



Woollamia Farmlets Small Lot Investigation Area

Preliminary Desktop Assessment

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1 Purpose of Report

This report is a preliminary desktop planning study of land identified in the *Jervis Bay Settlement Strategy* as the *Woollamia Farmlets Investigation Area*. The purpose of the report is to analyse and assess the natural, built, social and economic environmental features of the Woollamia Farmlets area in order to develop options to progress the resolution of the development potential of this area.

2 Site History

The Woollamia Farmlets Investigation Area is made up of 183 lots ranging in size from 695 sq metres through to 22 hectares. The lots were initially created in 1917 as part of the “*Woollamia Estate*” (DP9289), with further small lot subdivision taking place to create the small lots along Streamside Avenue and rural residential lots along Willowford Road and Pritchard Avenue in 1927 (DP15266). Further small lots were created in 1957 on either side of Woollamia Road between Fairfax Road and Greenway Esplanade. The legal paper subdivision of the land created separate land titles. In 1964 the land was given a “non-urban” zoning under the Interim Development Order No. 1 (IDO No.1) with a minimum lot size of 40 hectares being required to lawfully erect a dwelling.

Some of the lots created as part of these earlier subdivisions were sold prior to the introduction of the IDO No.1 and were held in separate ownership at this time, whilst other owners held multiple titles. Each ownership holding of lots at 1964 have an “entitlement” to one dwelling (existing holding), and in certain circumstances, the creation of additional lots with dwelling entitlements (concessional lots). This has resulted in the situation where some lots have maintained and acted upon dwelling entitlements established through holding ownership in 1964, whilst lots which were held in the one ownership in 1964, have changed ownership and currently have no dwelling entitlement under the current zoning provisions. In addition to this, some lots have obtained dwelling approvals through the provisions set out under State Environmental Planning Policy No.1 – Development Standards (SEPP 1) and through subsequent subdivision relying on “concessional allotment” entitlements.

The *Jervis Bay Settlement Strategy* (2003) identifies the need to resolve small lot rural subdivisions and their development potential. It sets out parameters to review and investigate lot sizes and configuration and their development potential.

2.1 Background to Jervis Bay Settlement Strategy

The Settlement Strategy is a non-statutory plan adopted by Council and endorsed by the NSW State Government and reinforced via the South Coast Regional Strategy. It forms a strategic framework that provides guidance in terms of the conservation and development of the Jervis Bay region. The document does not rezone land for development, it does, however, identify potential development areas that will need to be further investigated; outlines issues that will need to be addressed in more detail during the investigation and rezoning process; and also provides a tool to help manage residential and rural residential growth in the area. In terms of the Woollamia Farmlets Investigation Area, the Strategy identified areas in the Principles Plan to be investigated in detail and possibly rezoned.

The Settlement Strategy specifically addresses the question of the small lot rural subdivisions in the Jervis Bay Region, of which the Woollamia Farmlets are included. The Strategy identifies four broad options to address small lot rural subdivisions namely:

- Option 1:** *Retain current zoning;*
- Option 2:** *Investigate rezoning in accordance with this Strategy and where appropriate, allow each lot to have a dwelling built on it;*
- Option 3:** *Investigate rezoning in accordance with this Strategy, and where appropriate, amalgamate lots to a minimum size in order to accommodate on-site effluent disposal;*
- Option 4:** *Public purchase of the land for a public use as addition to National Park.*

The Settlement Strategy states that Options 1 and 4 are not considered to be viable for all of the small lot rural subdivisions in the Region.

The Settlement Strategy goes on to set out a framework and actions for resolving the Woollamia Farmlets small lot rural subdivisions which can be summarised as follows:

- *The development potential of the Woollamia Farmlets be investigated through a review of lot sizes and configurations in order to accommodate on-site effluent management.*
- *The investigation of the possible rezoning of the 2 hectares or larger lots located on the southern side of Woollamia Road to enable a dwelling to be built on each (Map 10C).*
- *The carrying out of detailed environmental studies to determine the actual development potential of the smaller lots along Woollamia Road that range in size from 800 – 2,900 square metres.*
- *Land that is identified as being flood liable will generally not be considered for development.*
- *Smaller lots may need to be consolidated to an appropriate size to accommodate on-site effluent disposal.*
- *Detailed consideration and assessment of wetlands and setbacks, water courses and setbacks, habitat corridor issues, flooding and impacts on cultural heritage.*

3 Study Area

The Woollamia Farmlets area is located south of Nowra in the Jervis Bay region. The farmlets are dissected east-west by Woollamia Road, the main road providing access from the Princes Highway to Woollamia and Huskisson. The northern boundaries of the study area are shared with Currumbene Creek (which forms part of the Jervis Bay National Park) and Woollamia Road. To the south is the Woollamia Nature Reserve which is managed by NSW National Parks & Wildlife Service (NPWS).

The investigation area can be separated into three distinct precincts, based on existing land development characteristics related to lot size and configuration. These precincts can broadly be described as small residential lot area, rural residential area and residual flood prone and/or developed land which is made up of a mix of residential sized lots and rural residential lots that are flood prone and/or largely developed. Land use in the study area is predominantly rural residential, with some other related activities.

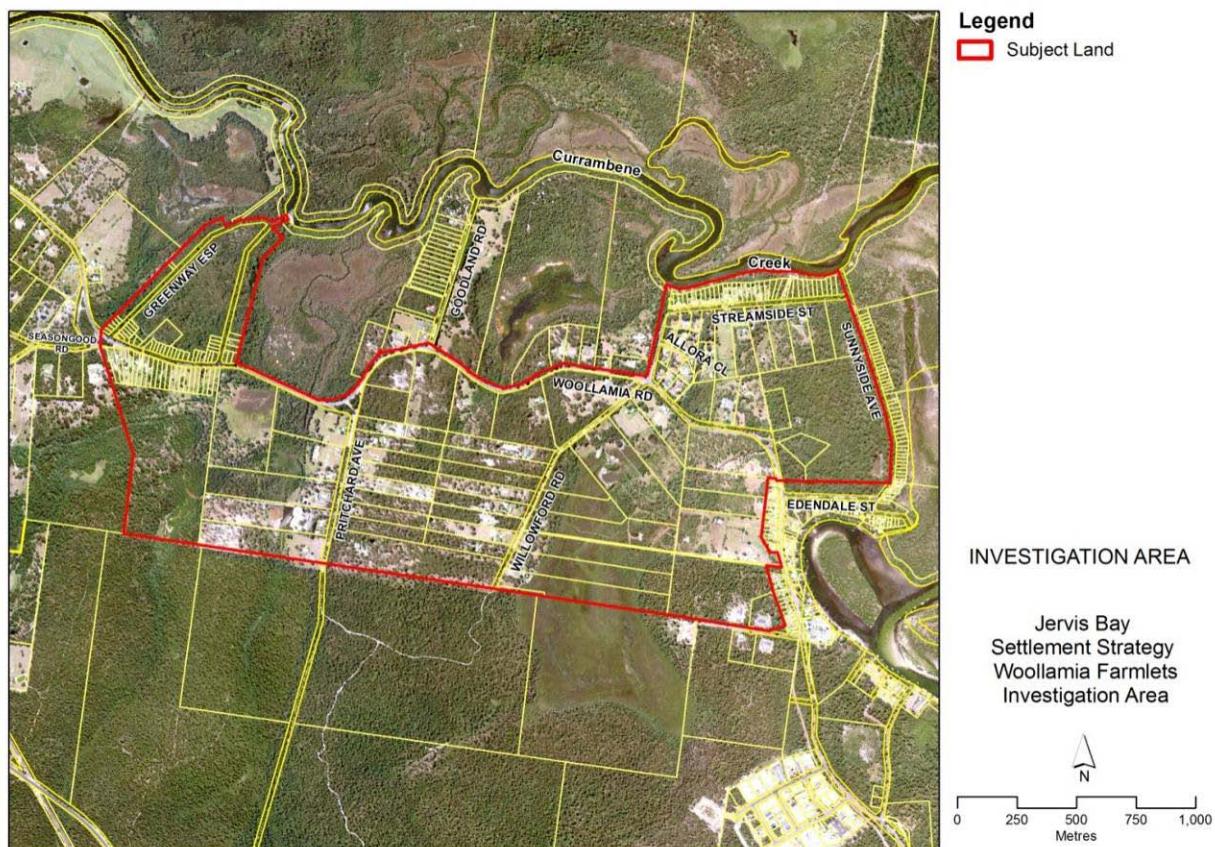


Figure 1: Woollamia Investigation Area

3.1 Land Use History

Residential development within the Woollamia Farmlets area has largely occurred in an uncoordinated manner. The existing development pattern generally reflects the subdivisions which occurred between 1917 and the late 1950's and the subsequent land ownership holdings which established dwelling and concessional lot potential from the IDO in 1964. The exception to this is the Allora Close subdivision, in the north eastern section of the study area, which was developed following the amendment of the Shoalhaven Local Environmental Plan 1985 in 1987 to enable a large residential lot subdivision (see clause 39). Several lots throughout the broader study area have obtained dwelling approval via the provisions set out under State Environmental Planning Policy No. 1 (SEPP 1).

Of the lots which have been developed, the majority are being used for residential purposes, with a small number of lots being used for commercial activities, generally in association with an authorised dwelling. Figure 2 (Development Pattern) shows the existing development pattern within the investigation area.

3.2 Unauthorised Development

Several lots within the investigation area contain structures which do not appear, based on preliminary research, to have the necessary consent under the *EP&A Act (1979)*. Whilst the majority of these structures are minor in nature (i.e. carport arrangements associated with caravans) two (2) lots located along Willowford Road contain unauthorised structures which are potentially being used for habitation whilst one (1) lot located along Willowford Road contains a significant unauthorised dwelling within land that is identified as being

flood prone. These matters have been referred to Council's Development and Environmental Services Group for resolution.

Five (5) lots located within the Greenway Esplanade/Woollamia Road precinct contain caravans and/or minor associated structures.

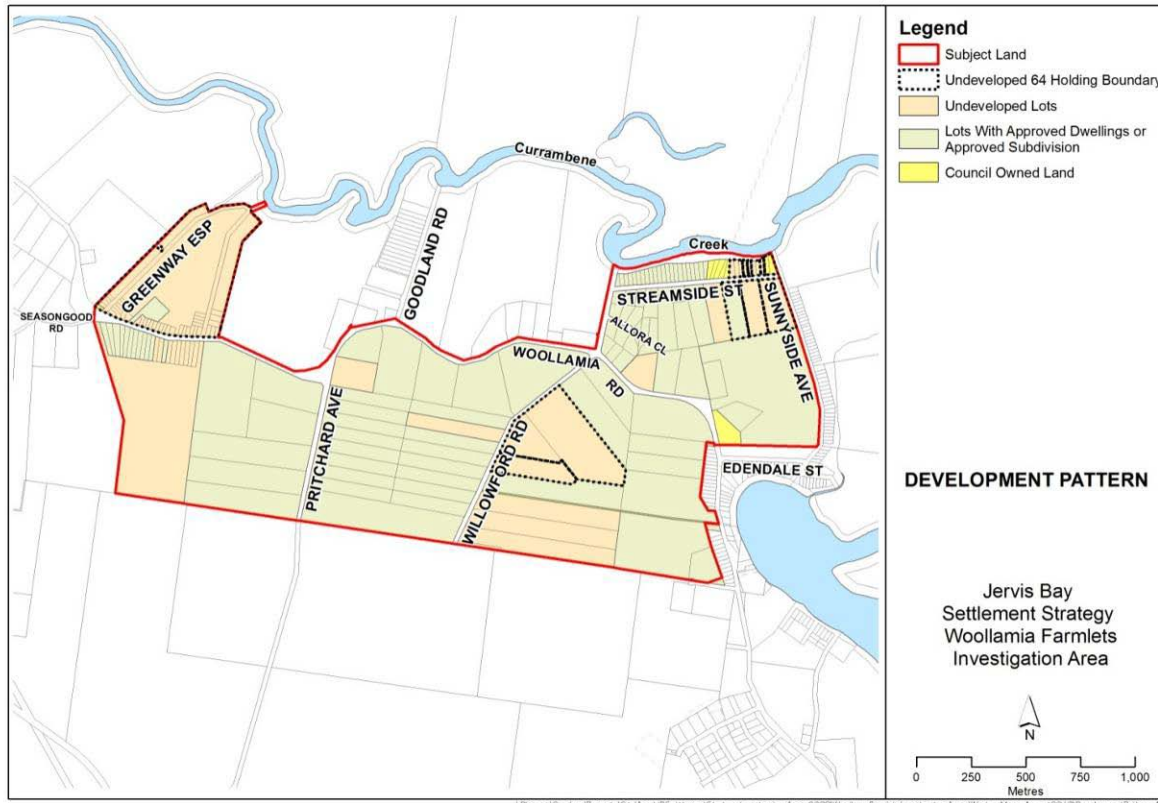


Figure 2: Development Pattern

3.3 Lot Size and Land Ownership Analysis

Currently there are 183 lots zoned 1(d)(Rural "D"(General Rural) Zone) within the Woollamia investigation area. One (1) property is partly zoned 7(a) (Environmental Protection "A" (Ecology) Zone). The 183 lots are currently held in approximately 140 individual ownership holdings, which means there are very few owners with multiple contiguous lots in the study area.

The investigation area can be categorised relative to lot size. By mapping the lots based on a range of lot sizes, a distinct pattern of development becomes evident. **Figure 3 – Lot Size Analysis and Figure 4 – Lot Size Graph** below splits the lots within the study area into 4 size ranges as follows:

Small Residential Lots	0 – 1,000 m ²
Low Density Residential Lots	1,000 m ² – 3,999 m ²
Rural Residential Lots	4,000 m ² – 1ha
Larger Rural Residential Lots	> 1ha

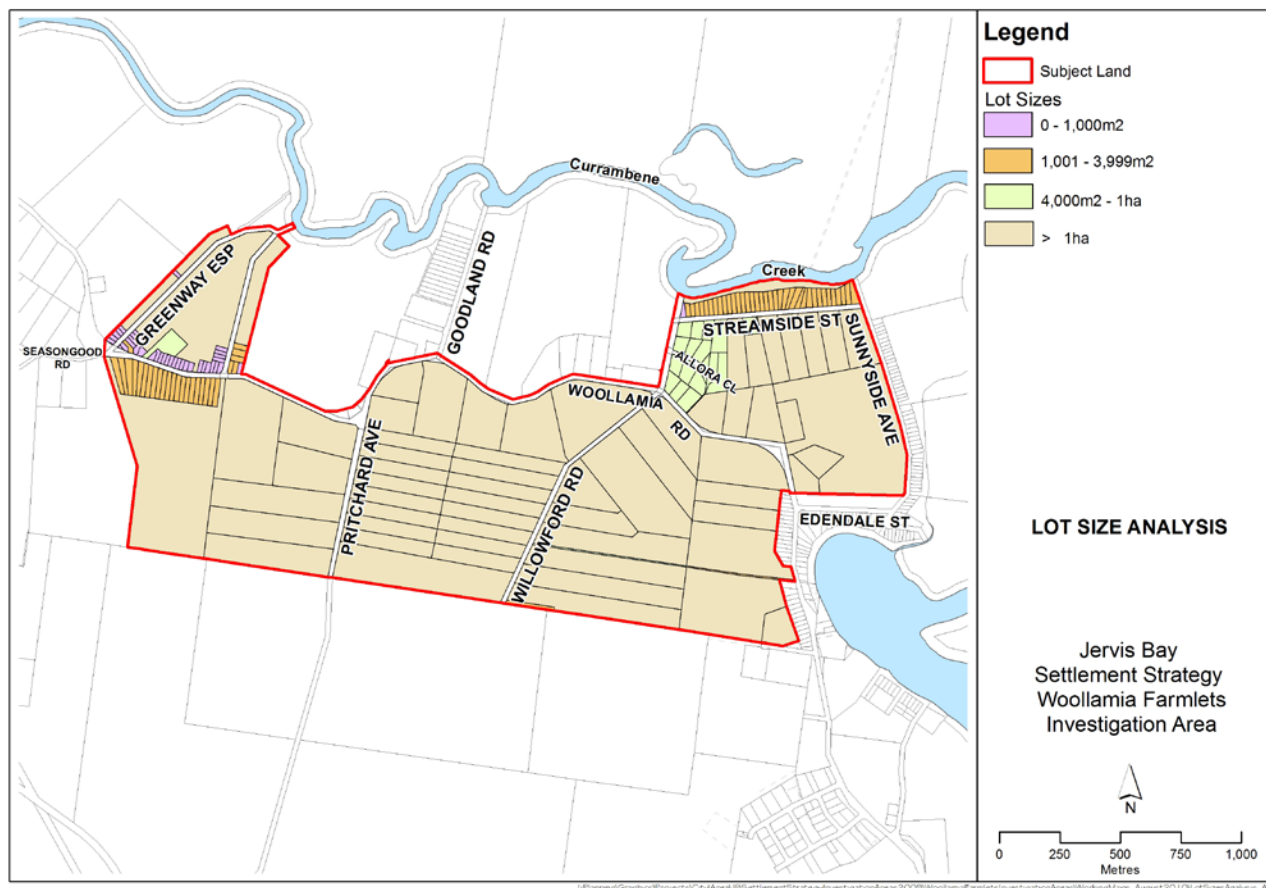


Figure 3: Lot Size Analysis

102 of the 183 lots in the investigation area have authorised dwellings constructed on them (or have approved subdivisions permitting dwellings). Of the remaining undeveloped lots there are approximately 11 lots that have dwelling potential within the 1964 holding boundaries which have not been exhausted. Six (6) of those are located along the eastern end of Streamside Street and land identified under SLEP 1985 as being flood prone.

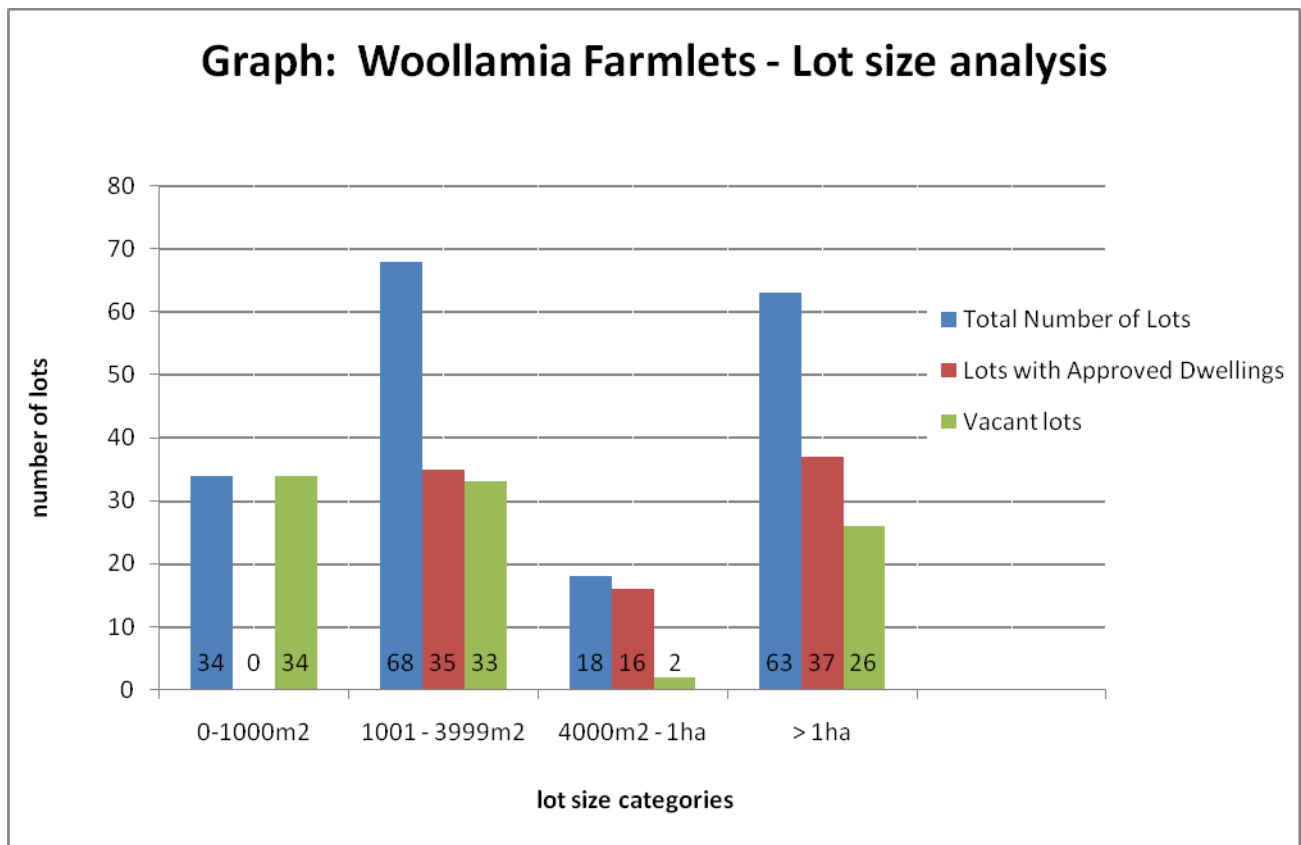


Figure 4: Lot Size Graph

3.4 Environmental Characteristics

The investigation area is located in an area which is predominantly low lying, with large open depressions or wetlands which drain to the floodplains which dissect the area in two points from the north. Additional survey work is required to provide a greater understanding of elevation ranges and contours across the site. Greater investigations into the Geology and soils on the site are required in relation to erosion (and impact on water quality), acid sulphate soils and onsite effluent disposal (if this is the option that is ultimately selected or is viable).

3.5 Constraints

There are a number of constraints which affect the investigation area including vegetation, effluent disposal capacity, water quality/catchment, flooding, flora & fauna, cultural heritage, bushfire and road network limitations.

3.5.1 Bushfire

The Jervis Bay Settlement Strategy objective in terms of Bushfire as follows:

Objective: To ensure that settlements are protected from bushfire risk.

It seeks to achieve this objective by:

- *The provision of appropriate Asset Protection Zones*
- *Asset Protection Zones associated with new development being contained within developable areas, and excluded from protected areas (wildlife corridors, riparian areas etc.)*
- *New settlement to be planned to include bushfire risk management measures that are relative to the associated risk of the locality*

- *Bushfire risk arrangement measures associated with new development will comply with relevant assessment and policy requirements.*

The Section 117 Directions issued under the provisions of the *EP&A Act* stipulate that the relevant planning authority must consider Planning for Bushfire Protection when preparing a Planning Proposal. Council has mapped bushfire prone land across the LGA according to the Rural Fire Service (RFS) *Guidelines for Bushfire Prone Land Mapping* (see **Figure 5 - Bushfire Prone Land**). The Bushfire Prone Lands map indicates that the vegetation category for the majority of the subject land is Category 1.

This is the most hazardous vegetation category, and as a result, special building setbacks, landscaping and construction requirements would apply to development in the investigation area. In considering the preparation of a planning proposal, a detailed bushfire study will be required to determine provisions required to protect life, property and the environment from bush fire hazard (APZ's, perimeter fire trails, access provisions) and to determine the compatibility of land uses in bush fire prone areas and the implications of bushfire protection measures on related factors (e.g. impact of creation of APZ's on flora and fauna, water quality etc).

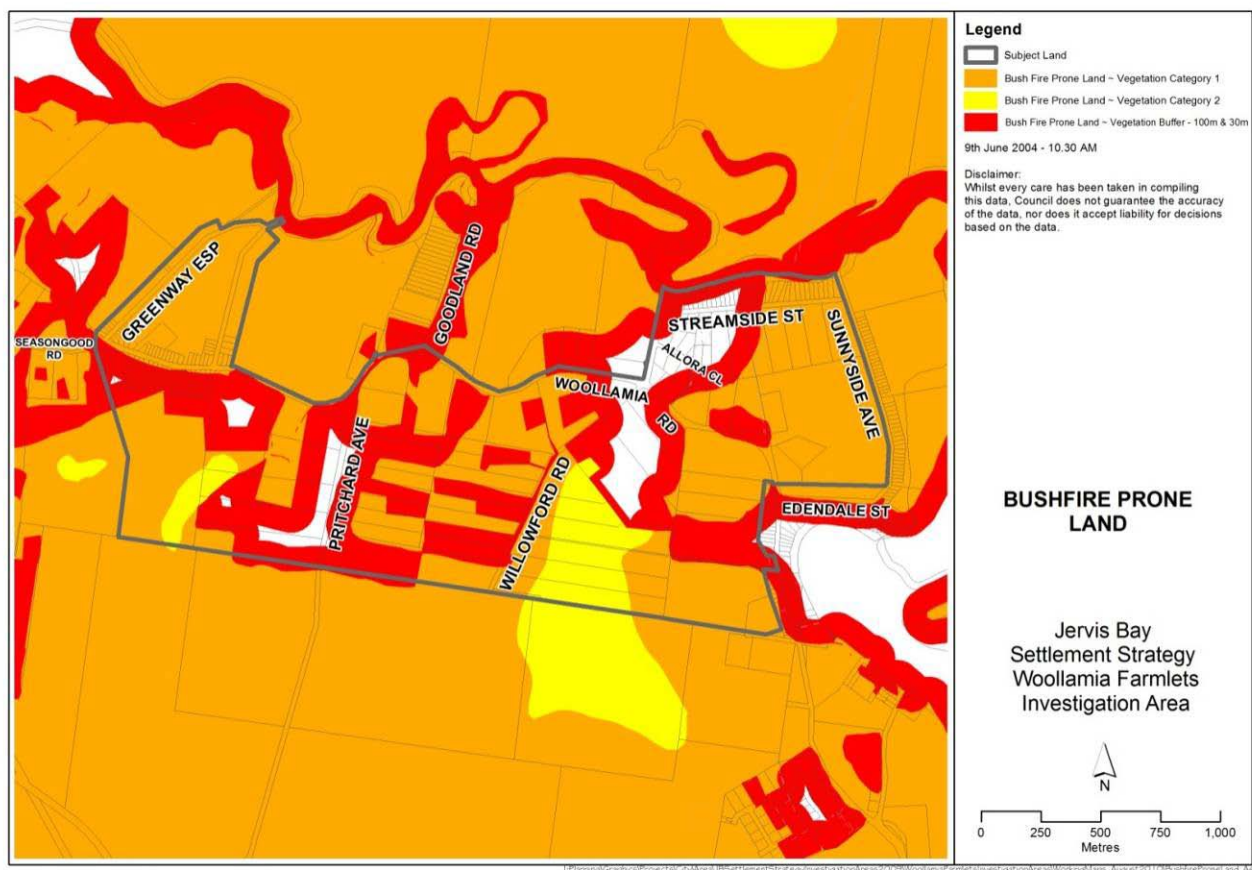


Figure 5 - Bushfire Prone Land

3.5.2 Water quality

Currambene Creek is one of a series of sub-catchments located within the Jervis Bay catchment. Future land use decisions within the Woollamia Farmlets Investigation Area have the potential to create significant impacts on the aquatic quality of the Currambene Creek and associated SEPP 14 Wetlands within this catchment through surface water run-off and sub-surface drainage from developed areas if not properly controlled and managed.

Riparian and total catchment management is a central issue to water quality, bed and bank stability, biodiversity and environmental corridor functioning to ensure the long term health of the Currambene Creek Catchment. The consideration of the impact of vegetation removal, run off from urban and rural areas can influence water quality as can nutrient cycling within the creek. Population increases and development can place pressure on catchments through vegetation removal and run off on SEPP 14 Wetlands which interact and drain to the Currambene Creek sub-catchment.

Water quality and catchment issues are dealt with across a range of current policy documents and planning instruments which relate to this site. The Jervis Bay REP (JBREP 1997) includes specific provisions in relation to catchment protection (clause 11) and the protection of water quality. The plan provides objectives for protecting aquatic ecosystems, drinking water for livestock and recreation. Currambene Creek is also identified in the *Draft South Coast Regional Conservation Plan (2009)* as a vulnerable estuary as it is located within the Jervis Bay Marine Park.

The *Jervis Bay Settlement Strategy* objective in terms of water quality and flow stipulates:

Objective: To ensure that the water quality and flow of waterways and their aquatic, marine and estuarine ecosystems is not detrimentally affected as a result of new settlement in the region.

The Strategy outlines six actions seeking to achieve this objective, in summary including:

- *Development to meet the requirements of the Jervis Bay REP in terms of catchment protection.*
- *New development be located and designed to avoid detrimental impacts on waterbodies and watercourses, including groundwater.*
- *Domestic effluent should not have a detrimental impact on water quality and flow.*
- *New development, including infrastructure, be located, designed and constructed in a manner that does not degrade land based or aquatic ecosystems or processes.*
- *Catchment health indicators be established to supplement interim environmental objectives and assist monitoring and assessment of cumulative impacts of development.*
- *Infrastructure works should not have a detrimental impact on water quality of receiving waters in the region.*

Background water quality levels are currently not available in order to determine what is required to achieve the objective of “no net increase” in the average annual load of key pollutants above the current load from the investigation area. There is currently insufficient monitoring data available to determine the annual average current load of key pollutants from the investigation area and it is anticipated that in order to meet the provisions of the JBREP, monitoring may be required to provide adequate information for modelling of nutrient export.

Further investigation is required to determine how water quality within the catchment and the SEPP 14 wetlands will be maintained and how the objectives of the JBSS will be met.

A comprehensive water quality and flow monitoring program may be required to gather the necessary information and be used to further investigate the impacts and management of urban run off, erosion and subsurface drainage.

3.5.3 Flooding

Council is part way through the process of preparing a Floodplain Risk Management plan for the Currumbene Creek floodplain. In November 2006, Council adopted the *Currumbene Creek and Moona Moona Creek Flood Studies (Lyll & Associates Consulting Engineers)* which defined flood levels in the Woollamia area. Council is about to commence the preparation of a Risk Management Study and Plan, however, these are lengthy processes and will take up to two years to finalise.

Flooding extents are currently based on the 2006 *Currumbene Creek and Moona Moona Creek Flood Studies* which used contours derived from surveyed cross sections of the creek and floodplain and available limited contour data, however these are only approximate. The extent of inundation on individual study areas near the flood fringe need to be determined by more specific and accurate levels and survey data.

Council has previously undertaken Airborne Laser Scanning (ALS) surveys where rezoning was being considered within the floodplain to obtain more accurate height data. This method should also be considered, in conjunction with other strategic projects which might gain value from access to such data.

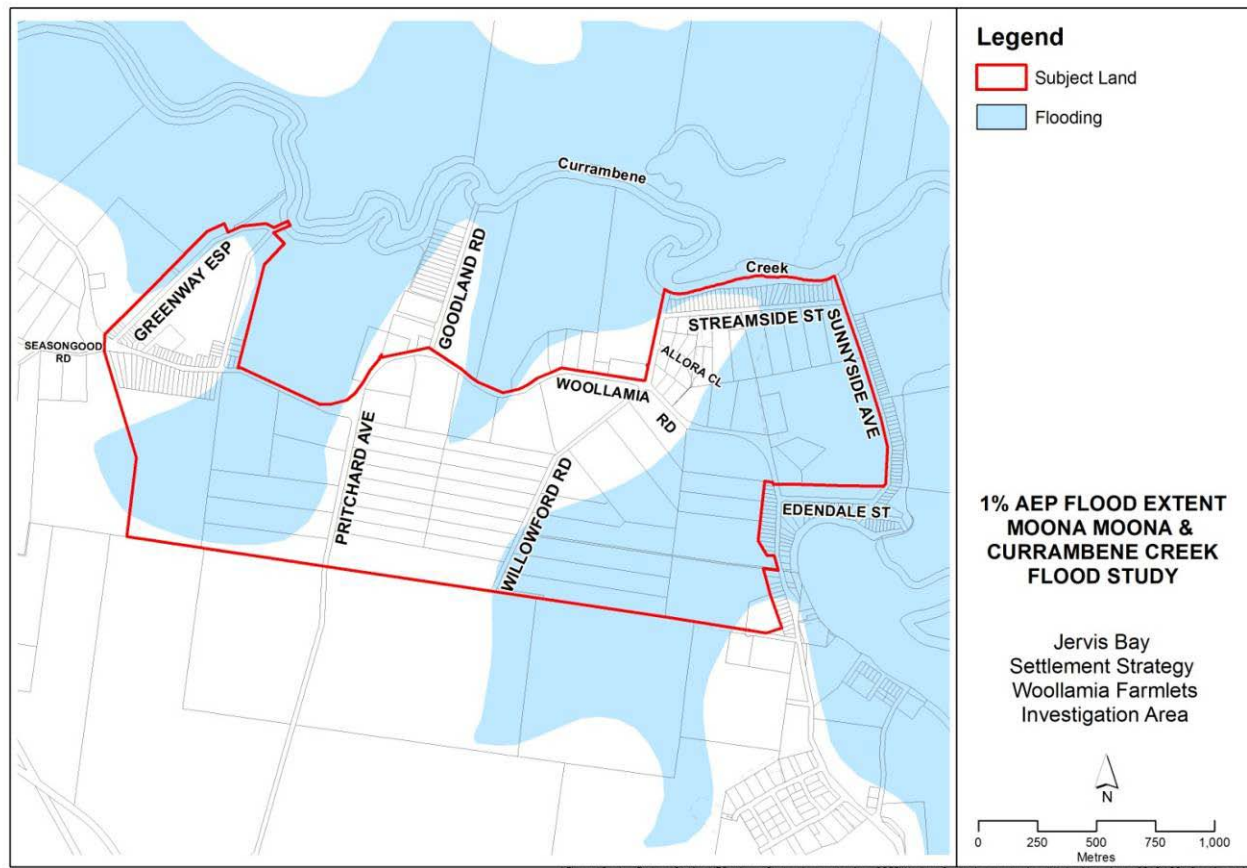


Figure 6: Flooding

The *Currumbene Creek and Moona Moona Creek Flood Study* (2006) defines flood behaviour and predicts flood activity in future flood events, however, it is noted that this study does not currently take into account the potential impacts of Climate Change or the implications arising from the *NSW Sea Level Rise Policy Statement* (2009). The Statement includes benchmarks which are a projected sea level rise of 0.4m by 2050 and 0.9m by 2100. Correspondence from DECCW in relation to other rezoning investigations in the Currumbene Creek area indicate that Councils will be required to adopt sea level rise projects of 0.4m at 2050 and 0.9m at 2100 in land use planning. In addition, correspondence from the NSW Department of Planning in December 2009 required Councils to incorporate those levels in its planning of land which was flood prone and below 4 meters AHD and for which there was no Flood Risk Management Plan in place (or if there was, then such a plan had not taken into account the latest sea level rise and climate change assessment). If a Council did not do that then it could lose its protection under section 733 of the Local Government Act against action from another party for its flood planning advice or approvals. In order to determine potential impact of the sea level rise impact on those areas at the floodline interface, additional detailed survey work is required to be carried out to determine elevations and extent of future flooding.

The Jervis Bay Settlement Strategy states that *"It is not proposed to rezone land below the flood planning level for new residential development"*. The Flooding objective set out on page 55 is:

To identify and acknowledge flooding of land as a constraint to future development.

Action ii in relation to flooding specifies:

“Land within the Flood Planning Area (1% AEP) will not be rezoned to provide for residential development. The zoning of existing urban areas will be reviewed in accordance with relevant Floodplain Management Studies....”

The 1% year flood extent is shown in **Figure 6: Flooding**.

The Section 117 direction issued by the NSW Minister for Planning reinforces that Council shall not rezone land within the flood planning level from Rural to Residential, however, a planning proposal may be inconsistent with this direction, but only if Council can demonstrate that the rezoning is in accordance with a floodplain risk management plan prepared in accordance with the principles and guidelines for the Floodplain Development Manual 2005 or, the provisions of the planning proposal that are inconsistent are of minor significance.

Land located within the 1% flood level would appear to be significantly constrained by both the Jervis Bay Settlement Strategy objectives and the Section 117 Directions that, in circumstances where the whole of a lot falls within this area, the land will be excluded from any planning proposal for the investigation area.

3.5.4 Land Based Biodiversity

The investigation area supports significant tracts of native bushland, which sustain a diverse range of flora and fauna species. Endangered ecological communities (EEC) and habitat corridors identified via the Jervis Bay REP and the South Coast Regional Strategy are located within the investigation area and preliminary consultation with both DECCW and the South Coast CMA have reiterated the importance of retaining existing vegetated areas within the investigation area given the role it plays in maintaining habitat corridors along the Currambene Creek riparian corridor and within the catchment and with maintaining vegetation linkages with the NPWS estate to the south of the investigation area.

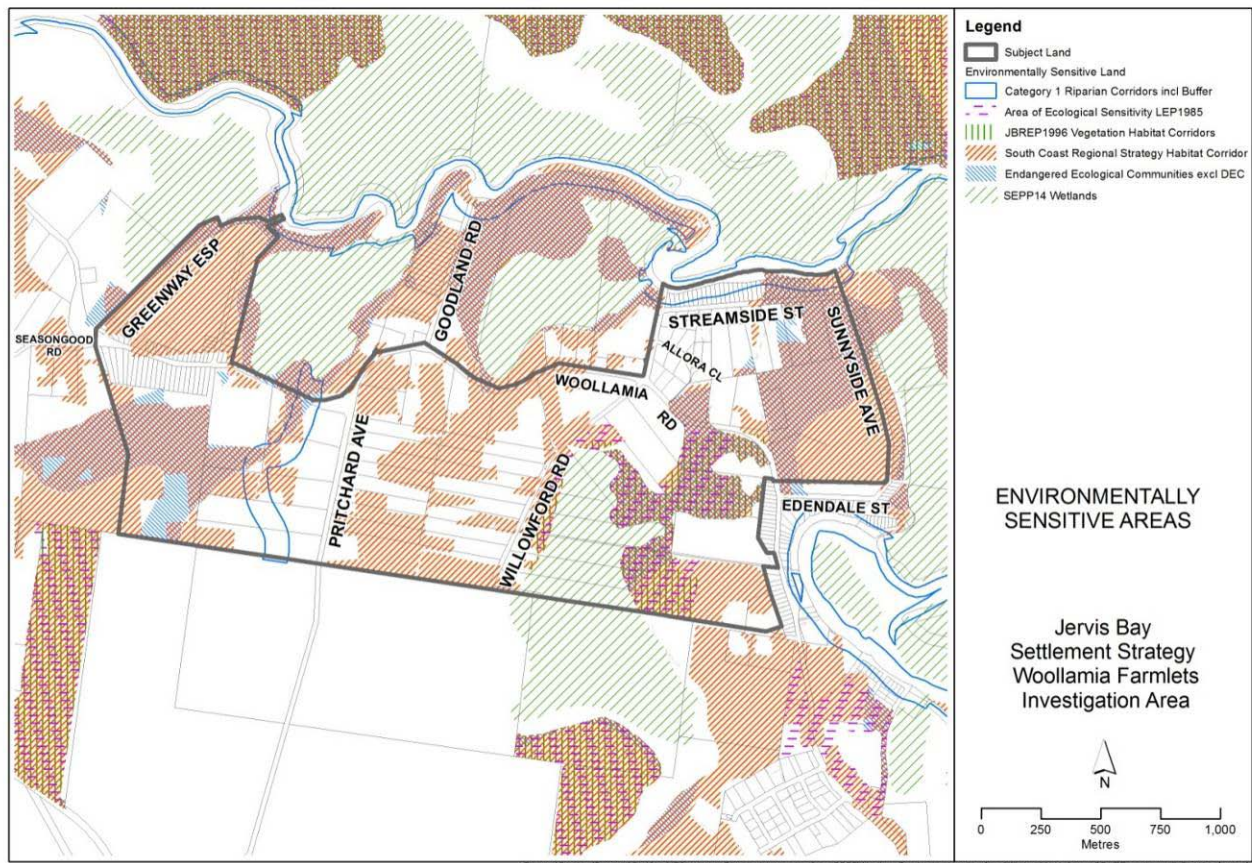


Figure 7: Environmentally Sensitive Land

The Jervis Bay Settlement Strategy outlines twelve actions to achieve the following objective with regard to land based biodiversity;

Objective: *To ensure that significant areas of land-based biodiversity, ecosystems and the function of natural processes are conserved and sustainably managed as a major contribution to the achievement of ecologically sustainable development.*

The South Coast Regional Strategy further indicates that parts of the investigation area function within a habitat corridor. The Strategy requires local environmental plans to protect regionally significant corridors by maximizing the retention of native vegetation.

Currambene Creek is listed in Appendix 4 of the *South Coast Regional Strategy (SCRS)* as having significant habitat values. Map 2 within the SCRS shows biodiversity and conservation assets. In this regard, the Strategy requires that:

The location and conservation significance of areas shown as “Biodiversity Assets Outside Conservation Areas” on Map 2 will be verified by councils in consultation with the Department of Planning and Department of Environment and Conservation; and

Local environmental plans zone all coastal wetlands identified in SEPP 14 to achieve environmental protection and that, future developments in these catchments will need to demonstrate no net impact on the hydrology, water quality or ecology of these wetlands.

The Draft South Coast Regional Conservation Plan (SCRCP) (DECC May 2009) also contains 5 key principles and 3 key priorities with regard to biodiversity planning in the South Coast region. The maintenance and improvement of biodiversity is central to these principles and priorities and it is intended that these guide local-level strategic planning. The Draft SCRCP (2009) identifies parts of the investigation area as having high conservation value. Draft SLEP (2009) utilises a composite of verified data drawn from the above mentioned strategies and planning instruments to create a draft Environmentally Sensitive Area Map (Draft ESL). Significant parts of the investigation area are identified as environmentally sensitive land through this process.

Preliminary discussion with the Department of Environment Climate Change and Water indicated that the rezoning of parts of the study area may constitute a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Approval is required from the Commonwealth Minister for the Environment for actions that have, will have or are likely to have a significant impact on a matter of “*national environmental significance*” and this should be addressed as part of further flora and fauna investigations for the investigation area.

The data available in relation to the vegetation habitats in the investigation area at this stage is based on primary sources which have been verified either through ground truthing or aerial photo verification. In order to accurately review lot size and configuration, and to determine the impact of infrastructure and bushfire protection zones, initial ground survey work is required as part of a larger flora and fauna study.

3.5.5 Marine Based Biodiversity

The Jervis Bay Marine Park was established in 1998. The park covers the whole of Jervis Bay, including Currumbene Creek to its upstream tidal limit. The study area is adjacent to the part of Currumbene Creek designated as a Sanctuary Zone to the west of Goodland Road and a Habitat Zone to the east of Goodland Road.

Preliminary discussions with the Jervis Bay Marine Park Authority indicate that the potential impacts of rezoning on aquatic biodiversity, including impacts on water quality, vegetation management, erosion and sedimentation as a result of clearing, water, storm water and effluent management, protection of riparian vegetation and increase in demand for access to Currumbene Creek all need to be considered.

3.5.6 Acid Sulfate Soils

Low probability acid sulfate soils premodinate on the flood prone parts of the investigation area. Parts of the Northern Boundary of the investigation area are mapped as having a high probability of occurrence of acid sulfate soils.

The Jervis Bay Settlement Strategy notes that land affected by classes of Potential Acid Sulfate Soil should not be developed for new urban or rural residential development. Given that the areas mapped as having a probability of acid sulfate soil also have additional constraints (flood prone & SEPP 14 Wetlands), these areas are likely to be conserved and protected from further development.

3.5.7 Wetlands and Riparian Corridors

A SEPP 14 Wetland (No. 329) is located in the south eastern sector of the investigation area. Additional SEPP 14 Wetlands (No's: 330, 331 + 332) are located north of the investigation area

A Crown land Assessment - Currambene Creek and Adjoining Riparian Reserve was prepared by the NSW Department of Lands in 2003 and covers the 30.48 metre Reserve for public recreation which abuts Currambene Creek and the lots located on the northern side of Streamside St. This reserve was assessed in the Crown Land Assessment as having the suitable use of Environment Protection and Recreation (natural).

3.5.8 Aboriginal and European Archaeology

No known aboriginal archaeological investigations have been carried out within the study area and detailed investigations may need to be undertaken as part of any Planning Proposal. Lot 4 DP 102789 (22 James Farmer Grove), which is located in the south eastern corner of the investigation area, is identified in the Shoalhaven Local Environmental Plan (LEP 1985) as containing an item of environmental heritage, the “*Lone Grave of Sarah Coulon*” which is considered to have “local significance”. Should the rezoning of this south eastern section of the investigation area proceed, an additional European heritage study may need to be carried out.

3.5.9 Infrastructure

Sewage

The ability to manage effluent disposal has the most significant initial impact on the residential development potential of the small lots located on the northern and southern side of Woollamia Road. In considering effluent management, options will be considered which result in on-site management, will largely influence lot size and configuration, and/or the extension of the Pressure Sewerage System from the Woollamia Industrial area.

In this regard, detailed initial studies will need to be prepared into the capacity of the small lots located on the northern and southern side of Woollamia Road to provide on site effluent disposal, and the impact of this on possible lot layout, yield and configuration. The feasibility of extending the existing reticulated system west to Greenway Esplanade will also be investigated.

Water

A 150mm reticulated water main runs along Woollamia Road, whilst the northern end of Pritchard Avenue, the western end of Streamside Street, the northern end of Willowford Road and Allora Close are serviced by a 100mm reticulated water pipe.

Preliminary discussions with Shoalhaven Water indicate that the existing water main infrastructure has additional capacity sufficient to service additional development in the investigation area, however, this should be re-assessed once the method of effluent disposal has been established and further confirmed should any Planning Proposal progress.

Electricity

Whilst there is an existing reticulation system, advice has not yet been sought from Integral Energy in regard to the capacity of the existing infrastructure or any upgrades required to cater for additional loads.

Telecommunications

Telecommunications are available via the existing systems advice has not yet been sought from Telstra in regard to the capacity of the existing infrastructure any upgrades required to cater for additional loads.

Other services

Reticulated Gas is not available in the areas and is unlikely to be provided. Bottled LPG is available from local suppliers.

Transport and Roads

An inventory of roads within the investigation area is summarised below:

Road Name	Status	Existing Construction Standard
Woollamia Road	Council Road D: R137251603 Resumed and Dedicated as Public Road Gaz 24/10/1919 Fol 5803	Sealed
Pritchard Avenue	Council Road DP: R137251603 Resumed and Dedicated as Public Road on 24/10/1919 Fol 5803	Constructed and formed gravel
Willowford Road	Council road DP: DP9289 By virtue of the LG Act 1906 (See D05/38844 on file 1422-02)	Part sealed part gravel constructed
Allora Close	Council Road DP: DP717481 Dedicated to public as road 16/10/1985	Sealed
Streamside Street	Council Road DP: DP9289 By Virtue of LG Act 1906 (See D05/38844 on file 1422-02)	Western end – Constructed Gravel Eastern end – partially formed track (not constructed)
Sunnyside Avenue	Council Road DP: DP9289 By Virtue of LG Act 1906 (See D05/38844 on file 1422-02)	Unconstructed track
Greenway Esplanade West	Council Road DP: R137251603 Resumed and Dedicated as Public Road Gazette	First 120m constructed gravel road. Remainder unconstructed track
Greenway Esplanade East	Council Road DP: DP9289 By Virtue of the LG Act 1906 (See D05/38844 on file 1422-02)	Unconstructed track

Consideration to the costs and timing of Road upgrades should be given if any planning proposal for the investigation area progresses.

4 Preliminary Consultation

A Councillor Briefing was held on Thursday 3 June 2010, in which background information in relation to the Investigation Area was provided and discussed. A further Councillor Briefing was held on Thursday 16 September 2010 which related to the potential extension of the pressure sewer to the Woollamia area.

Preliminary scoping discussions were held with representatives from DECCW, Jervis Bay Marine Park Authority, NSW Rural Fire Service, Southern Rivers Catchment Management Authority and the NSW Department of Planning on Thursday 5 August 2010. Issues identified through these discussions and the desktop analysis included:

- Legislative requirements under *Rural Fires Act 1997*, *Threatened Species Conservation Act*, *Environment Protection & Biodiversity Conservation Act 1999*, *Native Vegetation Conservation Act 1997*, *State Environmental Planning Policy No 71 (Coastal)* and *State Environmental Policy No 14 (Wetlands)*.
- Land and Aquatic based biodiversity
- Water quality - specifically the impact on Currambene Creek, adjacent SEPP 14 Wetlands and total catchment management
- Effluent Disposal - investigate options for sewer extension and/or on site effluent disposal capacity
- Archaeological issues
- Impacts of climate change on flooding
- Infrastructure demand

Preliminary discussions have also been undertaken with the Department of Planning. Discussion centred around Council investigating rural residential development around the Woollamia Road/Greenway Esplanade area with a view to considering an E4 Environment and Living type zoning and to investigate one dwelling per lot on those “discrete” lots located along Willowford Road. The Department of Planning did not raise any strong objection to pursuing two separate planning proposals at this early stage.

5 Conclusion

The desktop study has considered various relevant environmental and socioeconomic issues relating to the investigation area available at this point in time.

The main findings of this desk top study are as follows:

- *There are a number of biophysical constraints including vegetation, fauna, bushfire and flooding significantly affects the area.*
- *The area is environmentally significant in terms of vegetation conservation and water quality within the Currambene Creek catchment*
- *Large sections of the area are significantly constrained by flooding and SEPP 14 Wetlands to the extent that further investigation into rezoning on land identified as flood prone should not be pursued as part of any planning proposal.*
- *Additional separate consideration should be given to the resolution of these “residual” flood prone sites which are unlikely to support residential development.*
- *Large sections of the area have been developed for rural residential purposes. There is neither the demand nor need to pursue intensification of these sites.*
- *There are six (6) discrete lots within the Rural Residential Precinct (Pritchard Avenue, Woollamia Road and Willowford Road) outside the 1% AEP flood area and which do not currently have dwelling entitlements. These sites should be considered for further investigation to enable for one dwelling on each allotment.*

- The small lots located on the northern and southern side of Woollamia Road should be investigated further for potential rezoning for residential purposes having regard to identified constraints.
- A clear process for investigating and resolving the small lot rural subdivisions should be established.
- The method for funding potential studies and investigations should be considered and agreed with owners prior to the commencement of any environmental studies.

The historical subdivision and land holding patterns along with the development of land in the area has resulted three distinct development areas which are identified below in **Figure 8: Proposed Planning Proposal Areas.**

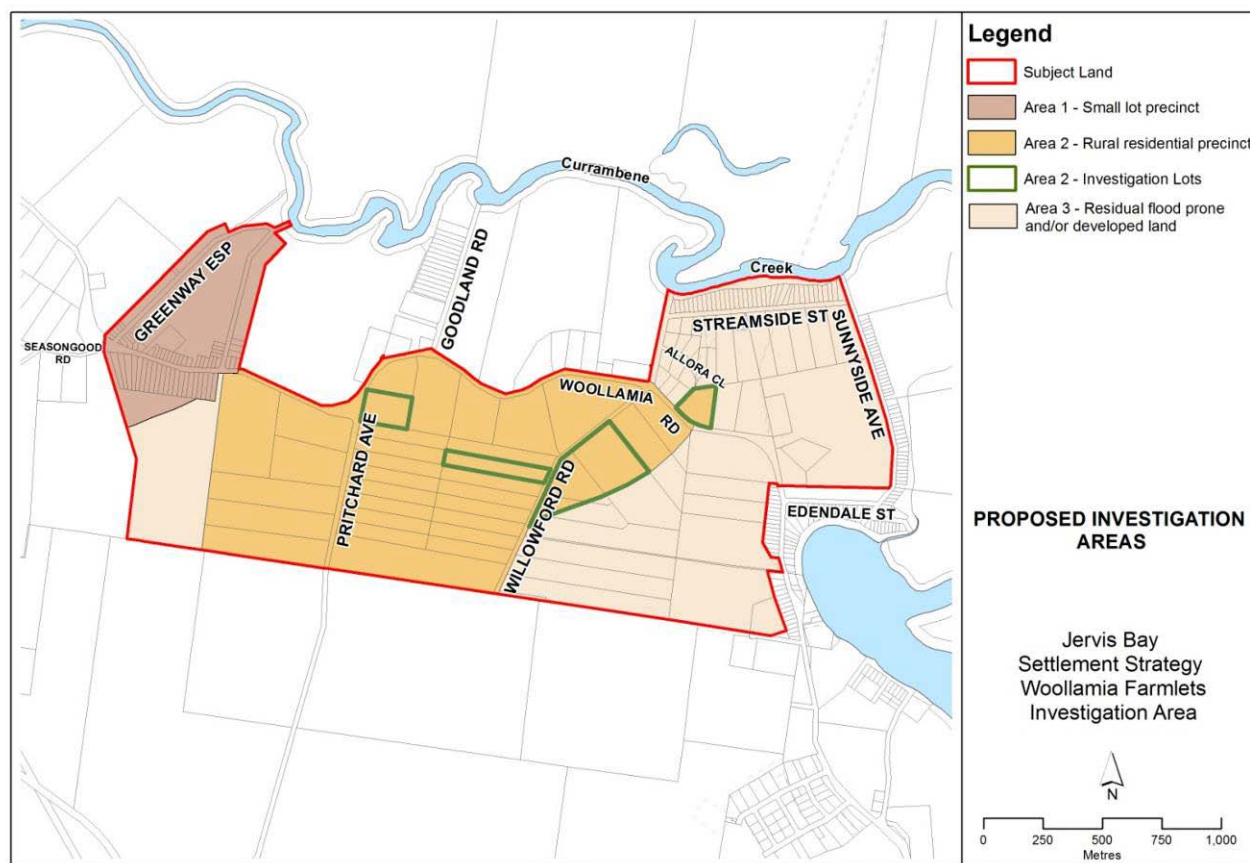


Figure 8: Proposed Planning Proposal Areas

It is recommended that further land use investigations be carried out on the basis of these boundaries as follows:

- Area 1** The **Greenway Esplanade/Woollamia Road area** in which 34 vacant lots are grouped north of Woollamia Road, all with a lot size less than 1,000m² on which a dwelling is not permissible. On the southern side of Woollamia Road, there is a grouping of 13 developed lots and a further 9 vacant lots between 1,000 and 3,999m² on which a dwelling is not permissible.
- Area 2** The **rural residential residue** located largely south of Woollamia Road in *which six (6) discrete rural/residential lots are located within a larger area which has a distinct and established rural residential development pattern. Four of these lots are wholly within the 1% AEP flood area.

Area 3

The **residual land** which is made up of the following land:

- a. Land that is currently developed for residential purposes, or capable of being developed in the Streamside Street/Allora Close area and to its south.
- b. Land located in the 1% AEP flood area (and floodway) along the eastern end of Streamside Street and then continuing south across Woollamia Road down to the south eastern end of Willowford Road.

APPENDIX 1: LAND USE PLANNING and STATUTORY FRAMEWORK

COMMONWEALTH LEGISLATION	<i>Commonwealth Environment Protection & Biodiversity Act (EPBC)1999</i>	The aim of the EPBC is to protect those aspects of the natural and cultural environments which are of national significance and to maintain natural biodiversity. Approval is required from the Commonwealth Minister for the Environment for actions that have, will have or are likely to have a significant impact on a matter of “ <i>national environmental significance</i> ”. The <i>EPBC</i> provides lists which identify numerous endangered species of flora and fauna.
STATE LEGISLATION	<i>Environmental Planning and Assessment (EP&A) Act 1979</i>	The <i>EP&A Act</i> provides the statutory framework for regulating and undertaking land use, Any planning proposal must be consistent with the objectives of the <i>EP&A Act 1979</i> , which aims to enable the efficient use of land without compromising the natural, social and building environments. The preparation of a Planning Proposal must follow the process set out under the Ministerial Directions via section 117 of the Act.
	<i>Threatened Species Conservation Act (TSCA) 1995</i>	The <i>TSC Act 1985</i> requires that certain matters be taken into account when considering whether a proposal is likely to have a significant effect on threatened species, populations or ecological communities, and whether a Species Impact Statement (SIS) is required.
	<i>National Parks and Wildlife Act (NPWA) 1974</i>	The <i>NPWA</i> represents the principle tool for the management of national parks in NSW. The Act also provides for the management of Aboriginal sites in the State. The Act does not allow for such sites to be impacted without authority for the National Parks and Wildlife Service. Further studies are required to determine their significance and the relevance of the <i>NPWA</i> .

	<i>Marine Parks Act (MPA) 1997</i>	This document provides an overview of the zoning and management arrangements for Jervis Bay Marine Park. The objectives of the <i>Marine Parks Act 1997</i>, are: • To conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive system of marine parks, • To maintain ecological processes in marine parks, and where consistent with the preceding objectives: • To provide for ecologically sustainable use of fish (including commercial and recreational fishing) and marine vegetation in marine parks, and • To provide opportunities for public appreciation, understanding and enjoyment of marine parks. The investigation area is adjacent to the Upper Currambene Creek Sanctuary Zone
	<i>Rural Fires Act (RFA) 1997</i>	The RFA aims to prevent, mitigate and suppress fires, co-ordinates bushfire fighting and protect people, property and the environment. The RFA requires Council to consider the threat of bushfire when considering development.
	<i>Water Management Act (WMA) 2000</i>	A controlled activity approval is required under the <i>Water Management Act (WMA)</i> for controlled activities carried out in on or under waterfront land.
STATE PLANNING INSTRUMENTS, STRATEGIES AND POLICIES	<i>South Coast Regional Strategy (SCRS)</i>	The South Coast Regional Strategy (SCRS) was released by the Department of Planning (SoP) in 2007. One of the primary purposes of the SCRS is to ensure that adequate land is available and appropriately located to accommodate projected needs.

	NSW Coastal Policy 1997	The <i>NSW Coastal Policy: A Sustainable Future for the New South Wales Coast</i> (1997) is a State Government Policy that is relevant to the “coastal zone” as defined by the policy. The whole of the Woollamia Farmlets area is affected by the Coastal Zone. The Policy contains principles for managing development in the coastal zone and has an overarching theme of ecologically sustainable development. The policy is a section 117 Direction under the <i>Environmental Planning and Assessment Act 1979</i>, which means Council must consider the Policy’s provisions when preparing LEP’s in the coastal zone. The coastal zones covers all of the investigation area.
	State Environmental Planning Policy No. 14 (Coastal Wetlands)	The aim of this policy is to “<i>ensure that the coastal wetlands are preserved and protection in the environmental and economic interests of the state</i>”. SEPP 14 Wetlands are identified
	State Environmental Planning Policy No. 71 Coastal Protection, 2002	SEPP 71 seeks to ensure that development in the coastal zone is appropriate and suitability located and that there is a consistent and strategic approach to coastal planning and management. SEPP No. 71 sets out those matters which should be taken into account by a council, when it prepares a draft local environmental plan that applies to land to which the Policy applies.
	Deemed SEPP – Jervis Bay Regional Environmental	The Jervis Bay REP/Deemed SEPP includes specific provisions in relation to: <i>Catchment protection (clause 11)</i> <i>Landscape quality (clause 12)</i> <i>Cultural heritage (clause 13)</i> <i>Habitat corridors (clause 14)</i> <i>Disturbed habitat and vegetation (clause 15)</i>

	Plan (JBREP)	<i>New urban releases (clause 16)</i> <i>Tourism development (clause 17); and</i> <i>National Parks (clause 18).</i> The south eastern part of the investigation area is mapped under clause 14 as a Habitat Corridor. Clause 14 requires a proposal to: a) Be designed to minimise disturbance to the existing structure and species composition of native vegetation communities, and (b) Seasonally or nomadically), and (c) Regenerate and revegetate degraded lands with local native species, and (d) Be designed to enhance the retention and augmentation of vegetation native to the area.
	NSW Oyster Industry – Sustainable Aquaculture Strategy (2006)	Identifies the key water quality parameters necessary for sustainable oyster aquaculture and establishes a mechanism to maintain and where possible improve the environmental conditions required for sustainable oyster production. Ensures that the water quality requirements for oyster growing are considered in the State's land and water management and strategic planning framework.
	South Coast Regional Strategy (SCRS) 2006	Sets out a land use plan for the South Coast which aims to balance demand for future growth with the need to protect and enhance environmental values. The JBSS is endorsed by the Strategy.
	Jervis Bay Settlement Strategy (JBSS)	The Jervis Bay Settlement Strategy (JBSS) forms a strategic framework document that provides guidance in terms of the conservation of the Jervis Bay regional. The document does no rezone land for development, it does, however, identify potential development areas that will need to be further investigated and outlines issues that will need to be

		addressed in more detail during the investigation and rezoning process.
LOCAL PLANNING CONTROLS, POLICIES & STRATEGIES	Shoalhaven Local Environmental Plan 1985	Shoalhaven Local Environmental Plan 1985 is the principal planning instrument for the Shoalhaven, providing detailed controls on the use of land within the City, including Woollamia Farmlets. Land within the Woollamia Farmlets is currently zoned Rural 1(d) (General Rural), with a small area of land in the south eastern being zoned Environment Protection 7(a) (Ecology). The erection of dwelling houses on individual allotments of less than 40 hectares is generally not permissible under these zoning provisions. A significantly proportion of the south eastern part of the investigation are also identified as <i>Land of Ecological Sensitivity</i> and Clause 21, sets out the provisions that apply to this land to minimise adverse impacts of development on natural features. The area of the site affected by this provision generally correlates with the area identified as “disturbed habitat and vegetation” under the provisions of clause 15 of the Jervis Bay REP (Deemed SEPP). Zones the subject land Rural 1(d)(General Rural) Zone). One (1) property is also part zoned 7(a) (Environment Protection “A” (Ecology) Zone). The current zoning controls are shown under Appendix 2. The erection of a dwelling house on individual allotments of less than 40ha is not permissible under SLEP 1985 on land zoned 1(d). See Appendix 1 – Extract Relevant Clauses - Shoalhaven Local Environmental Plan 1987
	Draft Shoalhaven Local Environmental Plan 2009	The draft Shoalhaven Local Environment Plan 2009 (not yet exhibited) has been prepared in accordance with the <i>Standard LEP Instrument</i> issued by the NSW Department of Planning in 2006. In its current form, the Draft SLEP proposes zoning the bulk of the site as RU2 (Rural Landscape). Part of the south eastern area of the site is proposed to be zoned E2 (Environmental Conservation). It is anticipated that the existing lot size provisions will be reflected in the Draft LEP. Sections of the Study Area are also identified on the Environmentally Sensitive Land Map (ESL).
	Development	A range of development control plans apply to the Woollamia locality, the majority of which are indirectly relevant to this

	<i>Control Plans and Draft DCP's</i>	study and which play a greater role at the development application or physical construction phase.
OTHER STUDIES	<i>Currambene Creek and Moona Creek Flood Studies (Lyll & Associates Consulting Engineers, Nov, 2006)</i>	The study defines flood behaviour in the creeks and their main tributaries in terms of flows, levels and flooding behaviour for floods ranging between 5 and 200 years ago. The study will form the basis of the development of the Flood Plain Risk Management Plan which Council proposes to commence in 2011.
	<i>Currambene Creek and Adjoining Foreshore Reserve Crown Land Assessment (undated)</i>	Provides a natural resource inventory for Crown Land within and adjoining the foreshore Reserve of Currambene Creek. Undertaken as assessment of the capabilities of the land and identifies suitable and/or preferred uses for the land.

Appendix 2: Shoalhaven Local Environmental Plan 1987 – Relevant clauses

<i>Relevant Clause</i>	<i>Clause Provisions</i>
Clause 9	5.1.1 Zone No. 1(d) (Rural “D” (General Rural) zone) 5.1.1.1.1 1. Objectives of zone The objectives are: (a) To provide opportunities for a range of rural land uses and other development, including those which by virtue of their character require siting away from urban areas; (b) To recognise the potential for high intensity bush fire over wide areas of the zone and to ensure that development does not lead to significant risks to life or property from bush fire or to the implementation of bush fire mitigation measures which will have a significant environmental impact; and (c) To ensure that wherever possible the location, design and management of development is consistent with: (i) the protection of important natural and cultural environments; (ii) the conservation of renewable natural resources such as forests and prime crop and pasture land; (iii) the maintenance of opportunities for economic development of important extractive resources; (iv) minimising conflict between land uses; and (v) any plans for public infrastructure provision or management. 5.1.1.1.2 2. Without development consent

Clause 9 (cont)	Agriculture; forestry (other than on land to which clause 21, 23, 25 or 27 applies). 5.1.1.1.3 3. Only with development consent Any purpose other than a purpose for which development may be carried out without development consent or a purpose for which development is prohibited. 5.1.1.1.4 4. Prohibited Boarding houses; bulk stores; bulky goods premises; car repair stations; cluster housing; dual occupancies (other than attached dwellings); generating works involving wind-powered generators; industries (other than rural industries, extractive industries, offensive or hazardous industries); junk yards; motor showrooms; residential flat buildings; service stations; sexual services premises; shops; warehouses. 5.1.2 Zone No. 7(a) (Environment Protection “A” (Ecology) Zone) 1. Objectives of zone The objectives are: a) To protect and conserve important elements of the natural environment, including wetland and rainforest environments; b) To maintain the intrinsic scientific, scenic, habitat and educational values of natural environments; c) To protect threatened species and habitats of endangered species; d) To protect areas of high biodiversity value; and e) To protect and enhance water quality in the catchment. 2. Without development consent Nil.
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Clause 9 (cont)	3. Only with development consent Agriculture; aquaculture (other than development above high water mark); bed and breakfast accommodation; dwelling houses; roads; structures for educational and recreational purposes which assist in promoting and interpreting the area's ecological values; utility installations (other than gas holders or generating works). 4. Prohibited Any purpose other than a purpose for which development may be carried out only with development consent.
5.1.3 14 <i>Dwelling-houses – Zone Nos 1(a), 1(b), 1(d) and 1(g)</i>	(1) This clause applies to land within Zone No. 1(a), 1(b), 1(d) or 1(g). (2) A dwelling-house may, with the consent of the Council, be erected on land within Zone No. 1(a), 1(b) or 1(d) if the land: (a) has an area of not less than 40 hectares; (b) comprises a 1964 holding of less than 40 hectares and on which no dwelling-house is erected and then only if the Council has taken into consideration: (i) whether or not the land will have an adequate vehicular access that is practical and lawful; (ii) whether or not the erection of the dwelling-house will create or increase the effect of ribbon development along any arterial or main road; and (iii) whether or not adequate utility and other services will be available to the dwelling-house; (c) is a concessional allotment described in paragraph (a), (b), (c) or (e) of the definition of “concessional allotment” in clause 6(1); (d) is a concessional allotment described in paragraph (d) of the definition of “concessional allotment” in clause 6(1) and the Council is satisfied that the dwelling-house will be actually occupied by a person referred to in clause 11(4)(c)(i), (ii) or (iii) as in force immediately before the commencement of City of Shoalhaven Local Environmental Plan 1985 (Amendment No. 127); (e) is the residue of the land remaining after the creation of allotments referred to in clause 11(4), or the residue created under clause 11(5), as in force immediately before the commencement of City of Shoalhaven Local Environmental Plan 1985

	(Amendment No. 127), or is a residue lot created in a subdivision in accordance with clause 11 of Interim Development Order No. 1 - Shire of Shoalhaven; (f) is an allotment created before 20 September 1974 in accordance with clause 11(1), (2) or (3) of Interim Development Order No. 1 - Shire of Shoalhaven as in force when the allotment was created; or (g) is the residue of land remaining after the creation of an allotment under clause 11(7) as in force immediately before the commencement of City of Shoalhaven Local Environmental Plan 1985 (Amendment No. 127) or under clauses 11(3) and 13B(2) and on which a dwelling-house could have been approved by the Council immediately before the subdivision under any of those subclauses. (2A) A dwelling-house may, with the consent of the Council, be erected on land within Zone No 1 (a), 1 (b) or 1 (d) if: (a) the land is an allotment created under clause 11 (3) or (4) for the purpose of a tourist facility, and (b) there is no other dwelling-house or dwelling erected on the allotment, and (c) the Council is satisfied that the dwelling-house is to provide a residence for a manager of the tourist facility and will otherwise be integral to and essential for the proper and efficient operation of the tourist facility
5.1.4 21 <i>Land of ecological sensitivity</i>	(1) This clause applies to land shown on the map by distinctive hatching. That land is taken to be land of ecological sensitivity. (2) The objective of this clause is to minimise adverse impacts of development on natural features, including flora, fauna, landforms and other physical features, and ecological processes. (3) Despite clause 9, the consent of the Council is required for any development, including forestry and agriculture, on land to which this clause applies. (4) In deciding whether to grant consent, the Council must take into account: (a) the objectives of this clause; and (b) the adequacy of the measures proposed by the applicant to avoid, mitigate or remedy any adverse effects of the proposed development on the ecological values of the land and other land in its vicinity.

5.1.5 23 <i>Protection of streams</i>	(1) This clause applies to any perennial water course within Zone No. 1(a), 1(b), 1(c), 1(d), 1(e) or 1(g). (2) For the purposes of this clause, a “perennial water course” means land shown by a continuous blue line on the latest version 1:25,000 scale topographic map for the land to which this clause applies produced by the NSW Land Information Centre and available for public inspection at the office of the Council. (3) The objectives of this clause are: (a) to protect water quality; (b) to protect aquatic habitats and riparian communities; (c) to protect and enhance the function of perennial water courses and their associated vegetation as habitat corridors; (d) to protect the scenic and recreational values of perennial water courses and their associated vegetation communities; and (e) to protect perennial water courses from erosion and sedimentation. (4) Despite clause 9, the consent of the Council is required for any development within 50 metres from the centre line of a perennial water course or, where the perennial water course is greater than 20 metres in width, from the bank of the perennial water course. (5) In deciding whether to grant consent, the Council must take into account: (a) the objectives of the clause; and (b) the adequacy of the measures proposed by the applicant to avoid, mitigate or remedy any adverse effects of the proposed development on the ecological and aesthetic values of the perennial water course concerned and of land in its vicinity. [Amendment #127 – see page xxvi] [Amendment #195 – see page xxxvii]
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5.1.6 26 *Soil, water and effluent management*

- (1) A person must not carry out development that relates to the habitation of land by humans unless and until arrangements satisfactory to the Council have been made by the applicant (and if the applicant is not the owner, the owner also) for the provision of a water supply, facilities for the removal of sewage, and for the drainage of stormwater and other surface water from the land.
- (2) In deciding whether arrangements for drainage of stormwater and other surface water and the treatment and disposal of effluent are satisfactory, the Council must take into account whether the proposed systems can be accomplished in a manner which meets the following objectives:
- (a) economical feasibility and practicality in terms of design, installation and maintenance;
 - (b) protection of public health;
 - (c) protection of surface water;
 - (d) protection of ground water;
 - (e) encouragement of the utilisation of wastewaters as a resource rather than a waste for disposal;
 - (f) protection of community amenity.
- (3) Despite any other provision of this plan, except clauses 2, 9(3) and 21 and the objectives of the zone in which development the subject of this clause is proposed, the Council may consent to the construction of devices which, in the opinion of the Council, are to be used principally for the purpose of soil and water management or water pollution control.
- (4) The Council must not consent to the carrying out of development on the following land involving the need for effluent disposal unless it is satisfied that any habitable building erected or to be erected on that land will be connected to a reticulated sewerage system linked to an operating sewage treatment plant for the locality:
- Callala Beach, Griffin Street area - Land shown as being within Zone No. 2(c) on the map marked "City of Shoalhaven Local Environmental Plan 1985 (Amendment No. 77)".

5.1.7 27 Development on acid sulfate soils	(1) This clause applies to land identified as having high probability to be affected by acid sulfate soils on the map prepared by the Department of Land and Water Conservation entitled "Acid Sulfate Soil Risk Map" dated December 1997 and available for public inspection at the office of the Council. (2) Despite any other provision of this plan, the consent of the Council is required for any development which involves or is likely to involve, through drainage, earthworks, or any other means, the exposure to the atmosphere of any part of soil which contains iron pyrites within land to which this clause applies. (3) The Council must not consent to development described in subclause (2) unless it is satisfied that measures can and will be taken to avoid or mitigate the actual or potential contamination of waterways in the vicinity of the land concerned by acid from acid sulfate soils.
5.1.8 28 Danger of bush fire	(1) The Council must not grant consent to the carrying out of development on bush fire prone land if it is of the opinion that: (a) the development may have a significant adverse effect on the implementation of: (i) any strategies for bush fire hazard reduction or risk management adopted by the Council, or (ii) any relevant provisions of the Act or the <i>Rural Fires Act 1997</i>, and (b) the development, including the arrangements for access to and from the development, may constitute a significant threat to the lives of residents, visitors or emergency services personnel, and (c) the development may give rise to an increased demand for emergency services during bush fire events that will result in a significant decrease in the ability of the emergency services to effectively control major bush fires. Note. Section 146 of the Act provides that bush fire prone land is land recorded by the Council as such on a map certified by the Commissioner of the NSW Rural Fire Service as a bush fire prone land map for the area of the Council. (2) The Council must not grant consent to the carrying out of development on bush fire prone land unless it is satisfied that adequate

<i>Danger of bush fire</i> <i>(cont)</i>	measures are proposed to avoid or mitigate the threat from bush fire, having regard to: (a) the siting of the development, and (b) the design of, and the materials used in, any structures involved in the development, and (c) the clearing of vegetation, and (d) the provision of asset protection zones, landscaping and fire control aids (such as roads and water supplies). (1) Before deciding to grant consent to any development on bush fire prone land, the Council: (a) must have regard to the requirements set out in <i>Planning for Bushfire Protection</i>, ISBN 0 9751033 2 6, prepared by the NSW Rural Fire Service in co-operation with the Department of Planning, dated December 2006, and (b) must be satisfied that those requirements will be met as far as is practicable in the circumstances.
5.1.9 29 <i>Development of flood liable land</i>	(1) Subject to subclause (2), the Council must not consent to the carrying out of development on land which, in its opinion, is flood liable. (2) the Council may consent to the carrying out of development on flood liable land if: (a) the development is for a purpose ancillary or incidental to the use of land for the purpose of agriculture; or (b) the development comprises the extension or alteration of an existing dwelling-house; or (c) the land is in any urban zone under this plan; or (d) the Council has received a flood assessment report, in relation to the land, that addresses each of the matters referred to in subclause (3), and the Council is of the opinion that the development is feasible despite the land being flood liable. (3) In considering an application to which subclause (2) applies, the Council must make an assessment of: (a) the likely levels, velocity, sedimentation and debris carrying effects of flooding;

	(b) the structural sufficiency of any building the subject of the application and its ability to withstand flooding; (c) the effect which the development, if carried out, will or is likely to have on the flow characteristics of floodwaters; (d) whether or not access to the site will be possible during a flood; and (e) the likely increased demand for assistance from emergency services during a flood. (4) In granting consent to a development application made pursuant to subclause (2), the Council may impose conditions that set floor levels, require filling, structural changes or additions or require other measures to mitigate the effects of flooding or assist in emergency situations.
5.1.10 39 <i>Development for certain additional purposes</i>	Nothing in this plan prevents a person, with the consent of the Council, from carrying out development on land referred to in Schedule 9 for a purpose specified in that Schedule in relation to that land, subject to such conditions, if any, as are so specified, notwithstanding that such development may be inconsistent with the provisions of this plan
5.1.11 <i>Schedule 9 Development for certain additional purposes</i> 5.1.12	Lots 43-67, inclusive, DP 9289, Streamside Street, Woollamia, and lots 68, 68a, 68b, 69 and 69a inclusive, DP 15266, Streamside Street, Woollamia, Parish of Currambene, as shown edged heavy black on the map marked "Shoalhaven Local Environmental Plan No. 8" – erection of dwelling-houses and buildings ancillary thereto on allotments in existence on 12th August, 1983, and the subdivision of land into allotments having an area of not less than 4 000 square metres and the erection of rural residential dwellings and buildings ancillary thereto on the allotments so created provided that the Council shall refuse its consent to the erection of a dwelling or other building on so much of the land which in the Council's opinion is subject to flooding at a recurrence interval of at least 1 in 100 years.

APPENDIX 3: ANTICIPATED STUDIES AND INVESTIGATIONS

STUDY/INVESTIGATION NAME	STUDY DETAIL
Survey Information	Additional survey work is required in order to provide more accurate height data to determine flood levels/floodways. Airborne Laser Scanning (ALS) surveys should be considered to enable more accurate height data, and this method should also be considered, in conjunction with other strategic projects which might gain value from access to such data.
Bushfire Study	Have regard to the provision contained with <i>Planning for Bushfire Protection 2006</i> Understand the asset protection zones (APZ's), access roads and other bushfire protection measures that may be required for residential development of the land containing small lots and the implications for vegetation removal, maintenance of biodiversity, urban run off and erosion and water quality within the Currumbene Creek Catchment.
Water quality and flow monitoring	Establish background water quality levels in order to determine what is required to achieve the objective of no net increase in the average annual load of key pollutants above the current load from the study area into the Currumbene Creek subcatchment.
Water Management Study	Investigate the impacts and management of urban run off, erosion and subsurface drainage on SEPP 14 wetlands, Jervis Bay Marine Park and Currumbene Creek and its catchment.

Land Based and Aquatic Biodiversity Study	Review vegetation within the study area to determine conservation significance of threatened species, populations and endangered ecological communities and their habitats identified under the NSW <i>Threatened Species Conservation Act, 1995</i> (and amendments) and the Commonwealth <i>Environment Protection and Biodiversity Conservation Act, 1999</i> (as amended), and the <i>Jervis Bay Marine Parks Act</i>; and Outline site specific land management principals and practices, both essential and desirable , that will help achieve threatened species and biodiversity outcomes; and Recommend any other impact mitigation strategies as may be necessary to permit some form of development on the study area; and, Consider the impact of bushfire protection and infrastructure development works on land based biodiversity; and Consider whether development of the study area will trigger the need for an SIS under the Threatened Species Conservation Act, 1995 or Ministerial approval under the Commonwealth Biodiversity & Conservation Act, 1999 and if so, how development could be modified to avoid significant impact; and Indicate whether rural residential development of individual lots is feasible in respect of threatened species and biodiversity constraints. If not, recommend minimum lot sizes that would be required to achieve satisfactory conservation outcomes; and Recommend, should it be decided to pursue biodiversity certification of the DLEP for the subject area, how this could be achieved as per provision s.126G in the Threatened Species Conservation Act, 1995, with specific reference to the “maintain and improve test”, the biometric tool and appropriate offsets. Review the boundary of the SEPP 14 wetland both within and on the adjoining sites. The review should be based on ground
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	truthing/ field survey, aerial photography and detailed contour information. This task is necessary to progress effluent disposal investigations and has high priority. It should be scheduled for completion early in the project.
Aboriginal Archaeological and Cultural Heritage Study	Review and identify items of Aboriginal and European Cultural Heritage through a comprehensive archaeological survey.
Effluent Disposal Study and options	Need to consider options of on-site effluent against pressure sewerage system. Consider potential impact in terms of funding, feasibility, equity and impact on water quality and catchment.
Servicing Study	Investigate capacity of existing service infrastructure including water supply, telephone and electricity and to determine details and costs associated with any identified upgrades which may be required.
Stormwater Management	Investigate management of stormwater across investigation area.
Feasibility Study – Funding	Investigate options to fund the required environmental studies, infrastructure provision and potential future subdivision. In addition consider implications for unpaid rates and potential land acquisitions.
Economic & Social Assessments	Consideration to be given to population increase and additional demand on community needs, services and infrastructure and economic demand for small lot rural subdivision.

APPENDIX 4: Draft LEP Checklist

Draft LEP Checklist Section 117(2) Directions		Woollamia Farmlets Investigation Area	
Direction No:	5.2 Subject	Relevant	Comment
1	Employment and Resources		
1.1	Business and Industrial Zones	X	
1.2	Rural Zones	√	Review of rural zoning to be considered
1.3	Mining, Petroleum Production and Extractive Industries	X	
1.4	Oyster Aquaculture	√	Currambene Creek
1.5	Rural Lands	√	
2	Environment and Heritage		
2.1	Environmental Protection Zones	√	Parts of study area are ESL
2.2	Coastal Protection	√	Site is located within the Coastal Zone
2.3	Heritage Conservation	√	Item of Environmental Heritage located on Lot 4 DP 1027849 (Sarah Coulon's grave). Aboriginal heritage items /objects/landscapes likely to be located in the investigation area.

2.4	Recreation Vehicle Areas	X	No proposal for recreational vehicle area to form part of planning proposal.
3	Housing, Infrastructure and Urban Development		
3.1	Residential Zones	√	Investigations may include consideration of creation of residential zoned land
3.2	Caravan Parks and Manufactured Home Estates	√	Need to consider maintaining provisions permitting caravan parks.
3.3	Home Occupations	√	Need to consider maintaining provisions permitting home occupations.
3.4	Integrating Land Use and Transport	√	Investigations may include consideration of creation of residential zoned land
3.5	Development Near Licensed Aerodromes	√	Investigation area located in the vicinity of HMAS Albatross
4	Hazard and Risk		
4.1	Acid Sulfate Soils	√	Low probability acid sulphate soils in investigation areas
4.2	Mine Subsidence and Unstable Land	X	Land is not within a Mine Subsidence District nor has it been identified as unstable land.
4.3	Flood Prone Land	√	Flood prone land is located within the study area
4.4	Planning for Bushfire Protection	√	The investigation area is identified as bushfire prone land.

5	Regional Planning		
5.1	Implementation of Regional Strategies	√	The area is covered by the South Coast Regional Strategy
5.2	Sydney Drinking Water Catchments	X	
6	Local Plan Making		
6.1	Approval and Referral Requirements	√	
6.2	Reserving Land for Public Purposes	√	
6.3	Site Specific Provisions	√	