significant aquatic habitat, developers often decommission and fill in dams in order to maximise the number of potential allotments. It is assumed that this practice would be adopted within the investigation area and hence, at a broad scale, it is considered that the number and location of dams presents a minor limitation to development within the investigation area. Detailed investigation at development application stage will however be required to determine whether or not individual dams are a significant aquatic habitat.

Bush Fire Threat

All of the land within the investigation area is classified as "bushfire prone land" on the Bushfire Prone Land Map for the LGA with the vast majority of the area falling within the Category 1 vegetation class. Bush fire prone land is shown in Figure 7.

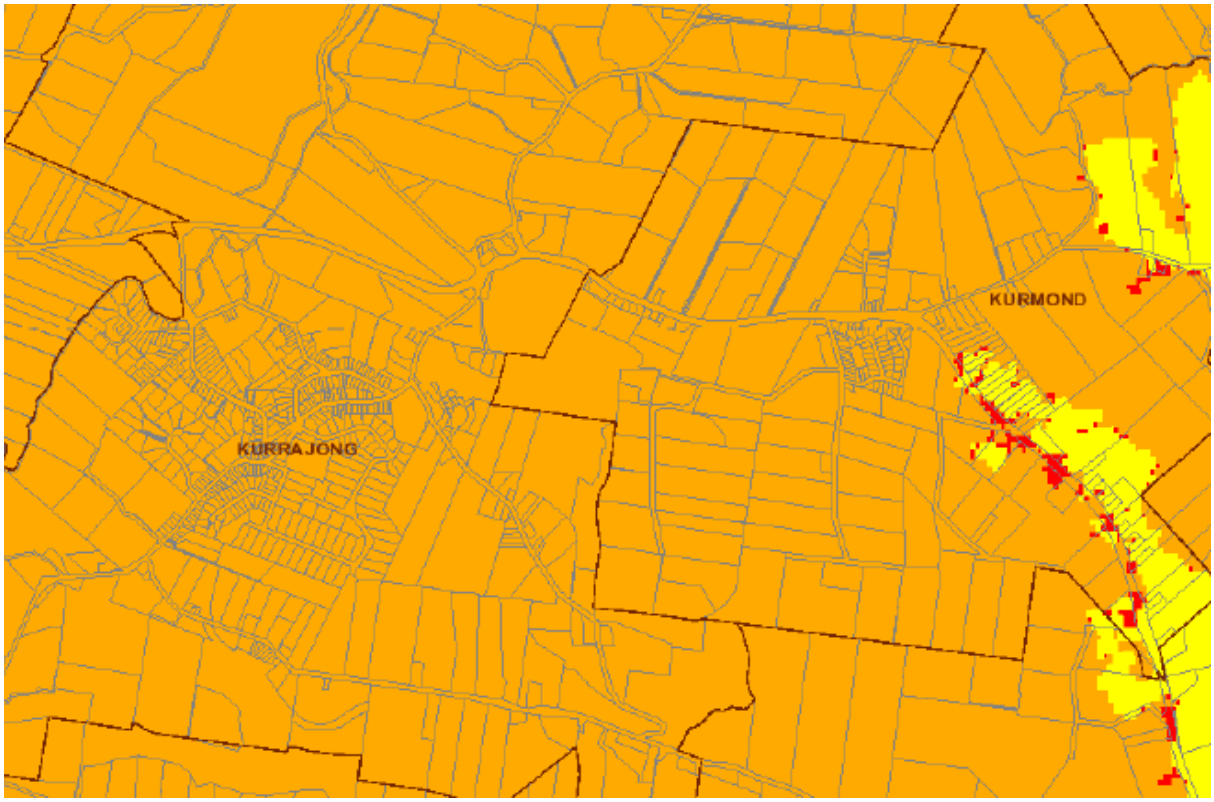


Figure 7: Bushfire prone land

Category 1 vegetation - Orange
Category 2 vegetation - Yellow
Buffer area - Red

All development on bushfire prone land must satisfy the aims and objectives of *Planning for Bushfire Protection 2006* (PBP) and Council must consider the provisions of PBP when considering planning proposals and development applications on bushfire prone land. A major matter to be addressed in satisfying the provisions of PBP is the determination and location of APZs and perimeter roads and their impacts on flora and fauna and neighbouring properties.

Road Network

Bells Line of Road

Bells Line of Road is the major east – west vehicle thoroughfare through the investigation area. It is classified as a main road and is under the care, control and management of the Roads and Maritime Service (RMS). Bells Line of Road currently experiences significant volumes of traffic in the morning and evening peak period and major congestion regularly occurs east of the investigation area in North Richmond and Richmond.

The RMS has advised Council of its concerns regarding the cumulative impacts of planning proposals for subdivision in the Kurmond and Kurrajong area. Further the RMS has advised that they do not have any current plans or funding available for upgrades to Bells Line of Road.

The RMS has recommended that Council undertake a Traffic Study to investigate impacts to the surrounding road network and individual intersections that are likely to be adversely impacted by the increase in traffic generated by large lot residential development in the investigation area. The RMS has offered assistance to Council via developer funded mechanisms to fund local and State road improvements in the vicinity.

Old Bells Line of Road

Old Bells Line of Road/Grose Vale Road is a southerly regional road loop connecting Kurrajong, Bowen Mountain, Grose Wold, Grose Vale and North Richmond.

Other Roads

The major local roads within the investigation area are Kurmond Road and Greggs Road/Redbank Road.

Kurmond Road provides an east - west route, connecting with either Gorricks Lane / Freemans Reach Road to access Windsor or Putty Road to access Wilberforce.

Greggs Road/Redbank Road is an east-west route connecting Kurrajong to Bells Line of Road approximately 1.2km south-east of the investigation area.

All other roads in the investigation area are minor local roads. These roads typically have a road reserve width of approximately 20m, a pavement width of approximately 3.5m to 5m and are not provided with kerb and gutter. The function and character of these roads is primarily that of a “rural lane” or cul-de-sac as they do not provide connection with other local roads in the investigation area.

Figure 8 shows the status of roads within the investigation area.

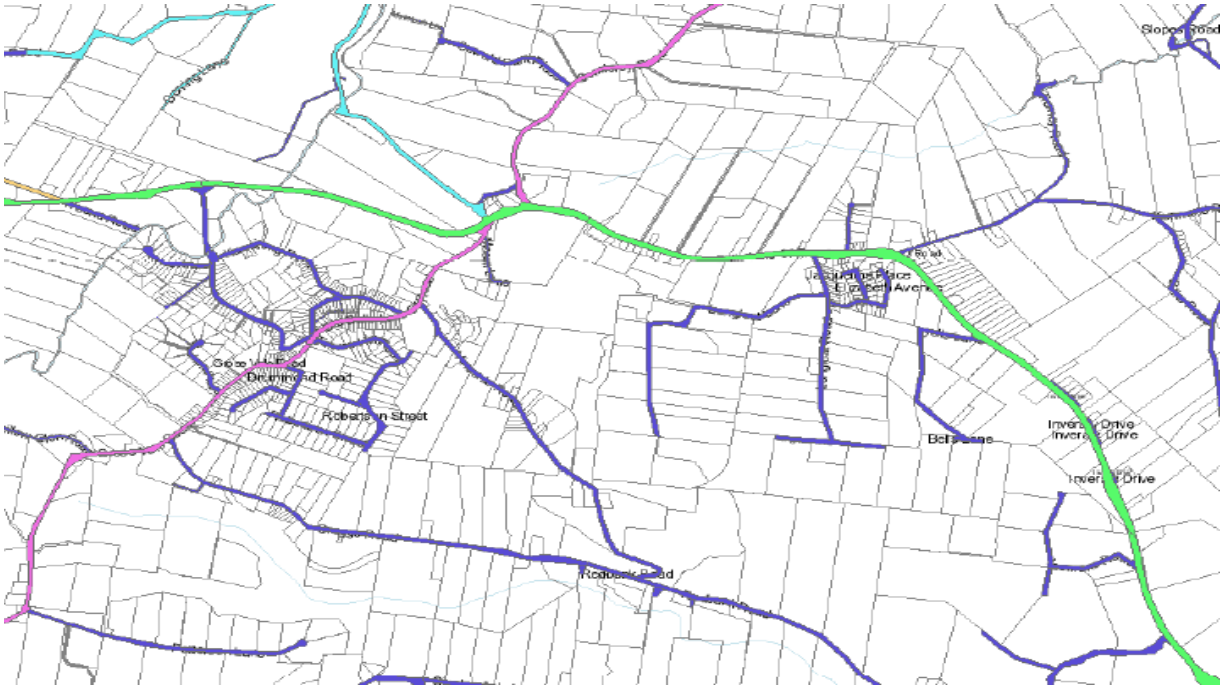


Figure 8: Road Status Map

Main Road - Green
Regional Road - Purple
Local Road - Blue

Within the investigation area there is one signalised intersection at Bells Line of Road and Old Bells Line of Road, all other intersections are either sign posted or un-controlled.

Limited street lighting is provided throughout the investigation area. Such lighting is typically located in or near the town centres of Kurrajong and Kurmond. Street lighting does extend partly along Vincent Road, Longleat Road and Kurmond Road.

Council's vehicle crash data since 2005 shows that Bells Line of Road has suffered the most number of vehicle accidents with a significant cluster of accidents occurring between Rowland Avenue and Kurmond Road.

Wastewater Disposal

The investigation area is not serviced by a reticulated sewer service. Sydney Water and Council have no current plans to provide such a service the area.

At present waste water must be treated and disposed of onsite or removed from properties via a pump out service managed by Council. Council's current policy is not to approve subdivision that relies on a pump out service. Hence in the absence of a developer funded reticulated sewer system, all new allotments would need to rely on onsite treatment and disposal of waste water.

Composite Map - Primary Physical Constraints

Figures 3, 4 and 5 show areas that should be avoided for the purposes of large lot residential development due to physical constraints. Figure 9 is a composite map showing such constrained land.

Figure 9 shows that extensive large lot residential development throughout the investigation area is unlikely and that only selected pockets or corridors of development would appear to satisfy the key guiding development principles.

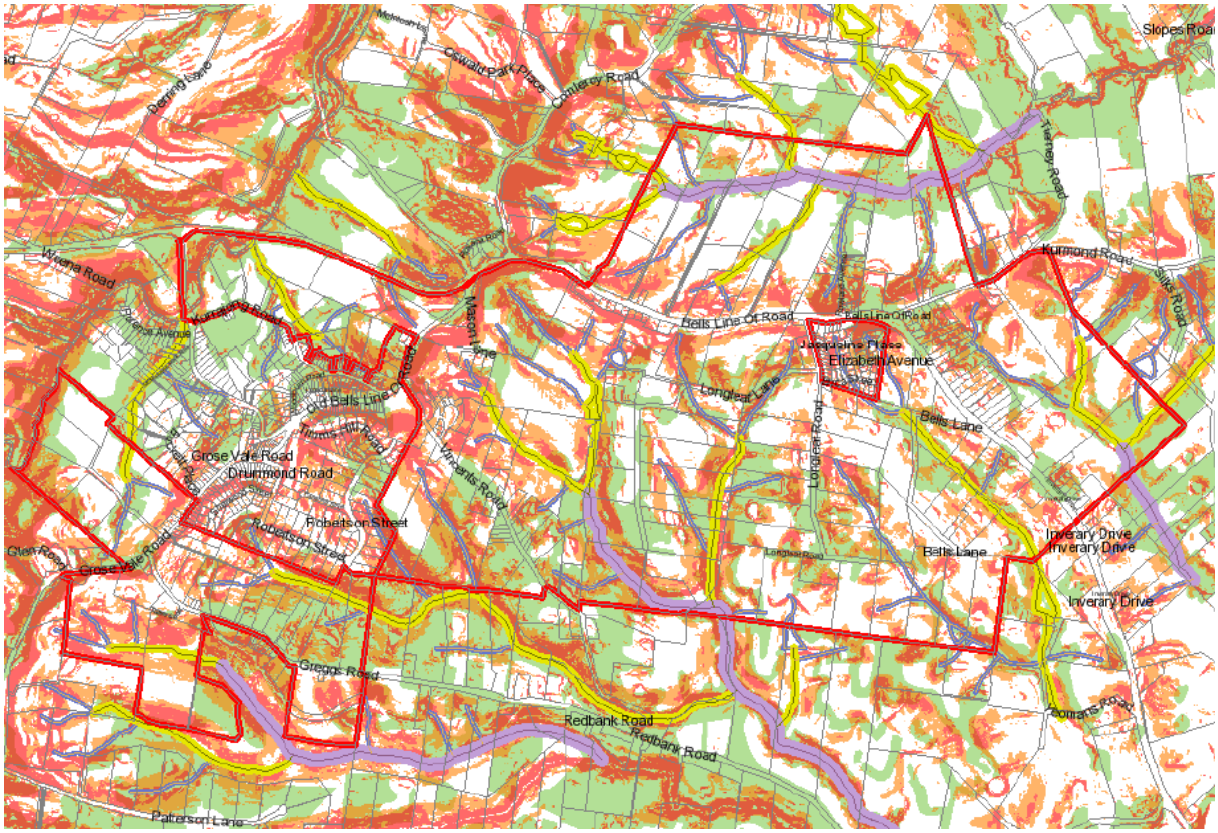


Figure 9: Composite Constraint Map