

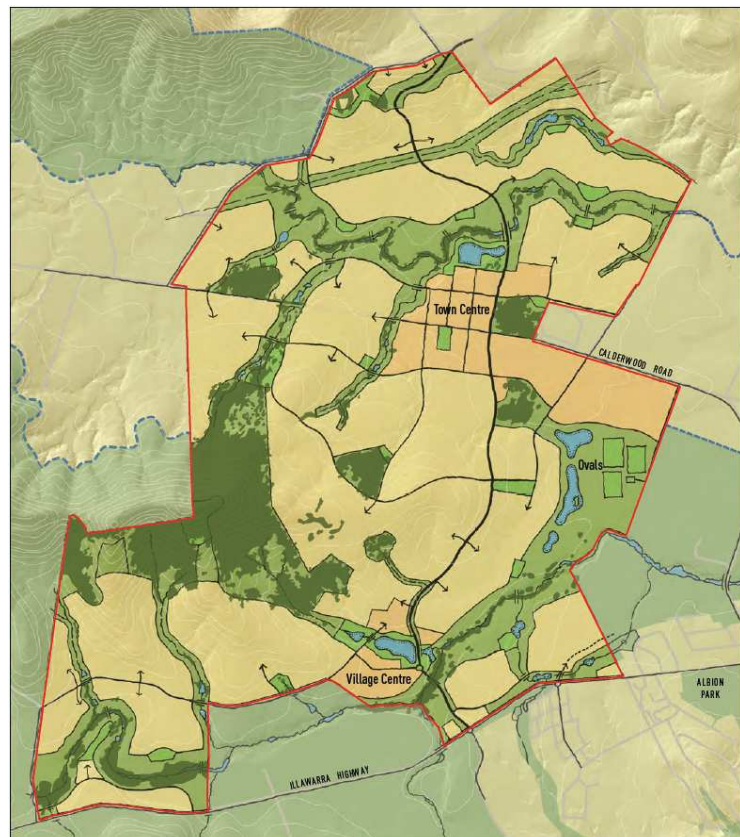


Planning

***Calderwood Concept Plan
Proposed by Delfin Lend Lease
Project Application MP 09-0082***

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

November 2010



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1 EXECUTIVE SUMMARY

This is a report for a Concept Plan application for a site at Calderwood, in the Illawarra region, pursuant to Part 3A of the *Environmental Planning and Assessment Act, 1979* ("the Act").

Delfin Lend Lease (the proponent) is seeking project approval for a Concept Plan for the 700 hectare site to provide for the following:

- Approximately 4800 residential dwellings
- Approximately 50 hectares of mixed use land for a range of retail, commercial and light industrial uses
- Open space and protection for environmentally significant lands
- Internal roads, service infrastructure and community facilities

The estimated project cost of the total development is approximately \$410 million.

A State Significant Site study is also being considered to list the site in Schedule 3 of the State Environmental Planning Policy (Major Development) 2005 and rezone the site for residential, mixed use, environmental protection and public open space uses. This is subject to a separate report.

The proposal was placed on public exhibition for a period of 59 days from 14 April 2010 until 11 June 2010. The Department received a total of 14 letters from public authorities, and 108 letters from the public (69 objecting, 39 in support).

A Stage 1 Project Application which included 320 residential lots and 10 mixed use lots was included in the Environmental Assessment and exhibited with the Concept Plan. This application will be subject to a separate assessment report.

Key Issues

Key issues raised by both public authorities and the public submissions relate to:

- Consistency of the development with the Illawarra Regional Strategy
- Impacts on regional infrastructure, especially the regional road network
- Flooding and water management both on and off the site
- Ecological impacts, especially vegetation loss, riparian corridors and flora and fauna linkages
- Loss of Class 2 agricultural land
- Provision of local infrastructure and community facilities for the development

Preferred Project Report

On 18 August 2010 the proponent amended details of the application via a Preferred Project Report to address issues raised in the agency and public submissions, and by the Department in response to the Environmental Assessment. The amendments included changes to the use of zones and development standards for the SSS listing, further information relating to State and local development contributions, amendments to the development control strategy and revised Statement of Commitments.

Assessment

The Department has assessed the merits of the proposal and is satisfied that the impacts of the proposed development have been addressed via the proponent's Preferred Project Report, the Statement of Commitments and the Department's recommendations. The Concept Plan, with recommended modifications, is supported because it is generally consistent with the objectives of the Illawarra Regional Strategy, is an identified urban release area and contributes to the growth and dwelling targets for the subregion.

The proposal adequately addresses the Director-General Requirements for the project. On these grounds, the Department is satisfied that the site is suitable for the proposed development and that the project will provide environmental, social and economic benefits to the region, subject to modifications to the Concept Plan. All statutory requirements have been met.

2 BACKGROUND

2.1 THE SITE

2.1.1 Site context and location

The site is located approximately 20km south-west of Wollongong and 10km west of Shellharbour City Centre. The site is approximately 700 hectares with approximately 107 hectares within the Wollongong Local Government Area, and the remaining 593 hectares within the Shellharbour LGA.

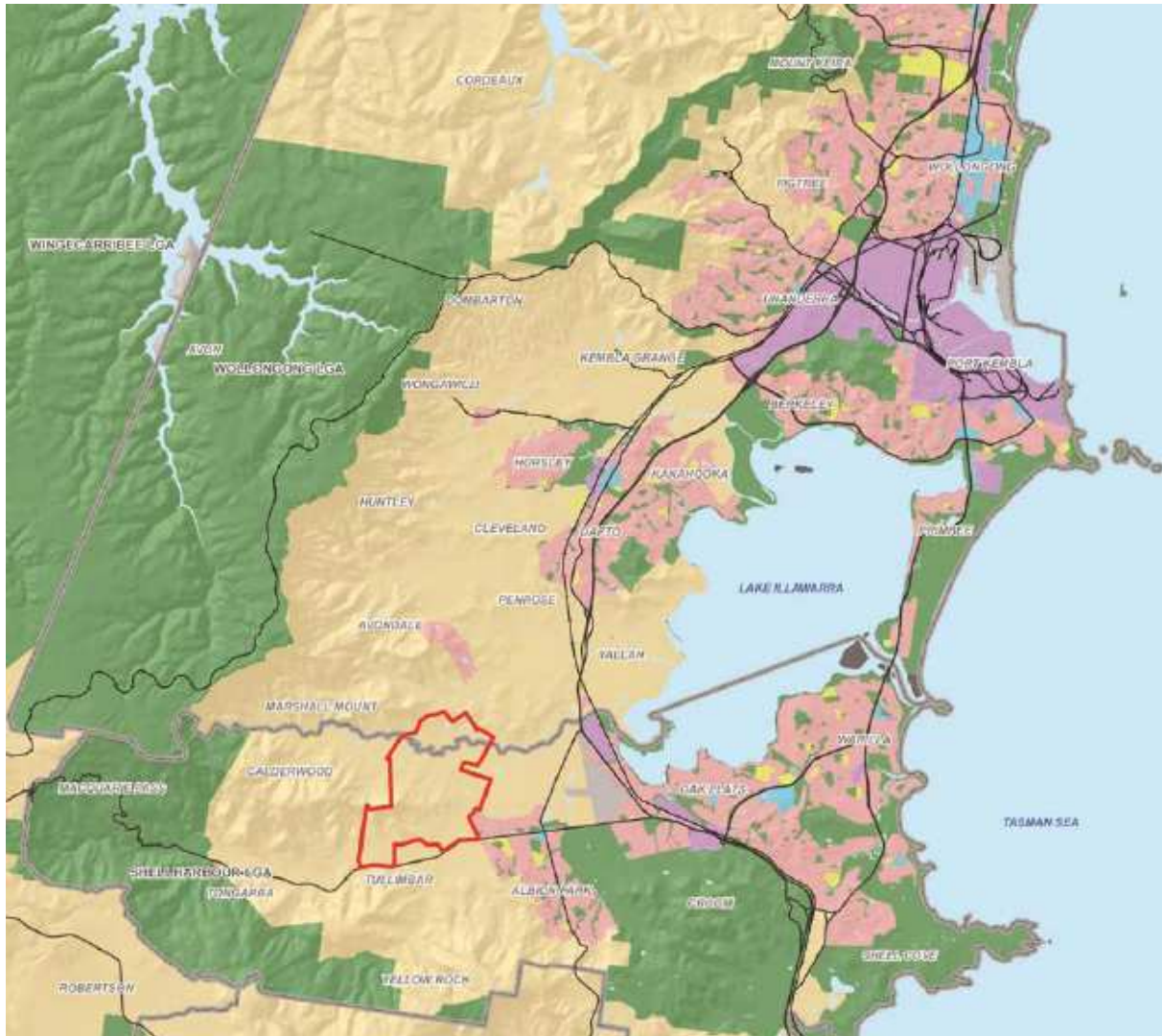


Figure 1. Approximate site location of the proposed development

2.1.2 Detailed location

The Illawarra Highway adjoins a large part of the southern boundary of the site. Marshall Mount Road runs along the northwest boundary. North Macquarie Road and Calderwood Road run through the site. The existing suburb of Albion Park and the newly developing suburb of Tullimbar are adjacent to the south-eastern part of the site. The southern part of the West Dapto Urban Release area (Yallah/Marshall Mount) adjoins the northern boundary of the site.

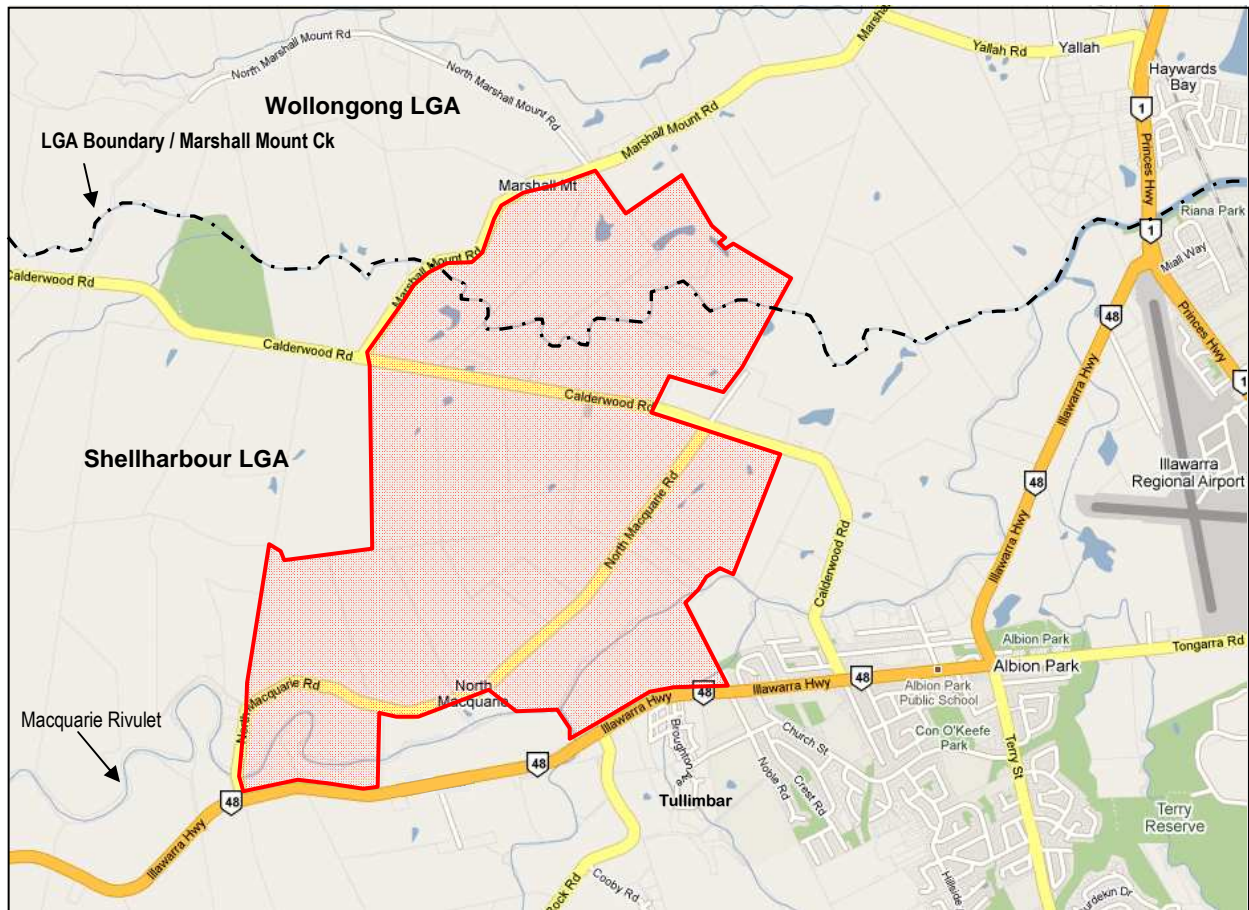


Figure 2. Detailed location of the proposal

2.1.3 Current land uses

The site comprises 22 existing lots in private ownership.

The site is primarily used for a range of rural uses including low intensity farming, agistment and dairying. Properties within the site are in private ownership, other than road reserves which are owned by Council, and some waterways which are under the control of the Department of Lands.

A Methodist cemetery is located in the centre of the site, on the southern side of Calderwood Road.

2.1.4 Natural site features

Two main watercourses run through the site, originating from the Illawarra escarpment 2-3km to the east, and drain into Lake Illawarra 3km to the east. Macquarie Rivulet runs through the southern part of the site, and Marshall Mount Creek, which also forms the boundary between Shellharbour and Wollongong City Councils, runs through the northern part of the site. A number of minor tributaries are also located throughout the site.

Johnson's Spur is located in the western part of the site. This is the highest part of the site (approx RL 180 AHD) and contains a significant amount of remnant native vegetation. Much of the remainder of the site is gently undulating and has been cleared for pastoral uses, with some patches of vegetation and several isolated trees remaining. The lowest areas of the site are generally in the eastern part and less than RL 20 AHD.



Figure 3. Aerial photograph of the site

2.1.5 Surrounding development

South

Albion Park, a suburb of Shellharbour, adjoins the south-east of the site. It is an established urban area with an estimated population of approximately 11,000 residents. The adjacent suburb of Albion Park Rail has an estimated 7,000 residents, according to ABS 2006 Census data.

Tullimbar, which adjoins the western edge of Albion Park, was approved for urban development on a 80 hectare site by the Land and Environment Court in 2004. The approval included 851 residential lots and a village centre. The site is zoned Mixed Use Residential (e) under the Shellharbour Local Environmental Plan 2000. The Tullimbar site is currently being developed in stages, with approximately 50 dwellings having been completed. A primary school has opened and recently a tavern/conference centre was approved, however there are currently

no buildings within the village centre. The Tullimbar site is located in a floodplain and required cut and fill works, creek rehabilitation and stormwater management as part of the approval.

Land to the south-west of the site is predominantly rural, similar to the properties on the subject site.

North

Land adjoining the north of the site is known as Marshall Mount, and has similar land use and features to the subject site. It is also part of the West Dapto Release Area.

West

Rural properties are located further west of the site, with the Macquarie Pass National Park and Illawarra Escarpment located approximately 3km kilometres west.

East

Rural properties, similar in size and use of those comprising the subject site adjoin the eastern part of the site. The Illawarra Regional Airport is located approximately 1km east of the site and the suburbs of Albion Park Rail and Oak Flats are located further east.

3 PROPOSED DEVELOPMENT

3.1 THE PROPOSED DEVELOPMENT

The Concept Plan application seeks approval for the following on the site:

- Approximately 4800 residential dwellings
- Approximately 50 hectares of mixed use land for a range of retail, commercial and light industrial uses
- Provision of open space and protection of environmentally significant lands
- Internal roads, associated infrastructure and community facilities

A detailed site layout plan is at Figure 4 overleaf.

Urban Design

A Development Control Strategy (DCS) was prepared and proposes standards for urban design, built form and environmental management for the site. It includes street design and hierarchy, landscape treatments for different types of open space, and public domain materials and treatments.

The DCS establishes different residential character areas across the site and identifies different types of dwellings for each character area, ranging from standard detached dwellings, attached integrated housing (subdivision following dwelling construction), and apartment buildings.

The Town and Village Centres will enable a range of uses including retail, commercial and community facilities and feature the highest residential densities. Development adjoining Johnson's Spur and the south western boundary (adjoining rural properties) will feature the lowest densities. The majority of residential neighbourhoods are proposed to feature a wide range of attached and detached dwelling types, although no apartment buildings are proposed. The DCS is discussed in further detail in Section 5.8 of this report.

Internal Road Network

The proposed internal road layout is shown in Figure 4 overleaf. The main internal road serving the site will be a north-south sub-arterial road that connects to the Illawarra Highway in the south opposite Yellow Rock Road, and Marshall Mount Road in the north. This main internal road will be supplemented by a number of collector roads.

The key external road connections include:

- Four connections to the Illawarra Highway
- Calderwood Road to the east and the west
- Marshall Mount Road in the north-west.

Community Facilities

Based on an assessment of the needs of the surrounding community and the future population of Calderwood the proposal includes the following facilities:

- A large multipurpose community resource centre incorporating a branch library (900m²), in the Town Centre
- Temporary community centre in the Village Centre
- Community development strategy and worker
- Land for 2 public primary schools, a special needs unit and 1 high school
- One private school
- Up to 3 child care centres

Landscaping and Open Space

A Landscape and Open Space Masterplan was prepared and provides an indicative layout of public open space and landscaping treatments for public lands. The proposal includes a series of local, district and city wide parks which aim to provide quality open space areas within close distance to where people live. Drainage corridors and riparian zones are also proposed to provide areas of open space throughout the site.

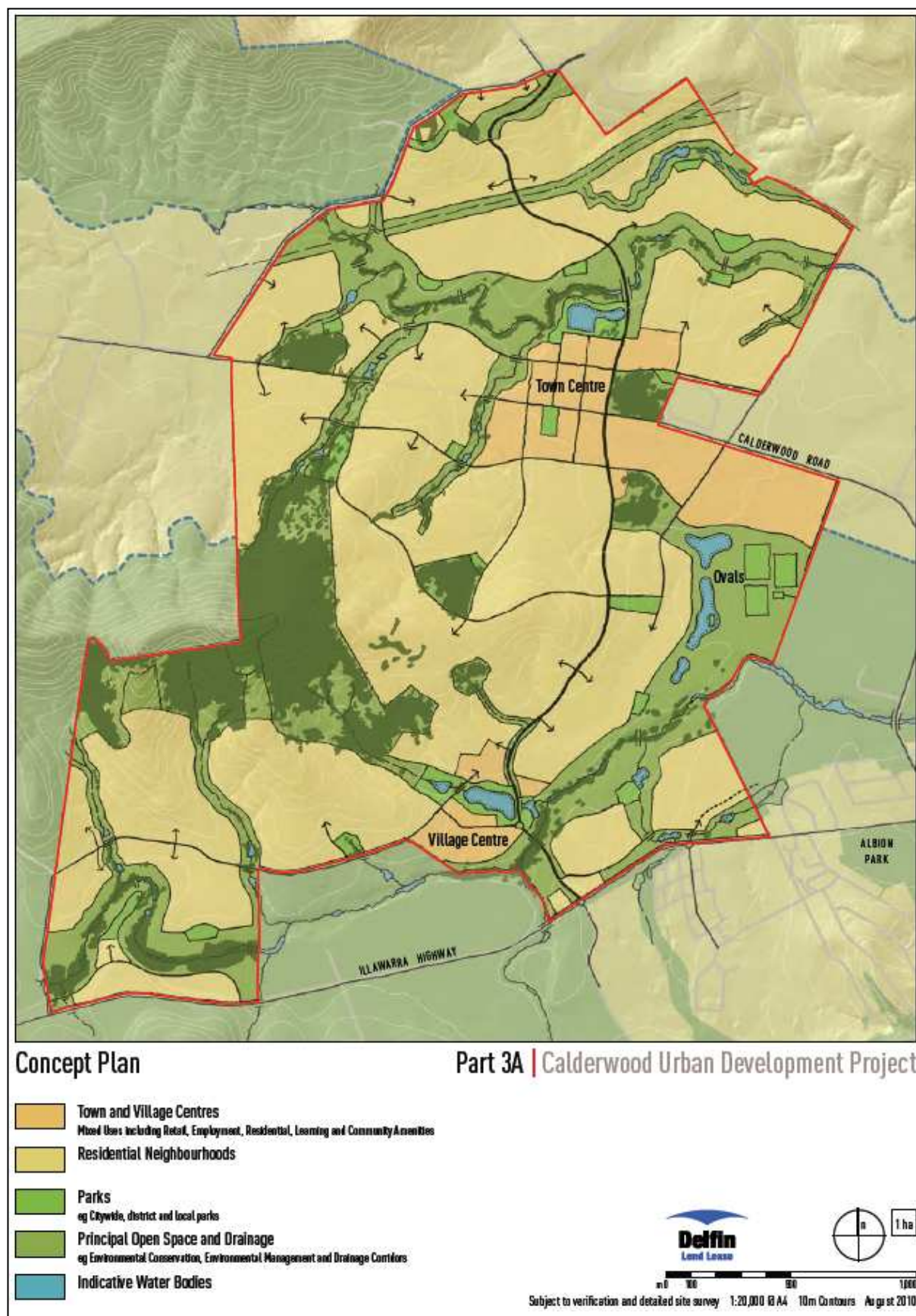


Figure 4. Proposed Concept Plan

3.2 PREFERRED PROJECT REPORT

On 18 August 2010, the proponent submitted a Preferred Project Report (PPR) to address issues raised in the agency and public submissions, and issues raised by the Department in response to the Environmental Assessment. The PPR amended the original proposal to include the following:

- Revision of the zones and development standards for the proposed amendment to the Major Development SEPP to list the site as a State Significant Site;
- Options for ownership and funding of maintenance of land proposed for public purposes, including a reduction in amount of land proposed to be dedicated free of cost to the relevant Council;
- Amended development control strategy;
- Clarifications of the proposed Asset Protection Zones (APZs) to address bushfire management;
- Further information relating to State and local development contributions;
- Responded to issues raised in the government agency and public submissions;
- Revised Statement of Commitments.

The proponent also advised that the Stage 1 Project Application would be subject to a separate PPR.

3.3 STAGING

Calderwood is proposed to be developed in stages over a period of at least 20 years. The Stage 1 application currently being considered by the Department is located in the south-eastern part of the site, with further development to extend within the site from this Stage.

3.4 FUTURE APPLICATIONS

The Concept Plan proposes that some future applications be subject to Part 3A. These areas are identified in Appendix L of the PPR and include Stage 1 and parts of the site requiring regrading of the floodplain, the riparian corridors for Macquarie Rivulet and Marshall Mount Creek, the road bridges and the town centre.

4 STATUTORY CONTEXT

4.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 AND STATE ENVIRONMENTAL PLANNING POLICY (MAJOR DEVELOPMENT) 2005

On 16 April 2009, the Minister for Planning declared the development was a Major Project under Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act), and authorised the submission of a Concept Plan and Stage 1 Project Application. The proposal was deemed to be a Major Project as it consists of residential and commercial development with a Capital Investment Value (CIV) of more than \$50 million and, in the opinion of the Minister, achieves State or regional planning objectives pursuant to Clause 13, Schedule 1 of the State Environmental Planning Policy (Major Projects) 2005 (Major Projects SEPP).

The CIV of the total development is approximately \$410 million.

A draft SEPP to list the site under Schedule 3 of the Major Projects SEPP has been prepared and is the subject of a separate submission to the Minister. The draft SEPP proposes to rezone the site to enable the development proposed under the Concept Plan.

The SEPP will establish zones across the site, and provide controls for minimum allotment sizes and maximum heights. The following table provides a summary of the zones and controls recommended for the SEPP by the Department:

Zone	Minimum Allotment size	Maximum Height
R1 General residential	300m ²	9m
R5 Large lot residential	2000m ²	9m
B4 Mixed Use	0	18m
RU1 Rural Landscape	40 hectares	9m
E3 Environmental Conservation	40 hectares	6.5m
E2 Environmental Management	10 hectares	6.5m
RE1 Public Recreation	N/A	N/A

4.2 STATE ENVIRONMENTAL PLANNING POLICY NO 55 – REMEDIATION OF LAND

SEPP 55 promotes the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The Proponent has provided a Stage 1 contamination assessment which concludes that overall potential for contamination at the site is considered to be low, although further investigations, incorporating a Stage 2 contamination assessment, will be required in areas of concern identified on the site.

4.3 STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

The main objectives of the SEPP Infrastructure are to facilitate the effective delivery of infrastructure by improving regulatory certainty through consistent planning management for infrastructure and providing greater flexibility in the location of infrastructure and service facilities.

4.4 NSW THREATENED SPECIES CONSERVATION ACT 1995 (TSC ACT) AND ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

The site contains three Endangered Ecological Communities (EEC) which are listed under the TSC Act – Illawarra Sub Tropical Rainforest in the Sydney Basin EEC, Illawarra Lowlands Grassy Woodland in the Sydney Basin EEC and River-Flat Eucalypt Forest on Coastal Floodplain listed EEC. The proponent identified four threatened flora species, and eight threatened fauna species recorded in the EPBC Act to be likely or potentially

likely to occur on the site, although none were found. An assessment of the impacts of the proposal were considered, and the impacts considered to be acceptable subject to mitigation and management measures.

Under the EPBC Act, it is necessary to obtain an approval from the Commonwealth Minister for the Environment and Heritage to carry out a "controlled action" where it is likely to have a significant impact on a "matter of national environmental significance". Under the EPBC Act, matters of National Environmental Significance include listed threatened species, ecological communities and migratory species.

On 30 March 2010, the Proponent provided documentation to confirm that the Department of the Environment, Water, Heritage and the Arts had determined that the proposed development is not a controlled action, and does not require further assessment and approval under the EPBC Act before it can proceed.

4.5 NATIVE VEGETATION ACT 2003

The Native Vegetation Act 2003 requires approvals for works to clear native vegetation. Section 5 of the Act provides that the Act does not apply to land described in Part 3 of Schedule 1 which includes land within a zone designated "residential" under an Environmental Planning Instrument. As the proposed amendment to the SEPP (Major Projects) will rezone the majority of the site as R1 General Residential it is likely that no further approvals will be required for this zone. Removal of vegetation elsewhere on the site will be considered in this report.

4.6 WATER MANAGEMENT ACT 2000

Approvals are required under the Water Management Act 2000 for certain activities that will be undertaken on the site including dewatering. Under 75U of the Act, where a Concept Plan has been approved these activities still require separate approval under the Water Management Act 2000 but the "Integrated Development" procedures under Part 4 would not apply to the corresponding Development Application.

5 ASSESSMENT

5.1 LEGISLATIVE REQUIREMENTS OF THE DIRECTOR GENERAL'S REPORT

Section 75I(2) of the Act and Clause 8B of the Environmental Planning and Assessment Regulation 2000 provides that the Director-General's report is to address a number of requirements in the Director General Report. These matters and the Department's response are set out in Table 1 below.

Table 2: Department's response to legislative assessment requirements

Section 75I(2) criteria	Response
Copy of the proponent's environmental assessment and any preferred project report	The Proponent's EA and Preferred Project Report are included as appendices to this report.
Any advice provided by public authorities on the project	All advice provided by public authorities on the project for the Minister's consideration is set out at Appendix C of this report.
Copy of any report of a panel constituted under Section 75G in respect of the project	No statutory independent hearing and assessment panel was undertaken in respect of this project.
Copy of or reference to the provisions of any State Environmental Planning Policy that substantially govern the carrying out of the project	Each relevant SEPP that substantially governs the carrying out of the project is identified and assessed.
Except in the case of a critical infrastructure project – a copy of or reference to the provisions of any environmental planning instrument that would (but for this Part) substantially govern the carrying out of the project and that have been taken into consideration in the environmental assessment of the project under this Division	An assessment of the development relative to all environmental planning instruments is provided in section 4 of this report and in the attachments.
Any environmental assessment undertaken by the Director General or other matter the Director General considers appropriate.	The environmental assessment of the project application is this report in its entirety.
A statement relating to compliance with the environmental assessment requirements under this Division with respect to the project.	The proponent's EA addressed the Director-General's Environmental Assessment Requirements and is considered to have satisfied those requirements as addressed in this report. Refer to the Conclusion in Section 8 of this report for a statement relating to this requirement.
Clause 8B criteria	Response
An assessment of the environmental impact of the project	An assessment of the environmental impact of the proposal is discussed in section 5 of this report.
Any aspect of the public interest that the Director-General considers relevant to the project	The public interest is discussed in section 7 of this report.
The suitability of the site for the project	This report assesses the suitability of the site for the project in discussion of the key issues in section 5 of this report
Copies of submissions received by the Director-General in connection with public consultation under section 75H or a summary of the issues raised in those submissions.	A summary of the issues raised in the submissions is provided in section 6 and Appendix C of this report.

5.2 STRATEGIC PLANNING

The proponent prepared a number of reports which were included in the EA to justify the timing of the release of the site for urban development, including an Illawarra Land and Housing Supply report, and consideration of the Sustainability Criteria in the Illawarra Regional Strategy (IRS). The proponent maintains that the criteria in the IRS for releasing Calderwood earlier than originally proposed have been met, as population has grown at a faster rate than predicted, and housing production has not been meeting the targets in the IRS, and thereby not satisfying demand. The proponent maintains that the proposal will have a positive impact on housing affordability in the region by increasing the availability and diversity of housing, in particular market level housing for the lower to median end of the market, producing a product that will not undermine other release areas.

Submissions were received from Wollongong and Shellharbour Councils, as well as the public submissions, with the following issues raised:

- the timing of the release is not consistent with the IRS,
- the potential impact of the development on other release areas in the region, especially West Dapto,
- the viability of providing essential regional and local infrastructure to service the site,
- part of the site is outside the IUDP map and should not be part of the urban release area.

Strategic Planning publications

A summary of the relevant planning policies and documents have been provided below:

State Plan

The most recent "State Plan 2010: Investing in a Better Future" sets new targets and actions to increase the supply of affordable housing for low and moderate income households in NSW, and includes increasing the availability of zoned lots so there is enough land for future supply.

National Housing Supply Council

The National Housing Supply Council is an independent group established by the Federal government in May 2008. The 2nd State of Supply Report was released in April 2010 to monitor housing demand, supply and affordability in Australia, and to highlight current and potential gaps between housing supply and demand from households.

The report found dwelling production from year to year varies significantly. It found that in 2008 and 2009, building activity levels generally dropped as a result of the global financial crisis, and this impact was particularly significant in NSW.

The report also found that there are still significant lags between when land is first released for urban development and when dwellings are completed. For example, it generally can take between 6 and 15 years to progress from raw land to new dwellings for sale. This highlights the importance of ensuring that a sufficient supply and mix of land and housing is available to reduce pressures on housing affordability.

Illawarra Regional Strategy 2006-31

The Illawarra Regional Strategy 2006-31 (IRS) provides a broad, high level planning framework to guide development in the Illawarra region for 25 years to 2031. It covers economic, environmental and housing issues for the development of the region. The IRS states that an additional 38,000 new dwellings will be needed to cater for the forecast increased population of 47,600 in the Illawarra region by 2031, with 50% of these dwellings to be in new release areas. The IRS envisaged a housing production target of 775 dwellings a year in new release areas, with 500 dwellings a year from West Dapto, identified as the priority new release area for the region.

The IRS states that Calderwood provides an opportunity for an additional new release area if demand for additional housing supply arises because population growth in the region is beyond projections and the ability of identified development areas such as West Dapto to satisfy housing demand.

The IRS Update was released in 2009. The report states that the population in the Illawarra region has grown at a faster rate than forecast in the IRS. It states that although this is not necessarily indicative of future growth rates, it does recognise that there is an ongoing need to provide an affordable housing supply in the Illawarra.

The Illawarra Urban Development Program (IUDP) supports the IRS by reporting on development and population data, and provides predictions to assist the Department with the ongoing strategic planning for the region.

The IUDP update continues to identify Calderwood as a release area providing up to 8000 dwellings, with at least 200 dwellings constructions forecast per year from 2010-11, subject to the approval of the State Significant Site and Part 3A applications.

The proposed Calderwood development site extends further south to the Illawarra Highway than the site identified in the previous IUDP, and also extends further north into part of the Stage 5/Yallah Marshall Mount precinct of the West Dapto Release Area. It also does not extend as far to the east or west as identified in the IUDP

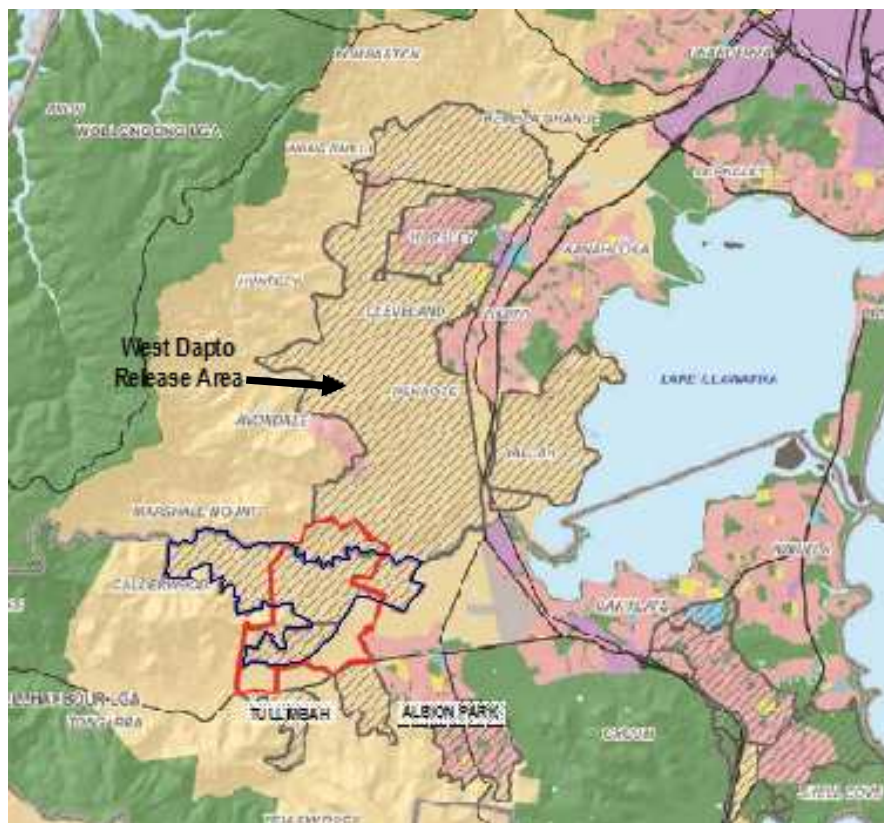


Figure 5. Calderwood proposal (red) compared to the previous IUDP boundary (blue). Other release areas are shown hatched.

The IUDP update no longer indicates a specified area for Calderwood, only noting the area generally on a map as the 'Calderwood Investigation Area'.

The GCC reviewed that Wollongong Council's West Dapto Release Area plan in 2008 and recommended an alternative development scenario to that in the IRS, due to constraints of the West Dapto Release Area. Stages 1 and 2 of West Dapto could be commenced initially, followed by a second front in the south (Yallah/Marshall Mount and Calderwood) in the short term, subject to ensuring the timely provision of local infrastructure in West Dapto. The outcome would be a likely overall production rate of 600 dwellings per year, 300 in each of the 2 fronts. Wollongong City Council adopted the recommendations in the GCC report and rezoned Stages 1 and 2 of West Dapto in May 2010.

The GCC report states that the dual release areas may have benefits for housing affordability and also recognises that developers would self regulate the supply of land based on market conditions.

Department's Position

As reported in the IRS and IUDP updates, population growth in the region has been beyond projections, especially in Shellharbour LGA. Therefore provisions should be made for a potential increase in demand for housing than previously planned for.

There may be sufficient zoned and serviced land currently available for housing development in the region in the short term, however given delays in translating zoned land into actual completed dwellings, releasing more land for residential development, which is consistent with broader Government policy, should assist in improving housing affordability by increasing supply to meet projected demand, and reduce the pressures on house prices.

As raised by the National Housing Supply Council, land supply projections beyond two years are highly speculative because of uncertainty about economic, environmental and development related factors which can delay dwelling construction (including the global financial crisis which occurred after the IRS 2006 report was released). Therefore, exceeding land supply benchmarks provides greater protection against factors affecting dwelling production during the economic cycle, and provide greater confidence that the annual average production target of 775 greenfield lots will be met in order to achieve the 38,000 dwelling target for 2036.

Releasing Calderwood earlier than originally proposed in the IRS is not considered to impact significantly on infrastructure provision in West Dapto, as the site can be serviced independently of West Dapto, subject to satisfactory arrangements for contributions for the provision of regional and local infrastructure (which is discussed in more detail later in the report).

Consideration of land previously identified outside of the IUDP map can be considered subject to a merit assessment of the potential impacts, in particular flooding. The level of development that can be supported in these areas will be dependant on the assessment of the constraints of these areas.

The impact of the earlier release of the site was also considered against the Sustainability Criteria in the IRS. The Criteria include infrastructure provision, access, housing diversity, employment lands, avoidance of risk, natural resources, environmental protection and quality and equity in services. The Sustainability Criteria have been considered as part of the proposed State Significant Site proposal, and have also been covered as part of the assessment of the impacts of the proposal in this report. It is considered that subject to recommended modifications to the Concept Plan, the proposal is satisfactory in this regard.

5.3 ECOLOGY AND BIODIVERSITY

A Flora and Fauna Assessment was prepared by EcoLogical Australia.

The report states that much of site has been cleared of native vegetation and has been used for rural purposes for over 100 years, mostly for grazing. The existing vegetation was mapped and classified by vegetation community and condition (refer to figure 6 below):

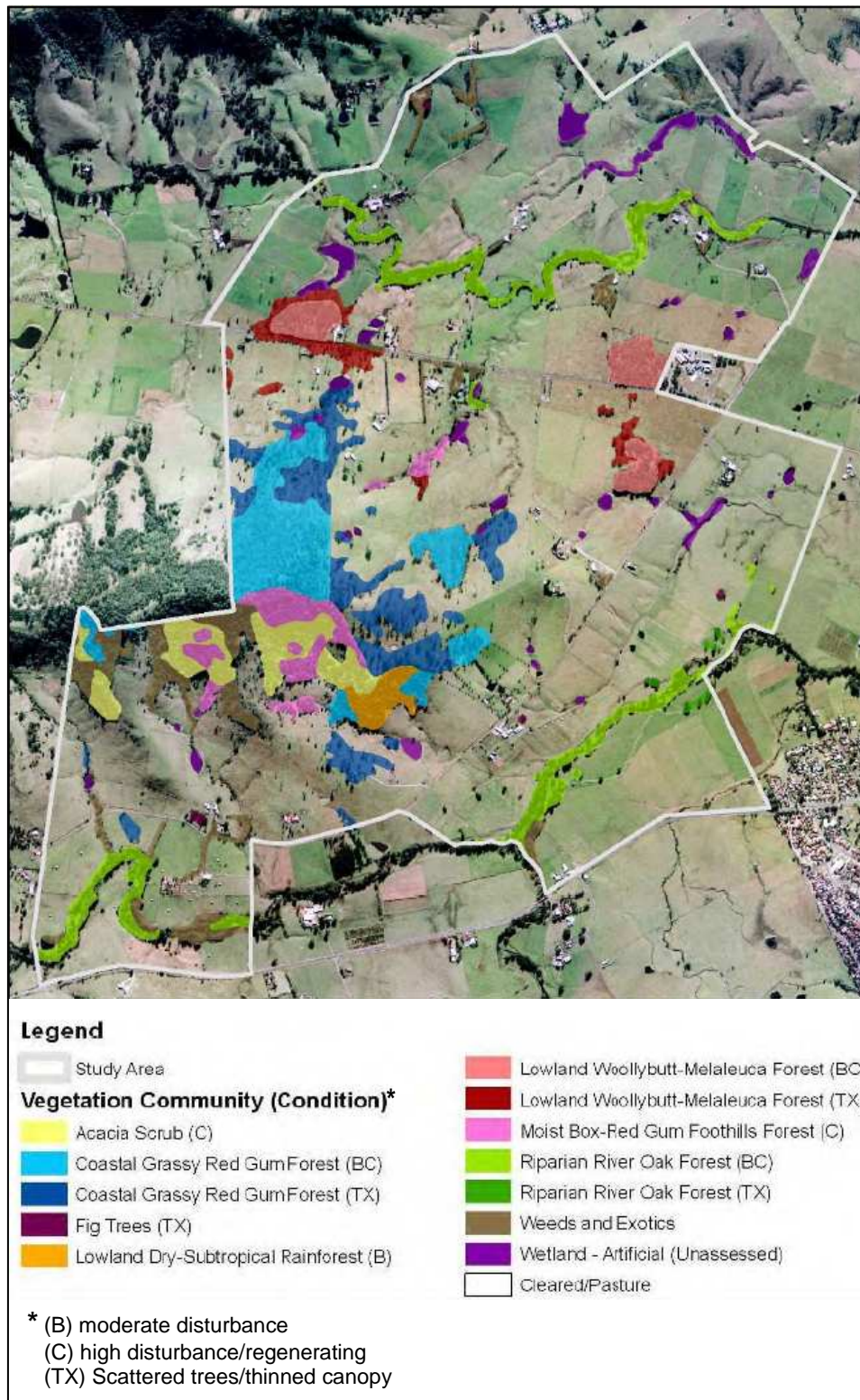


Figure 6. Vegetation communities and condition

Three Endangered Ecological Communities, as listed in the NSW Threatened Species Conservation Act 1995 were identified on the site, comprising the following four sub communities:

- Lowland Woollybutt - Melaleuca Forest
- Lowland Dry - Subtropical Rainforest
- Coastal Grassy Red Gum Forest
- Riparian River Oak Forest

The quality of the native vegetation ranges from moderate disturbance (B), high disturbance/regenerating (C) to scattered trees, thinned canopy (TX).

Johnson's Spur has previously been identified as having a high conservation value by DECCW and Shellharbour and Wollongong Councils. The most significant vegetation was found on the northern and eastern slopes, with the southern slopes featuring higher disturbance and weed invasion. Smaller pockets of significant vegetation also exist across the site. The existing riparian vegetation along Macquarie Rivulet and Marshall Mount Creek is significant but highly disturbed with weed invasion, with regenerating native vegetation and provides habitat for aquatic and riparian species. Riparian corridors are addressed separately in section 5.4 below in this report.

The application proposes to conserve and maintain areas of high conservation significance including ecological corridors. Approximately 71% (88ha) of all native vegetation is proposed to be retained, with 96% of the highest quality vegetation on the site (classified as 'moderate disturbance' and 'high disturbance/ regenerating' areas) to be retained and zoned E2 Environmental Conservation or E3 Environmental Management in the SEPP dependant on disturbance level and habitat potential, and have limited development potential to minimize the impact on the natural environment. These lands will also provide ecological linkages across the site, both north-south and east-west. The majority of vegetation loss is restricted to paddock trees that do not possess a native understory and therefore have limited habitat and/or regenerating potential.

In response to concerns raised by the Department of Environment, Climate Change and Water (DECCW) about lack of protection for remnant trees, a Statement of Commitment was included for further assessment of mature remnant habitat trees for retention and incorporation into the design wherever practicable. This will be assisted by an Environmentally Sensitive Lands map which will form part of the approval and identifies the location of significant vegetation within the E2 and E3 zones. Future applications within these areas of the site will need to demonstrate that the impacts are appropriately managed and the further assessment requirements have been satisfied.

In response to concerns about inadequate surveys for *Pterostylis gibbosa* (Illawarra Greenwood) raised by DECCW and Shellharbour Council, the proponent confirmed that a targeted threatened flora survey was undertaken for the entire site, but no additional species were found. Notwithstanding, the proponent has committed to conduct further surveys for a small number of threatened flora species during the appropriate season to increase the likelihood of successful identification to ensure that these species will not be adversely impacted during future development. It should be noted that should the threatened species habitat be present on the site it would most likely be located in the proposed environmental zones (as opposed to parts of the site which have been used for agriculture) and limited land uses are permitted in these areas.

DECCW and Shellharbour Council were concerned about the future ownership and management of the riparian corridors, drainage lines, environmental reserves and Johnson's Spur Conservation Area which the proponent proposed to transferred to public ownership. Neither were willing to accept the lands, with Council stating that they do not have resources to implement the proposed Vegetation Management Plans. In response to these concerns, the proponent prepared a land ownership options matrix (Appendix I of PPR) and Statement of Commitments which proposes to dedicate these areas to the Department of Lands in the first instance, and if dedication is not accepted by Department of Lands, then an alternative public or private land ownership will be considered.

Department's Consideration

The Department considers that the vast majority of significant native vegetation on the site will be given a greater level of protection from urban development as a result of the Concept Plan and recommended SEPP. This is achieved through the use of the environmental zones recommended in the SEPP that provide a greater level of protection than the existing zoning and the recommended uses under the Concept Plan in these areas will exclude most types of urban development. The threatened fauna species that were identified as being likely or having the potential to occur on, or use habitat within the site, will be located within these environmentally significant areas and therefore the potential impacts to these species is low. The increased environmental protection of the two core riparian corridors will assist in greater protection of these areas and assist in providing ecological linkages through the site for native flora and fauna.

Although some development is to be permitted on parts of the environmentally significant lands, such as dwelling houses on large lots and ecotourism within the proposed E3 zone, the impacts of these developments will be considered in greater detail when they are the subject to future applications.

The use of the proposed Environmentally Significant Lands map as an additional mechanism to protect vegetation is supported and will be recommended to be approved as part of the Concept Plan as a further assessment requirement. The map, as well as the Statement of Commitment that mature remnant trees will be individually assessed prior to applications for the detailed design stage, is considered to address concerns raised by DECCW and other submissions about remnant native vegetation.

The future ownership and responsibility for the management of the riparian and drainage lands, environmental reserves and Johnson's Spur conservation area will be determined in the relevant future applications for subdivision and development of these areas of the site.

It is also recommended that the Vegetation Management Plan proposed in the Statement of Commitments for the riparian corridors be prepared to demonstrate improvements in water quality and aquatic habitat, contribute to fauna habitat connectivity and provide for passive recreation uses to minimise the impact on the natural environment.

5.4 RIPARIAN, DRAINAGE AND STORMWATER MANAGEMENT

A number of reports were prepared for the EA that relate to riparian corridor management including the Geomorphology Assessment, Riparian Consistency Report, Water Cycle Management Study and Flora and Fauna Assessment.

The Riparian Consistency Report identified and classified streams and riparian corridors on the site. The methodology incorporated the Riparian Corridor Management Study 2004 and the most recent published Riparian Corridor Guidelines under the Water Management Act, 2000.

Macquarie Rivulet and Marshall Mount Creek were identified as the two main water courses which run through the site, with Macquarie Rivulet carrying a much greater volume of the two. Both streams have highly disturbed, regenerating native riparian vegetation and provide habitat for aquatic and riparian species. Stream condition is better overall in Macquarie Rivulet. Both Macquarie Rivulet and Marshall Mount Creek were considered to perform critical drainage and flood mitigation functions and as a result, the proponent has sought the transfer of these lands to public ownership.

The application proposes approximately 113 hectares of land within a Core Riparian Zone (CRZ) to provide bed and bank stability. Extensive areas of public open space are proposed to immediately adjoin the CRZs and will function as Vegetation Buffers to substantially increase the environmental outcomes of the riparian corridors. They are proposed to be generally open grassed areas, with some regeneration.

A network of pedestrian and cycle pathways are proposed within the CRZs as well as some river crossings. Utility services infrastructure will need to cross the CRZs as required.

The Flora and Fauna report recommends vegetation along Marshall Mount Creek and Macquarie Rivulet needs to be maintained and improved because it provides important habitat for riparian and aquatic ecosystems and contributes significantly to fauna habitat connectivity between the escarpment and the coast. It states that although some tributaries have limited ecological value, these would contribute to the connectivity of terrestrial remnant vegetation and provide a series of links for mobile fauna species between valley and ridge environments.

The report recommends Vegetation Management Plans (VMPs) be prepared for the riparian corridors in accordance with the latest DECCW guidelines, although the Statement of Commitments do not specifically state this.

The corridors will also perform a key role in the proposed water cycle management strategy for the site, based on Water Sensitive Urban Design Principles. This will include water quality ponds/constructed wetlands within

riparian corridors to treat urban runoff, and Gross Pollutant Traps to trap large particulates including litter and debris and improve water quality. These measures will also assist in ensuring the development peak flows will not exceed pre-development peak flows.

Submissions were received from agencies, in particular the NSW Office of Water, concerning the following:

- methodology for categorisation of water courses,
- adequacy of Core Riparian Zones (CRZs) and vegetation buffers,
- treatment of riparian vegetation,
- change to minor tributaries,
- location of water cycle management structures within riparian lands,
- stability of water courses, including impacts of floodplain filling.

The proponent responded, stating that the methodology used for categorising water courses includes the RCMS and most recent DECCW published riparian corridor guidelines. After ground-truthing, some watercourses were found not to exist, others found in different locations. The proponent believed that the approach used was better than the RCMS, resulting in the identification of a greater total area of land for inclusion in riparian and environmental corridors than that provided in the RCMS (113 ha compared to 96.5 ha).

The proponent stated that the CRZs meet or exceed the minimum widths recommended by DECCW, and that some vegetation buffer areas exceed the recommended 10m width, although others are less. The proponent sought a merit based approach rather than a blanket approach.

Wetlands and ponds will be designed and located to be sympathetic to the environment. The Landscape Open Space Masterplan provides details on how the land will be landscaped so it contributes as a vegetation buffer to riparian corridors.

The PPR states that the final location of crossings, pathways and utility services infrastructure will take into consideration vegetation that is proposed to be retained and protected as shown on the Environmentally Significant Lands map. The proponent proposes limited infrastructure works in CRZs as long as they do not reduce the function of the CRZs, and agrees that recreation and drainage uses within riparian lands needs to be sensitively design and managed.

Department's Consideration

The Department is satisfied with the approach used for the classification of riparian corridors, in particular the identification of the primary and secondary corridors, and the design of the CRZs and Vegetation Buffers. The core riparian corridors for the two main watercourses on the site will be zoned E2 Environmental Protection. The vegetation buffer areas provided for these two corridors, and the secondary riparian corridors, will be zoned E3 Environmental Management. This level of protection is a significant improvement to the current zoning, which is covered by the rural zone for most of the site. It is considered that the environmental quality of the corridors is likely to improve as a result of the increased protection for the riparian corridors through the uses proposed, as well as the measures proposed in the Statement of Commitments. Further assessment requirements are recommended to ensure these areas are revegetated to an acceptable standard, especially if they are not to be transferred to public ownership.

The Water Quality Control measures are considered to be satisfactory with regard to water quality both on and off site, and address a number of concerns about potential impacts on Lake Illawarra raised by the Lake Illawarra Authority.

The Department is satisfied the works proposed in the CRZs, subject to strict controls, and these are addressed satisfactorily in the Statement of Commitments.

The Department acknowledges that no agreements to date have been made regarding the transfer of land to public ownership, including the management of the water quality control systems, and that provision must be made accordingly.

5.5 FLOODING

The site is located within the Macquarie Rivulet catchment and is traversed by portions of the Macquarie Rivulet and Marshall Mount Creek. A Flood Study was prepared by Rienco, which provided hydrological modelling of flood behaviour in the vicinity of the proposed development, of both Macquarie Rivulet and Marshall Mount Creek. A Floodplain Risk Management Study was prepared by Cardno based on the findings in the Rienco report.

Shellharbour Council and DECCW raised concerns that the assessment underestimated the risk of flooding and impact on adjoining land. As a result the Department engaged SKM to undertake a technical review of the assessment. SKM concluded that the assessment of flood risk had been undertaken in accordance with the NSW Government's *Flood Prone Land Policy* as set out in the *Floodplain Development Manual 2005* (FDMP).

Existing Flood Conditions

The Reinco Flood Study identifies the Macquarie Rivulet catchment as having a temperate climate. High rainfall can occur due to the proximity of the ocean and the Illawarra escarpment, however it only occurs in relatively short bursts within longer, less intense storm events.

Historically, the catchment floods every few years. Flooding has occurred on sections of the Illawarra Highway within the vicinity of the site (close to the West Frazer's Creek Crossing) and also in the Albion Park Village as a result of inadequacies of the local stormwater infrastructure.

The modelling of flood behaviour in the catchment undertaken by Reinco identifies that portions of the site are currently located within areas subject to the 1:100 year flood level. The existing 1:100 year flood extents are shown in Figure 7 below. Areas of the site subject to the 1:100 flood include the low lying parts of the site generally located within the Stage 1 area in the south east, and within the proposed riparian corridors in the north. In the 1:100 year flood the Macquarie Rivulet and Marshall Mount Creek inundate these areas.

The peak depths anticipated in the 1:100 flood are shown on Figure 7 below. Some areas of the site and adjoining properties can experience flood levels of up to 3m. The section of the Illawarra Highway adjoining the site can experience flood levels of between 0.60 to 2m.

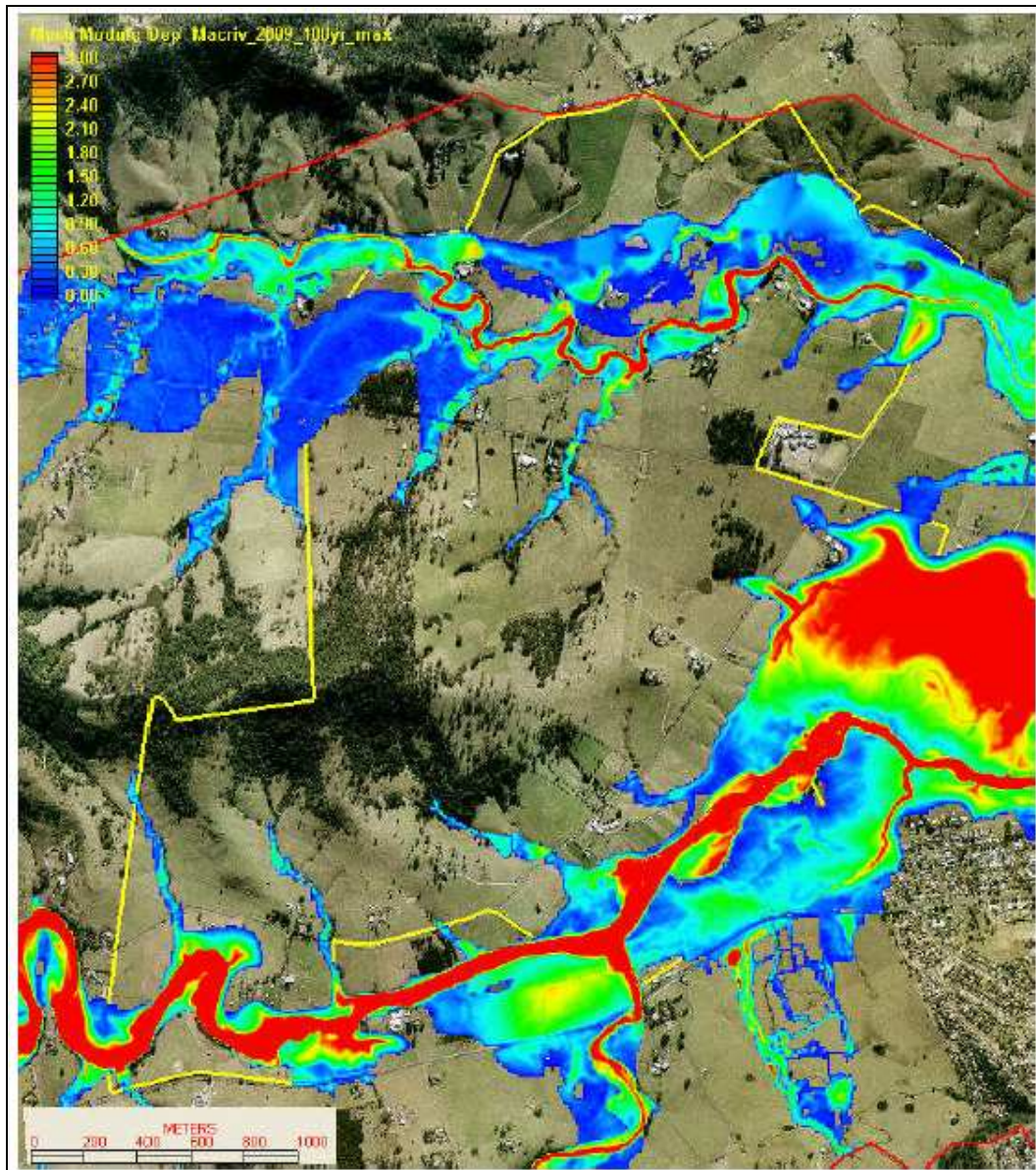


Figure 7: Peak Depth Flood Surface for the 1:100 flood (depth is in metres)

The impact of the Probable Maximum Flood (PMF) was also assessed. Due to the steep nature of the valley the area affected by the PMF is similar to the 1:100 flood extents. However, the PMF almost doubles the peak flows in the Macquarie Rivulet and Marshall Mount Creek and increases flood depths by approximately 1m. The maximum depth of flood waters anticipated in the PMF event on sections of the Illawarra Highway increase up to 3m.

Climate Change

The Cardno Floodplain Risk Management Study assessed the impact of climate change on flood levels in accordance with the DECC 2007 Flood Risk Management Guideline. The proponent also advised that the study was not inconsistent with the DECCW Draft Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments, October 2009.

Modelling of climate change scenarios demonstrated that there would an average increase to flood levels of 300mm in the 1:100 event and 200mm in the PMF. This impact of climate change is considered to be minor and none of the proposed residential lots in Calderwood will be affected by ocean inundation under the most extreme climate change scenario.

The key impacts of flooding resulting from the development of the site are discussed below:

Flood Risk to Adjoining Properties

Shellharbour Council and DECCW raised concerns that limited information had been provided to assess the potential flood impacts on adjoining properties. In response, the PPR included further plans to more clearly demonstrate the 1:100 flood extents on adjoining properties.

The additional plans provided demonstrate that there will be no significant change to the extent (area affected) of both the 1:100 year flood and the PMF as a result of the proposal. However, as shown in Figure 8 below, there may be changes to flood levels experienced at adjoining properties already subject to the 1:100 year flood. This was also found to be the case for the PMF.

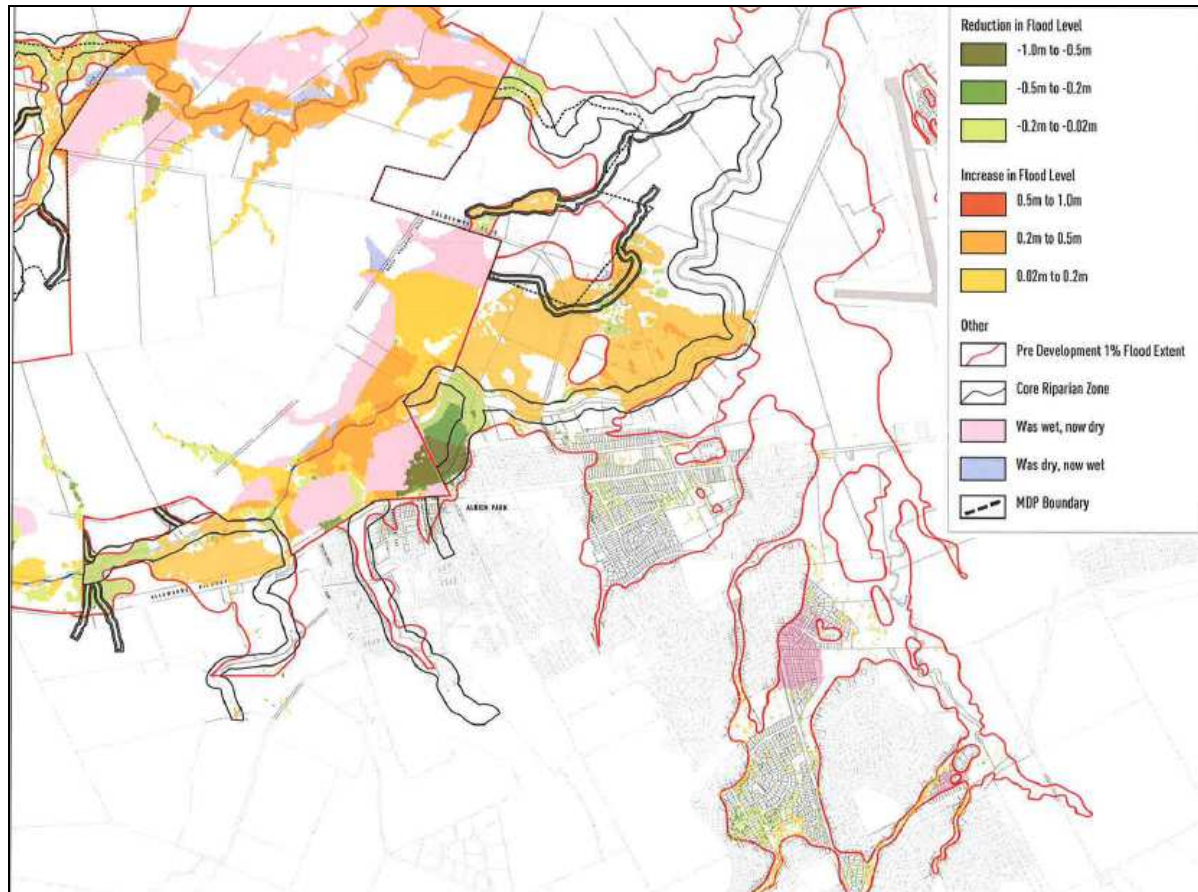


Figure 8: Change to 1:100 flood levels at adjoining properties

In some places a reduction in flood levels is anticipated. However some properties adjoining the site which are already flood affected may experience an increase of flood levels of between 0.02 and 0.2m in the 1:100 year flood and up to 1m in the PMF. The adjoining properties where an increase in flood levels may occur are currently zoned 1(a) Agriculture in the Shellharbour LEP 2004. During the 1:100 flood and the PMF these properties are already subject to flood waters from 1.5 to 3m.

There is also a minor increase in levels on a small section of the Illawarra Highway adjoining the site. As demonstrated earlier in Figure 7, this section of the Illawarra Highway already experiences levels of up to 2m which would restrict the use of the road. The RTA did not raise this issue as a concern.

Given the existing level of potential flood waters in these areas, it is considered that the use of land for agricultural purposes and a road will not be further impacted by the proposed development. Furthermore the assessment undertaken demonstrates that there is an overall reduction in velocities that will be experienced in areas adjoining the site, which may lessen the impact of the flood.

The Shellharbour Council's Floodplain Risk Management DCP states that proposed development should not result in any increased impacts on adjoining land. The proponent notes in this regard that other guidelines such

as the FPDM consider some increases may be acceptable if balanced by other measures, and that a merit based assessment is required to assess the impacts.

The Flood Risk Management Study provides a merit based assessment of the impacts on adjoining properties. The assessment considers that increased flood levels are acceptable in riparian corridors on rural lands but not acceptable beyond the riparian corridor on land zoned for urban use. The Study concludes that although there will be a change to flood levels, the proposal will not result in an unacceptable outcome on adjoining properties.

Filling in the floodplain

The application proposes a number of measures to mitigate and manage the flooding impacts within the site, including construction of bridges, increases to stream roughness (i.e. vegetation) and reshaping of the floodplain. The extent of the proposed works is shown in the following Figure 9.

The majority of the floodplain regrade works are within the primary and secondary riparian corridors and are required to manage the potential impacts of flooding. The main exception is the two fill pads within the Stage 1 area which are required to allow proposed residential development in these locations. The fill pads are located between the Macquarie Rivulet and the Illawarra Highway and are within the 1:100 flood plain. To ensure these residential areas are located above the 1:100 flood level the proposal includes significant volumes of fill in these locations.

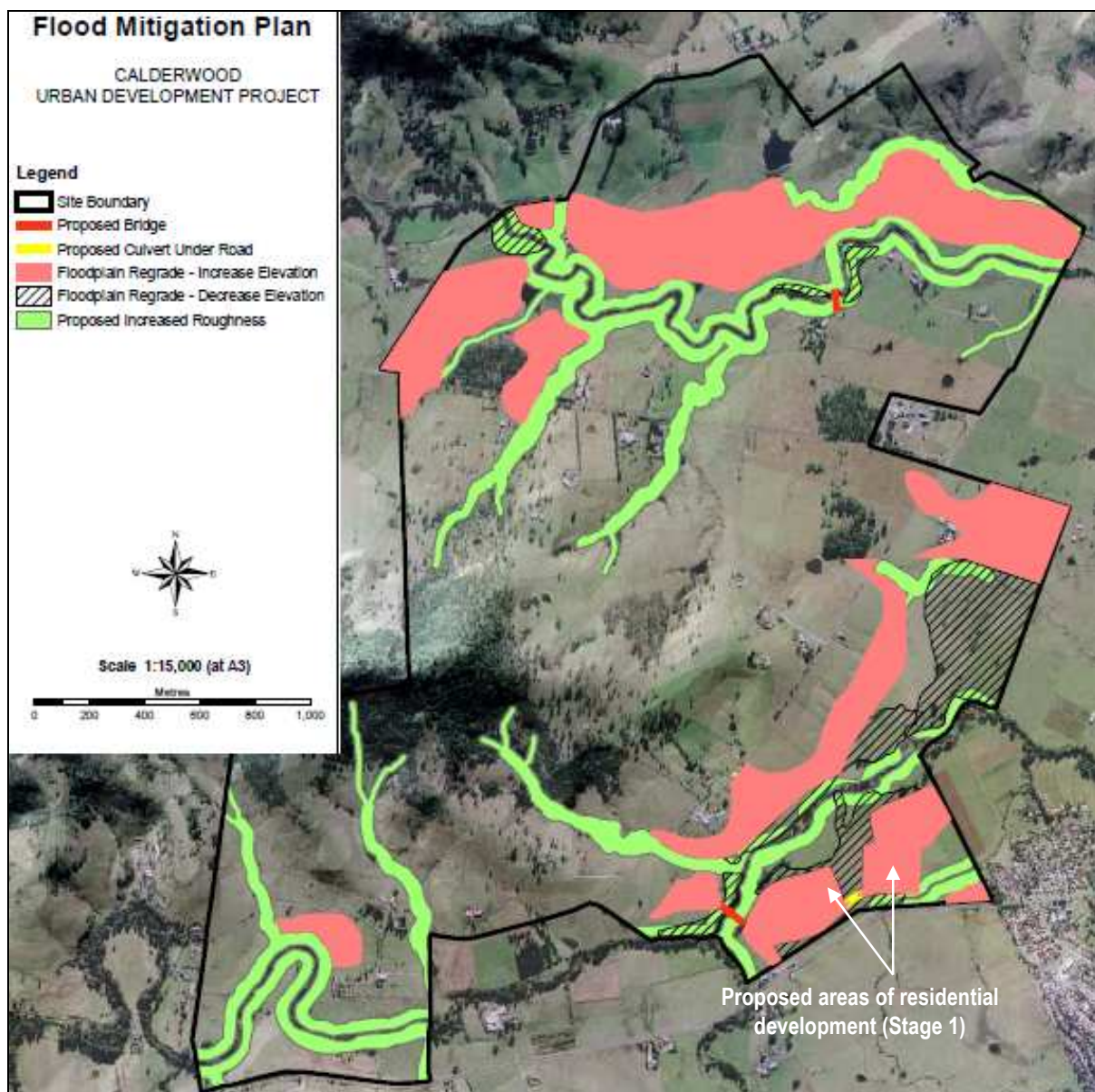


Figure 9: Proposed flood mitigation works

Some filling within the flood plain is required to provide access to the site from the Illawarra Highway. The proposed new road to provide the main north-south route through the site traverses this area, and is accessed from the Illawarra Highway and runs along the edge of the western fill pad. The finished levels of this area will be similar to the adjoining section of the Illawarra Highway and at completion will be appear as a natural extension of the adjoining land.

The eastern most of these fill pads however is required entirely to support residential development and will remain isolated by Hazelton Creek to the south and the Macquarie Rivulet to the north. This creates potential evacuation issues, discussed in the following section. This area of fill is also subject to the future proposed alignment of the Albion Park Bypass (discussed in Section 5.6). The proposed alignment of this section of the Bypass is not yet confirmed and therefore may impact on the potential for residential development in this area. For these reasons the Department does not recommend that the proposed eastern fill pad in the Stage 1 area be included in the Concept Plan approval.

The Shellharbour Council's Floodplain Risk Management DCP states that filling in the floodplain is not permitted unless a report from a suitably qualified civil engineer with expertise in hydrology and hydraulics is submitted which demonstrates the development will not increase flood affectation elsewhere. The DCP requires that this includes a cumulative impact assessment of the proposed filling which demonstrates that there are no significant increases in flood levels up to the PMF.

The impacts on adjoining properties is addressed in detail above. In summary the assessment concludes that there will not be a change to flood affectation on adjoining properties. However, levels experienced at adjoining properties already affected by the 1:100 flood may change. The assessment concludes the cumulative impact of the change to flood levels is considered to be negligible.

Evacuation and Isolation

The Flood Study concludes that evacuation due to flood waters is unlikely to be required as the majority of the site will be located above the 1:100 flood level. However it is noted that the majority of the site will be largely surrounded by flood waters presenting a potential problem for access and potential isolation.

To ensure access to flood free land is achievable during a flood event the proponent has committed (SoC 4.1) to a design which ensures all bridge decks and major spine roads are to be designed to be above the 1:100 flood level to allow uninterrupted road traffic throughout the development during events up to and including the 1:100 flood event.

To ensure safe evacuation is achievable it is recommended that all future project applications for each stage provide details of the provision of safe evacuation routes for all land uses located within the 1:100 flood plain and for those land uses outside the flood plain that will be potentially isolated by flood waters.

Department's Position

The Department considers the potential flood risk has been adequately assessed for the purposes of assessing the Concept Plan. This is based on the review undertaken by SKM which confirms the Flood Study was undertaken in general accordance with the FPDM.

Based on the findings of the Flood Study it is concluded that the proposed development is not likely to significantly increase the area of land affected by both the 1:100 year flood and the PMF and that there are no increases to the velocity of flood flows anticipated.

It is noted that there is a potential change to flood levels at some adjoining properties and on the Illawarra Highway. This change is not considered to significantly increase the impact of flooding on these properties as the use of these areas for agricultural and/or residential purposes will already be compromised in the existing flood levels, and the Illawarra Highway will already be unusable.

SKM recommended that further assessment of flooding impacts will be required as part of the detailed design of each stage of the development. A future assessment requirement is therefore recommended requiring a flood impact statement be prepared and included with each future application for subdivision works. Each flood impact

statement should confirm that the subject stage continues to have no impact on the 1:100 and PMF flood extent and no further impact on flood levels at adjoining properties is anticipated.

The proposed eastern fill pad within Stage 1 is not supported as it will create an isolated pocket of residential development surrounded by a riparian corridor and is subject to the proposed alignment of the future Albion Park Bypass. It is anticipated that without filling in this area the impact on flood levels at adjoining properties may be reduced. It is therefore recommended that the Concept Plan be amended to remove the proposed filling in this area and that further modelling as part of the stage 1 application be undertaken to assess the resulting change in the PMF and 1:100 flood event.

5.6 TRANSPORT AND ACCESSIBILITY

A Concept Plan Transport Accessibility Study and Transport Management and Accessibility Plan (TMAP) were prepared by Cardno to assess the impact of the development on the surrounding network and to identify road upgrade improvements required. In order to assist the Department's assessment of the TMAP, a technical review of the TMAP report was undertaken by ARUP. The road network in the vicinity of Calderwood is shown in Figure 10 below.

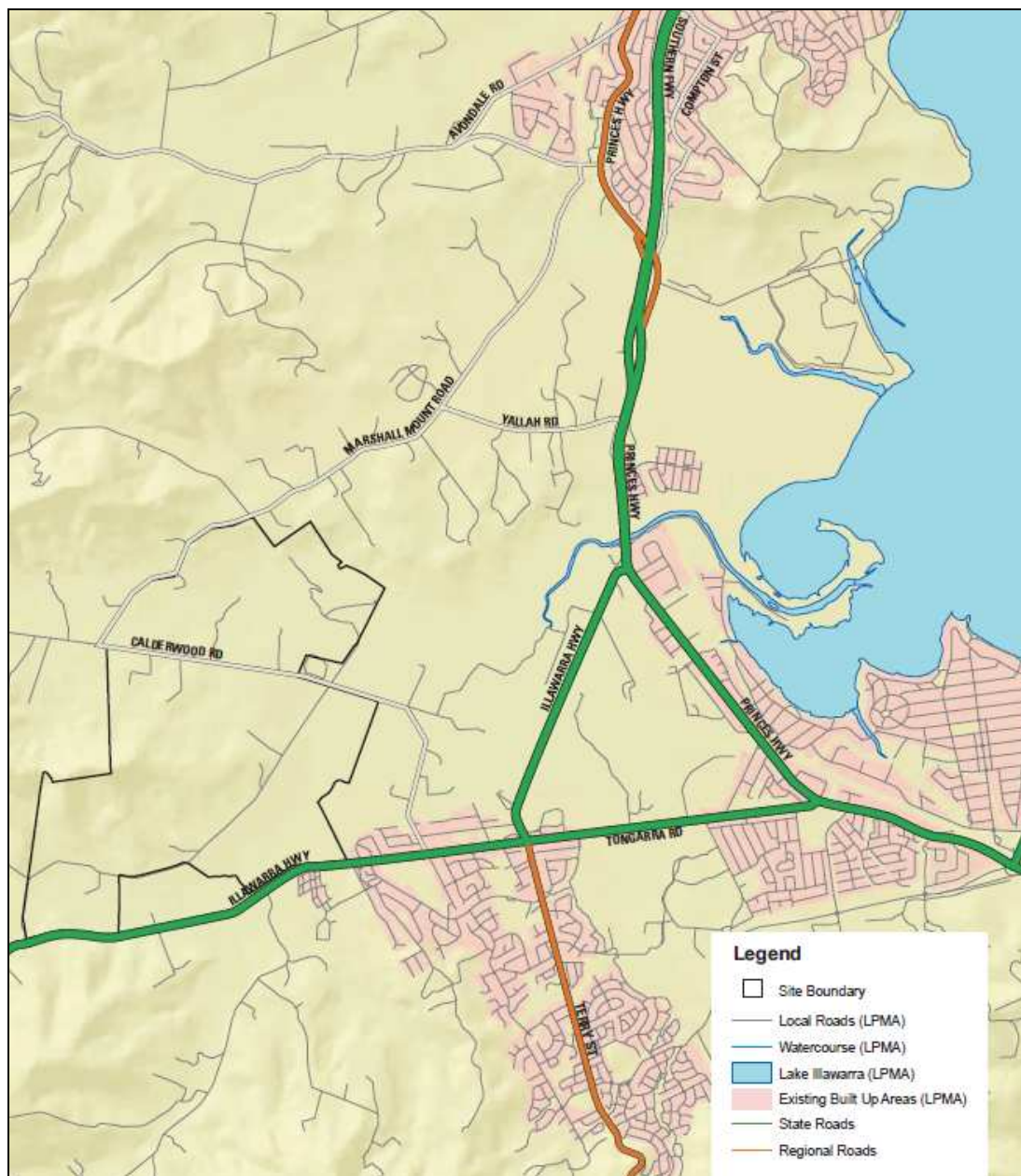


Figure 10: Road Network (showing funding classification) Proposed Network Upgrades

The TMAP identifies a number of upgrades to the State, regional and local road network that are required to accommodate Calderwood and also anticipated regional growth. The upgrades include upgrades to the existing network identified through modelling and include some new roads that are already proposed by the RTA and local councils.

The result of the traffic modelling undertaken showed that by 2031, the identified road upgrades can accommodate the planned growth, including Calderwood. These road upgrades will include works that will be required to be carried out by the RTA, supplemented with State infrastructure contributions. Upgrades to local roads will be supplemented through VPAs or S94 plans. Other works that will be required for the proposed development will be addressed through conditions of approval.

There is general agreement between the agencies and the RTA that the identified road infrastructure improvements are required to support the region's growth. However, the main issues raised are the required timing of all of the identified works, including the timing of the completion of the F6 extension. The network improvements required are summarised in Table 3 below.

Table 3 Summary of Required Network Upgrades

Infrastructure	Classification	Summary of Upgrade(s) Identified in TMAP
Southern Freeway (F6)	State Road	An extension of the F6 is proposed by the RTA from Tallawarra to Oak Flats to alleviate congestion on this section of the Princes Highway. On and off ramps from the F6 are required at its intersection with the proposed Albion Park Bypass, Croome Road and at Tallawarra.
Princes Highway (HW1)	State/Regional Road	Additional lanes are required on the Princes Highway from Huntlee Road to the F6 interchange including upgrade to the intersections of Huntlee Road and Cormack Avenue with the Highway.
Illawarra Highway (HW25)	State Road	Four new access points are proposed from the site to the Illawarra Highway including a new roundabout at the intersection of the Highway with Yellow Rock Road where the proposed new sub-arterial road will join the Highway.
Albion Park Bypass & Tripoli Way Extension	Local Road (SCC)	Construction of the Albion Park bypass (including the Tripoli Way extension) is required. Including new signalised intersections where the Bypass rejoins the Illawarra Highway and Tongarra Road.
Calderwood Road	Local Road (SCC)	Upgrade to provide a 2 lane - 2 way road with 3.5m wide lane widths from site boundary to Albion Park Bypass
Marshall Mount Road	Local Road (WCC)	Upgrade to provide a 2 lane - 2 way road with 3.5m wide lane widths from site boundary to Huntlee Road and new roundabout at the intersection with Yallah Road.
Yallah Road	Local Road (WCC)	Upgrade to provide a 2 lane - 2 way road with 3.5m wide lane widths from Marshall Mount Road to Haywards Bay Drive.

Timing of the F6 Extension

The F6 extension (from Tallawarra to Oak Flats) will alleviate congestion along this section of the Princes Highway, providing an alternative route north-south. However, this is considered a mid-long term solution and the project is not currently funded, and the detailed design and planning work has not been commenced.

Traffic modelling undertaken by both the proponent and the RTA identifies that in parts the Princes Highway within the vicinity of the site (between its intersection with the F6 and the Illawarra Highway) is already operating at an unsatisfactory level.

As discussed earlier in Section 5.2, the Illawarra Regional Strategy 2006-31 plans for an additional 38,000 new dwellings to cater for the forecast increased population of 47,600 in the Illawarra by 2031. The modelling undertaken by Cardno, which includes the impact of new residential and employment areas identified in the Regional Strategy and background growth, demonstrates by the year 2031, without any upgrades to the local and State road network, the performance of the Princes Highway and the Illawarra Highway would worsen

substantially. The modelling undertaken shows that even without the release of Calderwood by 2031 the full length of the Princes Highway within this area, including its intersections the surrounding network, would be operating at an unsatisfactory level.

The analysis of the impact on the State road network demonstrates that in order to achieve the outcomes of the Regional Strategy, upgrades are required to the State road network. As Calderwood is identified in the Regional Strategy and the Illawarra Urban Development Program, the upgrades required by the State to accommodate planned growth must take into consideration development of this site. Upgrades required to address the deficiencies in the State road network include the construction of an extension to the F6.

Modelling undertaken by Cardno indicates that with the construction of the F6 extension the traffic generated by Calderwood and future regional growth can be accommodated with the other network improvement works identified.

A concern raised by the RTA is that the timing of the F6 extension will need to be pushed forward as a result of Calderwood's release earlier than was anticipated. Ultimately it is the responsibility of the RTA to manage the State road network and co-ordinate the implementation of road network upgrades as it deems necessary.

The TMAP notes that interim measures may be needed on the Princes Highway to accommodate regional growth until such time as the F6 extension is constructed. The RTA has advised that interim measures on the Princes Highway (and the local road network) to accommodate regional growth are not supported as they will become redundant once the F6 extension is completed.

Albion Park Bypass

The Albion Park Bypass is a new road that has been proposed by Shellharbour Council to accommodate increases in traffic volumes on the Illawarra Highway from surrounding development. It will link to the Illawarra Highway, west of Albion Park and ultimately provide a link to the proposed F6 extension. For the purposes of the traffic assessment, the proposed bypass has been broken into a number of stages. The western arm of the bypass is referred to as the Tripoli Way extension.

The western section of the preferred route for the bypass traverses the eastern corner of the Concept Plan area (Stage 1). This section of the proposed bypass crosses a tributary of the Macquarie Rivulet to rejoin the Illawarra Highway. As noted in the previous Section 5.5, this area is within the 1:100 floodplain. It is also identified as Class 2 agricultural land (refer to section 5.12).

The Proponent has undertaken some preliminary design work of this section of the bypass and recommended a process for finalising its alignment. However this is unnecessary because the deletion of the eastern fill pad will ensure that the bypass can be constructed and will not be impeded on the site. The exact alignment and detailed design of the road are matters for Shellharbour Council to resolve as the local roads authority and therefore Statements of Commitment 13-17 are not endorsed.

Further assessment requirements are recommended that require the proponent to make appropriate contributions towards the upgrade of local road infrastructure such as the Albion Park bypass. Details of the contributions are to be determined with each application for subdivision and contributions shall be made either via a Voluntary Planning Agreement with the local Council or in accordance with a Section 94 plan or determination by the Minister made pursuant to Section 94B.

Impact on the Illawarra Highway

Concern has been raised by Shellharbour Council and the RTA that Calderwood will increase traffic volumes on the Illawarra Highway and require the construction of the Albion Park Bypass earlier than was anticipated.

The first stage of Calderwood will provide up to 442 lots that will be accessed from the Illawarra Highway. The traffic generated from the first stage can be accommodated on the Illawarra Highway without the need for the Albion Park Bypass and the existing congestion experienced on the Princes Highway will not become significantly worse.

It is therefore recommended that staging of the development is managed to mitigate impacts on the Illawarra Highway. Future stages of Calderwood will be required to include an updated traffic assessment to demonstrate that sufficient capacity is available on the surrounding road network to accommodate the additional traffic generated by each particular stage

Impact on the Local Road Network

Both Wollongong and Shellharbour Councils have also raised concerns regarding the impact on the existing local road network if Calderwood is developed prior to the construction of the F6 extension.

In particular Wollongong Council has raised the potential impacts on Marshall Mount Road, an unmarked rural road that is currently used for low volumes of two-way traffic. The RTA note that it is "a high speed rural road with poor alignment, minimum shoulder widths and significant hazards within the clear zones".

The Proponent's TMAP identifies minor upgrades to Marshall Mount Road including some road widening works to provide an undivided two way carriageway of minimum 3.5m lane widths and sealed shoulders. The Proponent proposes to make a contribution towards these works with the total costs apportioned between Calderwood and other land releases in the local area. Wollongong Council are concerned that the proposed upgrade is insufficient due to the volume of traffic that may use Marshall Mount Road if the F6 extension has not been completed. There is potential that without the F6 extension Yallah Road, Marshall Mount Road and the new internal north south road will be used as an alternative to the Princes Highway.

As noted above, the timing for the construction of the F6 extension is to be determined by the RTA. The Proponent will also be required to make contributions towards both local and State road infrastructure and the future assessment requirements will ensure that sufficient capacity is available or can be provided to support the development of future stages.

Mode Shift and Travel Demand Measures

The proposal includes a number of strategies and initiatives to reduce vehicle generation and private car dependency to achieve a mode share target of a 10% shift to non personal vehicle trips. In summary this includes:

- Trip Containment - the proposed Town and Village Centres are to be zoned B4 to permit a wide range of retail, employment and other uses and services, reducing the need to travel on the external road network.
- Public Transport - The proposal includes the future provision of bus network infrastructure within the site. There is potential for the site, in particular the Stage 1 portion of the site, to be connected to the existing bus service along the Illawarra Highway which links Albion Park to Shellharbour City Centre and a connection to Albion Park Rail.
- Active transport modes - the proposal includes initiatives to encourage active transport modes, including provision of high levels of pedestrian amenity, establishing bike routes and pedestrian linkages and providing bicycle parking throughout the site.

The RTA notes that although it supports the 10% mode share target, based on current trends in region it is unlikely to be achieved in the short term. To ensure the traffic modelling used to assess traffic impact and to apportion costs of infrastructure gave a realistic assessment, the Department required the proponent to use the current mode share target.

Department's Position

Due to the constraints identified in the existing road network, it is recommended that staging of the development is managed to reduce the impact on the State and local road network. Each stage of development will need to be assessed with consideration of the infrastructure required to support that stage.

It is recommended that the Concept Plan approval include a further study requirement requiring project applications for future stages of Calderwood to include an updated traffic assessment to address the impact on and capacity of the State road network from each stage.

The Department acknowledges that the 10% mode share is a future target and supports the strategies proposed to achieve it.

5.7 PLANNING AGREEMENT AND DEVELOPER CONTRIBUTIONS

Regional Contributions

The current State levy framework allows the State government to collect contributions from greenfield land release development to go towards the cost of road infrastructure, land for education uses and health/emergency services. In the case of Calderwood, contributions are required to go towards road infrastructure and land for education uses. The contributions will be formalised in a Voluntary Planning Agreement prior to the determination of applications for subdivision works.

The VPA will establish the contribution payable per lot to go towards regional road upgrades and require that contributions for local road upgrades are made prior to the issue of the subdivision certificate.

The VPA will establish the timeframe for the dedication of school sites, as agreed to by the Department of Education. In addition, the proposed SSS listing in the Major Development SEPP includes a clause which requires satisfactory arrangements for the provision of State infrastructure before subdivision of the land is undertaken.

Local Contributions

The local infrastructure contributions (S94 contributions) for community facilities, open space, and local roads will be finalised at the time each application for future stages of the subdivision is considered. Local contributions can be made as part of either a VPA between the proponent and the local council, a Section 94 Plan, or in accordance with a direction from the Minister of Planning. The contributions are to be generally consistent with the approach endorsed by the Concept Plan approval.

The proponent has submitted a detailed schedule of local contributions offered to support the proposal (refer to Appendix K of the PPR). The Department has undertaken the following assessment of the offer.

Community Facilities

The Proponent has offered to construct and dedicate the following community facilities:

- A temporary community centre (120-150m²) in the village centre;
- A permanent community centre (900 m²). This includes the dedication of 4000m² land.
- Branch library (626m²) adjoining the community centre.

The proposed provision of community facilities is considered adequate for the estimated 12,400 Calderwood residents (this is further assessed in Section 5.19 of this report). The Shellharbour Council Community Needs Study 2010 requires one centre is provided for between 10,000 – 20,000 people. The proposed library meets the NSW State library requirement of 42m² of library space per 1000 persons. The proposed library provides 50m² per 1000 people.

The detailed design and maintenance requirements of these facilities will be agreed as part of the Section 94 contribution arrangements made at each relevant subdivision application.

Local Open Space

A Landscape and Open Space Masterplan was prepared by Environmental Partnership. The plan provides an indicative layout of public open space and landscaping treatments to be used for public areas (refer to Figure 11). The Masterplan is proposed to form the basis for ongoing negotiations about the ownership and management arrangements for the open space.

The Proponent has offered to construct and dedicate the following open space areas:

- Sports field - 15.84ha
- Local parks – 2.9ha (2ha in SCC and 0.90ha in WCC LGA's)
- District parks – 7.72 ha (6.72ha in SCC LGA and 1.00 ha in WCC LGA)
- Citywide parks - 4.74 ha (2.74ha of which is Johnston's Spur)
- Ancillary open space areas – 79.9ha (made up of drainage reserves and open space corridors)

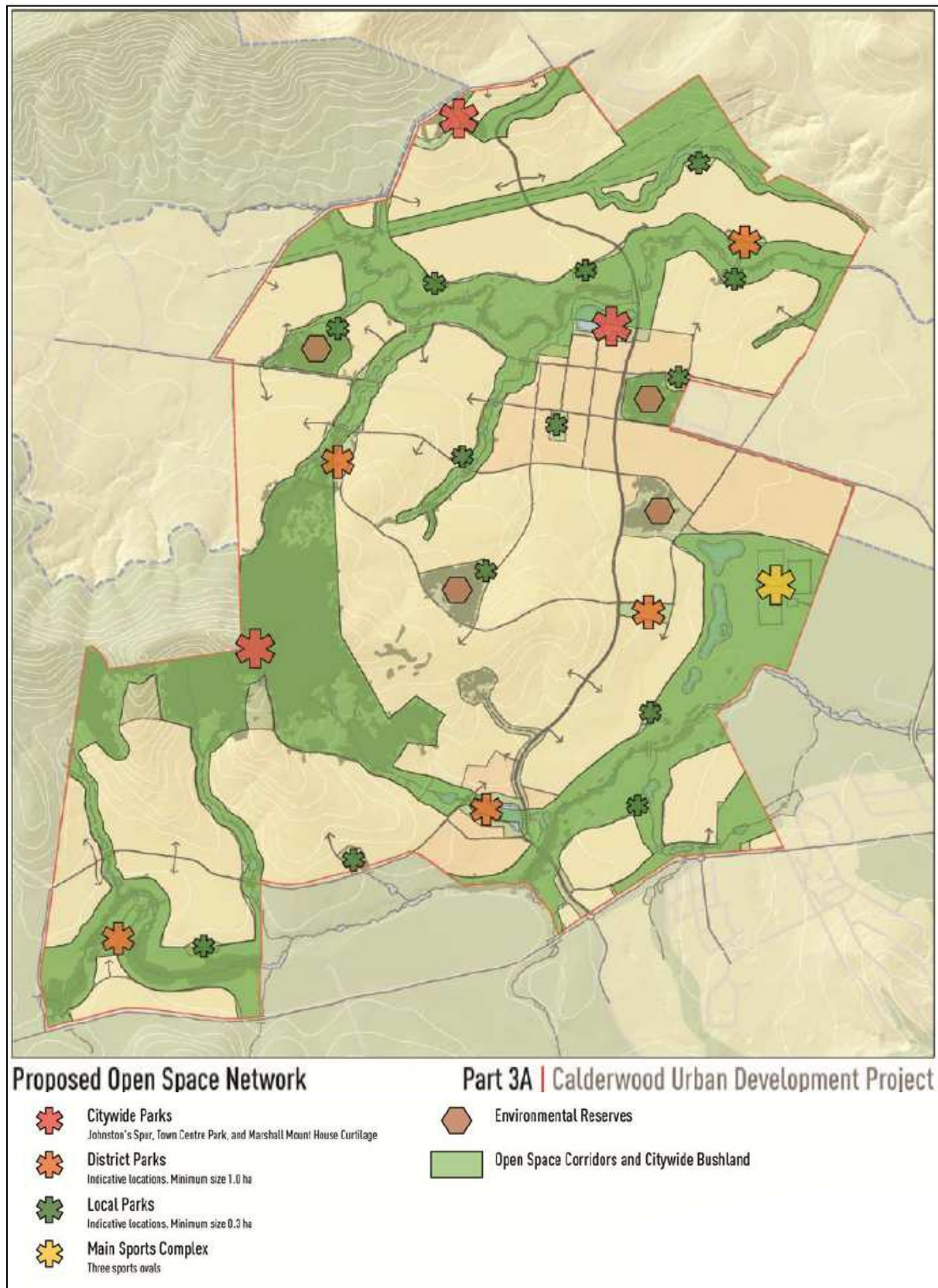


Figure 11. Proposed Open Space Network

The proposed quantum of local and district parks and provision of a sports field is considered appropriate. The Shellharbour Community Needs Study 2010 requires 0.33ha of local parks, 0.5ha of district parks and 1.28ha of sports field are provided per 1,000 people. Overall the total quantum of open space required by these standards is met.

Shellharbour Council raised concerns regarding the proposed dedication of the open space corridors, drainage corridors and Johnston's Spur due to the likely public use of these areas and costs of managing these lands. The Department therefore recommends Johnston's Spur and the ancillary open space areas are not included as local s94 contributions. The dedication of the remaining 2ha citywide park is considered adequate.

It is noted that neither Wollongong nor Shellharbour Council agreed with the location and classification of open space on the site, the minimum size of parks, embellishment, and plans for management and maintenance. Therefore the location, detailed design and future ownership arrangements of parks and other public open space will be considered as part of future applications for future development stages on the site.

Local Road Contributions

As outlined previously in Section 5.6, upgrades to the local and regional road network are required to support the planned growth in the region, including Calderwood.

Some of the upgrades identified in the TMAP are required to directly access the site. This includes the proposed roundabout on the Illawarra Highway at the intersection of Yellow Rock Road, the upgrade of Calderwood Road, and the internal sub arterial road. It is recommended that these works are not included as local s94 contributions and their construction will be required as part of conditions of approvals for each relevant stage.

The remainder of the upgrades identified in the TMAP are required to support growth in the region. These include the upgrade to Marshall Mount Road, and the Tripoli Way extension (including intersections with the Illawarra Highway). The Department agrees it is appropriate for the proponent to make contribution towards these works.

The specification, cost, timing, and apportionment of these works requires further assessment prior to the approval of subdivision applications beyond Stage 1. As noted in Section 5.6, Stage 1 can be accommodated within the existing road network with minimal upgrades. The construction of the roundabout required on the Illawarra Highway to access Stage 1 will be a condition of approval.

Department's Consideration

The proposed local contributions for community facilities, open space, and local roads are generally supported with the exception of those road works required to directly access the site. The local infrastructure contributions (S94 contributions) will be finalised at the time each application for future stages of the subdivision is considered and will be made as part of either a VPA between the proponent and the local council, a Section 94 Plan, or in accordance with a direction from the Minister of Planning.

5.8 URBAN DESIGN

A Development Control Strategy (DCS) was prepared and proposes standards for urban design, built form and environmental management for the site. It includes street design and hierarchy, landscape treatments for different types of open space, and public domain materials and treatments. The DCS was amended in the PPR, with changes made to residential development controls and mixed use land adjoining the Illawarra Highway following concerns raised by the Department and Shellharbour Council.

Residential Development

The DCS establishes 5 different residential character areas across the site. The revised design in the PPR is detailed in Figure 12 below.

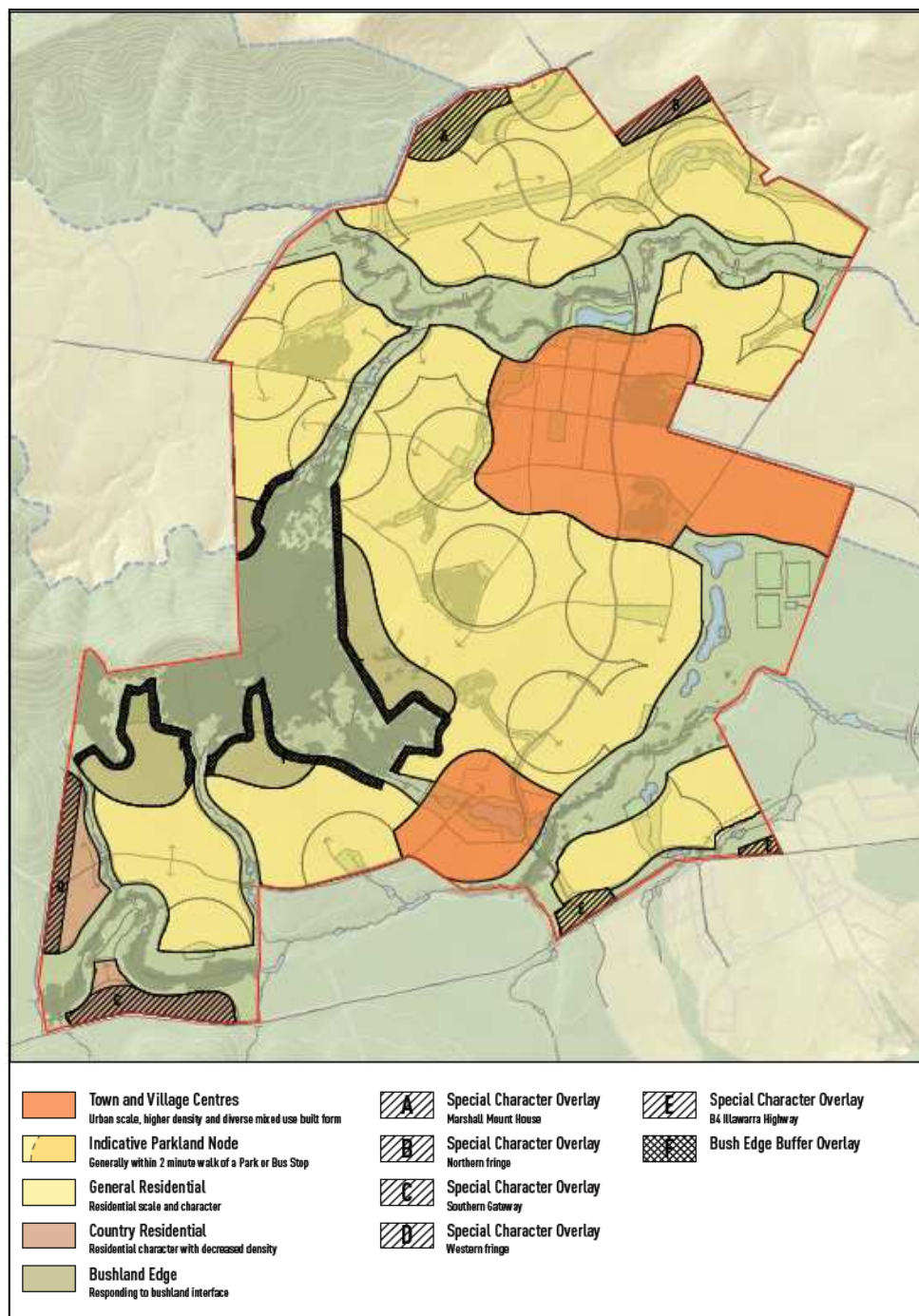


Figure 12. Proposed residential character areas

The DCS also identifies different types of dwellings proposed within each character area, ranging from standard detached dwellings, attached integrated housing (subdivision following dwelling construction), and apartment buildings. The highest residential densities will be in the Town and Village Centres, with the Country Residential and Bushland Edge areas, on the fringe of the urban development footprint, featuring the lowest densities. The General Residential precinct is proposed to feature a wide range of attached and detached dwelling types, although no apartment buildings are proposed.

Controls are proposed for each dwelling type including setbacks, private open space and car parking provision.

The following table provides a summary of the key residential development controls proposed, and includes the Department's recommended SEPP controls for context:

Table 6. Key development controls

Character Area	Min. Lot size (SEPP)	Lot sizes – Standard (Proposed)	Lot sizes – Integrated (Proposed)	Max. Height (m) (SEPP)	Max. Height (storeys) (Proposed)
General Residential	300m ²	250-1,500 m ² +	125-350 m ²	9m	2-3
Parkland Nodes	300 m ²	250-899 m ²	125-350 m ²	9m	2-4+
Bushland Edge	300/10 ha	900-1,500+ m ²	150 m ²	9/6.5m	2
Country Residential	2000 m ²	451-1,500+ m ²	N/A	9m	2
Town and Village Centre	0	250- 899 m ²	Up to 350 m ²	18m	6

The DCS proposes lots smaller than 300m² where they are located within 200m of a designated park, the boundary of the Town and Village Centres, or bus stops located on a sub-arterial or collector road.

Secondary dwellings are proposed to be permitted in all residential lots other than in the Town and Village Centres.

In addition to the five character areas, further controls are proposed for sites identified as having significant visual, heritage or environmental features, such as the lower developable slopes of Johnson's Spur, land in the south-western part of the site, and in the curtilage of Marshall Mount House, a heritage item.

Mixed used development

The DCS provides general concepts for development in the Town and Village Centres, and mixed use precincts adjoining the Illawarra Highway. These concepts include minimisation of use conflicts, street frontages and building form. Numerical controls have only been provided for residential development in these areas, as discussed above.

The application proposes an 18m height limit in the Town and Village Centres, which has been proposed as a development control in the SEPP. This height is justified on the basis that it is consistent with maximum heights allowed in town centres in West Dapto, Tullimbar Village and Shell Cove.

The application originally proposed two parcels of B4 zoned land adjoining the Illawarra Highway permitting a maximum height of 18m. No specific uses were proposed for this land, as it will be dependant on market factors. Concerns were raised in the submissions about the appropriateness of the zoning and height for these parcels compared to surrounding development. In response, the proponent reduced the proposed height of development on this land to up to 9.5m in the PPR.

Department's Consideration

The Department generally supports the residential character areas and controls within the DCS. This includes dwellings in the General Residential area to be on lots as small as 300m² which will provide lots that are smaller than other release areas such as West Dapto Stages 1 and 2, which have a minimum allotment size of 449m². This will allow for different housing products to provide greater housing choice. Permitting lots this size is supported by Landcom's *Housing Diversity Guide*, which was prepared to demonstrate that suitable, quality housing can be developed on lots smaller than 400m². Producing smaller parcels of land and smaller dwelling sizes helps to reduce land and construction costs, and on-going running costs for dwellings, making these dwellings more affordable.

The Department supports higher density development in areas close to parks and the Town and Village Centre, where residents can offset smaller dwelling size and private open space in return for greater access to public open space and/or services, and more likely to access these facilities by non-car travel. Modifications are recommended in the Concept Plan to permit lots as small as 125m² for attached or semi-detached dwellings if they adjoin or are opposite public open space or the Town and Village Centre, and that they are integrated housing developments (where subdivision follows the construction of dwellings).

The Department also recommends that other aspects of the DCS be revised to address the recommended changes to the SEPP, including the use of the R5, RU2, and E3 zones, which will require larger lots to minimise the impact on the natural environment.

The Department supports the proposal for secondary dwellings for all zones other than B4. However as no controls were proposed in the DCS, it is recommended that design controls be prepared and submitted to the Department of Planning for approval.

The Department is satisfied with the quantity of land proposed for the Town and Village Centres, as it provides a large enough area to enable a range of different uses in this zone, including residential development. However, it is recommended that further assessment requirements for a more detailed design strategy for the Town Centre to be lodged at the time of the first application for development within this zone, given its size and proposed function as a key economic centre for the site and surrounds.

The 18m height limit in the Town and Village Centres is supported as it is consistent with the 20 metre-plus heights in the B3 and B2 zoned land in West Dapto Release Area, and the tavern in Tullimbar approved to 17.8m. The proponent states in the PPR that the majority of the development within the Town and Village Centres are unlikely to reach the maximum 18m height, however there may be a select number of buildings that might. Therefore, the further assessment requirements for the Town Centre as discussed above will need to demonstrate that the overall strategy for the location of the highest buildings in the Centre

The Department has recommended that the B4 zoned land adjoining the Highway has a maximum height of 9m to be more consistent with maximum heights permitted on adjoining land.

5.9 VISUAL IMPACT

A Visual and Landscape Assessment was undertaken by Environmental Partnership. The report identifies the most visually prominent feature of the site as Johnson's Spur, with the views to the Illawarra Escarpment beyond also being of significance. The urban development will be most visible from Marshall Mount Road and Albion Park, which is also developed on slopes and are visually prominent from surrounds.

The report recommends that to minimise the visual impact of the proposal, urban development should be confined to the lower slopes of Johnson's Spur. It also recommended that building height and massing be limited on vegetated and pastoral ridges, that higher and denser building be limited to lowland areas, and that colour palettes in visually prominent areas be sympathetic to natural vegetation tones.

Concerns were raised in the submissions, including Shellharbour and Wollongong Councils, about the impact of the development on the appearance of Johnson's Spur and the Illawarra escarpment, and the impact on rural scenery. Wollongong Council did not support urban development above RL 50.

In response to concerns raised, the Development Control Strategy was amended in the PPR to include the 'Bushland Edge' Character area with controls to provide more visually sympathetic development on the slopes of Johnson's Spur.

Department's Consideration

The Development Control Strategy for the Concept Plan restricts the development capability of the most visually prominent parts of the site, especially Johnson's Spur. The development controls for the Country Residential and Bushland Edge character areas should also reduce the development potential on the south western part of the site, and function as a transition to rural properties further west of the site.

The Town and Village Centres, which have the highest maximum building heights and proposed to have the highest densities, and therefore greatest potential visual impact, are located on the lower parts of the site to minimise impacts on views to the escarpment. The ground level for these Centres is generally below RL 30 AHD, so the overall height in this zone will generally be less than RL 50.

5.10 ECONOMIC IMPACT

An Economic Impact Analysis was prepared by Pricewaterhouse Coopers and found that the project will directly inject an estimated \$2.9 billion into the local economy during the construction phases, and provide employment in the off the site. The total project value is estimated to be 6.3 billion to the Shellharbour economy and create approximately 8000 equivalent full time positions by 2028. The proposal will also lead to improved housing availability, affordability and diversity.

A Retail Floor Space Potential report was prepared by Duane Location IQ. The application is proposing 25,000m² of retail floor space for the Town Centre and 5,000m² for the Village Centre. The Town Centre is proposed to have 2 full line supermarkets, and possibly a discount supermarket, a small discount department store, 50-60 specialty stores, and approximately 20,000m² of other commercial uses including commercial offices, non-retail shopfronts, services and light industrial.

Concerns were raised by Shellharbour and Wollongong Councils, and in the public submissions that there is an excessive quantity land for mixed uses in the Town and Village Centres, and that the retail floor space proposed is not consistent with planned retail hierarchies, and is likely to impact on other retail centres in the region. Shellharbour Council recommended that up to 13,000m² be provided to serve the population predicted for the Calderwood site, with Wollongong Council recommending up to 20,000m² in the Town Centre.

The proponent responded to the concerns raised in the PPR, stating that the Town and Village Centres are proposed to be used for a wide range of uses, including retail, commercial, education, community, recreation and residential uses, and that the quantity of land proposed for mixed uses should provide flexibility due to the 20-plus year timeframe that the development is planned for. The proponent also notes the Department's report *Promoting Economic Growth and Competition Through the Planning System Review Report April 2010*, states that land use planning systems should be flexible enough to accommodate growth and to provide for new investment, thus allowing for competition between existing and new entrants, to justify their approach.

Department's Position

The Department notes the impact of the development on the local economy and is satisfied that the proposal is likely to assist in increasing the economic activity in the region. The Department also acknowledges that along with concerns about funding the infrastructure and services for the development, which is discussed in detail later in the report, the concerns about the impact on other retail and employment centres needs careful consideration.

Establishing a retail floor area per population of approximately 2m²- 2.2m² is considered reasonable based on the data provided in the Duane Location report and ABS data. This would result in a retail floor area for the site of approximately 24,800m² - 27,280m². Therefore it is recommended that the retail floor area for Town Centre be up to 20,000m² (which is the same as suggested by Wollongong Council) the Village Centre to be up to 5,000m² (as proposed in the application)

5.11 AGRICULTURAL LAND

An Agricultural Land Study was prepared by Sphere Property Corporation. The report states that existing land uses tend to be low intensity farming, including grazing, horse agistment, and dairy farming. Lots are typically about 40 hectares.

Concerns were raised in agency and public submissions about the loss of Class 2 agricultural land in particular on the site, and the impact on future food production to meet a growing population, especially the range of potential impacts that could arise from climate change.

Department's Consideration

NSW Agriculture, part of NSW Industry and Investment, has produced a 5-class agricultural land classification system for NSW. The agricultural land classifications consider the suitability of land for agriculture, including social and economic constraints, from the most suitable for intensive cultivation with few constraints (Class 1) to highly constrained land (Class 5).

Class 2 to Class 5 lands have been identified on the site, as well as other release areas such as the West Dapto Release Area and Tullimbar. The Class 2 lands identified on the site are largely located within the riparian corridors and the floodplain, which also presents potential land use conflicts. Agriculture can conflict with the management of riparian corridors including impacts on biodiversity and discharge of sediments, chemical and other particulates into the river system. The management of the riparian corridors and impacts on Lake Illawarra was a particular concern raised by the Lake Illawarra Authority.

The site also adjoins existing and future urban areas to the north and south, which is likely to result in the increased isolation of rural lands and increase potential land use conflicts. It is considered that a better planning outcome would be to continue an arc of urban development around the western side of Lake Illawarra, leaving other areas, especially further east of the site on lands with urban development constraints due to flooding, and land in Kiama LGA where there are significantly larger parcels of Class 2 land, for long term agricultural production for the region.

Part of the south-east portion of the site that is also part of the Stage 1 project application is currently classified as Class 2 land is recommended to be zoned RU2 Rural Living in the SEPP. This is due to concerns about flooding and filling of this part of the site, the adjoining rural zoned land further east, and the proposed location of the Albion Park By-pass.

5.12 ABORIGINAL CULTURAL HERITAGE

An Aboriginal Archaeological and Cultural Heritage Assessment report was prepared by Austral Archaeology. Both a desktop and field assessment was undertaken. The report identified 34 new Aboriginal archaeological sites, containing at least 189 surface artefacts. As a result of these findings, a number of recommendations were made including the collection and relocation of a number of surface artefacts, further assessment of properties that were inaccessible during the study, and procedures to be followed when encountering additional unrecorded material. The proponent has included these recommendations in the Statement of Commitments in the PPR.

DECCW stated in their submission that the recommendations in the management plan are broadly supported. DECCW recommends that sites not surveyed are surveyed by an archaeologist and representatives of the local Aboriginal community prior to future developments, and any recommendations made be implemented.

Shellharbour Council raised some concerns that further assessment may be needed for artefacts that may be buried, and that the acknowledgement of association of the land for Aboriginal people may not have been adequate.

In response, the PPR states the concerns raised by DECCW and Council were addressed in the revised Statement of Commitments.

Department's Consideration

The Department is generally satisfied with the recommendations in the report, and the revised Statement of Commitments.

5.13 EUROPEAN HERITAGE

A Heritage Impact Statement was prepared by Paul Davies Pty Ltd. The report identified 2 items of heritage significance within the site, being Marshall Mount Homestead and Barn located on Marshall Mount Road, and the Methodist Cemetery located on Calderwood Road. These sites are included as heritage items in the Wollongong Local Environmental Plan 1990 and Shellharbour Local Environmental Plan 2000 respectively.

The Marshall Mount Homestead and Barn

This site dates back from the late 1830s. A garden surrounds the house which consists of fairly dense plantings of mature trees and bushes including a Moreton Bay Fig. Marshall Mount House and Barn is considered significant as it is a good and very rare example of Colonial architecture in a rural setting. Picturesque views to and from the east and south were intentional.

The report recommends that 2 hectares be retained for the house and garden. It also recommends larger lot sizes with low densities adjoin the south and east of the house, which would also respond to the steep slope. Radial street design is also recommended to double as view corridors. The revised Statement of Commitments include these recommendations.

Marshall Mount Methodist Cemetery

The cemetery was established in 1880 and is located in the flats surrounded by open grassed paddocks. It has a gated memorial entrance built in the 1960s, and was also the site of a chapel which was demolished in 1959. It features 2 Bunya pines, which are landmarks in the valley. The remains of a number of local pastoral families, including an owner of Marshall Mount House are buried at the cemetery. The features which support the significance include use of the site, existing lot and boundary, existing grave sites, 1960s memorial entrance, pair of Bunya pines and current character of the cemetery in an open setting.

The report recommends that buildings on adjoining sites should be setback to retain the sense of 'openness' of the site. A Statement of Commitment (No. 62) states that the cemetery be situated within a public park or private open space to provide a buffer appropriate to a memorial place.

Other heritage sites

The former Marshall Mount School and Master's Residence are located to the northwest of the site, on the northern side of Marshall Mount Road. This is a regional Heritage Item under the Wollongong LEP 1990 (although regional significant is no longer recognised under State planning guidelines).

Shellharbour Council raised concerns that only 2 heritage items were nominated for the site, and that there were other sites that should have been considered for the proposal based on Council's Community Based Heritage Study completed in 2006. To date no additional properties on the site have been listed as heritage items, and the study was not made publicly available for the proponent to consider during the course of the assessment. A copy was provided to the Department, and includes the following properties:

- Oakvale – 317 Calderwood Road,
- Linonsin Stud, 337 North Macquarie Road
- Brushgrove and Trees – 248-268 North Macquarie Road
- Parkview – 340-400 North Macquarie Road

Archaeological potential and significance

The report states that the Illawarra region has been subject to intensive land use by Europeans since the 1820s. Oak Farm, at 70-87 North Macquarie Road has been identified as a site with potential archaeological remains by the Hynd archaeological report prepared for Shellharbour Council in 2003, although this report was not adopted. There is potential for limited scattered archaeological remains elsewhere on the site that would likely include footings and foundations of mostly timber structures, from domestic farm structures to fences, paths and tracks, redundant services, although the overall significance is considered to be low, although any evidence would have some research value.

Department's Consideration

The Department supports the findings in the Heritage Impact Statement, including the recommendations that were included in the revised Statement of Commitments in the PPR.

Establishing a buffer area around the cemetery is supported, however a condition is recommended for the urban design strategy for the Town Centre, to be approved by the Department of Planning, include appropriate setbacks from the cemetery.

The Department also raised some concerns about the protection of the significant trees on both sites. The EA states the development and changes to the local environment precipitated by development is likely to impact on the health of the trees as a result of changes to ground conditions and drainage. It is therefore recommended that to ensure that any impacts are minimised, that an arborist be engaged when works may affect significant trees on the heritage sites.

The additional properties identified by Shellharbour Council for consideration as potential heritage items are all examples of early rural farmhouses and outbuildings in a rural setting, however these are not considered to be as significant as the two items proposed to be listed. There are a number of other early farmhouses in the LGA more suitable for listing as heritage items, especially those in areas not identified for urban development and therefore more likely to retain their rural settings. The large group of remnant trees at 'Brushgrove' will be retained and zoned E3 Environmental Management in the proposed SEPP.

5.14 BUSHFIRE RISK

A Bushfire Planning Assessment was prepared by EcoLogical Australia. The report identified four areas of bushfire hazard on the site, which are Johnson's Spur, four larger stands of remnant vegetation elsewhere on the site, major riparian corridors of Macquarie Rivulet and Marshall Mount Creek, and scattered major drainage lines/habitat corridors.

The report states that the Concept Plan proposal has been designed to accommodate Asst Protection Zones (APZs) in the location and minimum dimensions as recommended in the Bushfire Planning Assessment, and that actual placement will depend on the specific land use that will be proposed for these areas. It is noted that consultation with the NSW RFS is required for subdivision of bushfire prone land, although after subdivision, applications for single dwellings will be assessed against the Planning for Bushfire Protection 2006.

Some slopes on Johnson's Spur are greater than 18 degrees, and providing APZs for these areas is not an acceptable solution under the Planning for Bushfire Protection 2006. The report states that there are other options available to mitigate the hazard, which can be confirmed at the detailed design stage for development adjoining the Spur.

The Department raised concerns that the APZs adjoining E2 and E3 land need to be clarified and to demonstrate that APZs in riparian corridors should be consistent with other management plans, including vegetation management plans. Both of these issues were addressed in the PPR. The proponent stated that no APZs are proposed within the Core Riparian Zones.

The PPR was referred to the Rural Fire Service (RFS) who provided a number of recommendations for the Concept Plan proposal.

Department's Consideration

The recommendations provided by the RFS submission have been included as further assessment requirements. The proposal is considered satisfactory in this regard.

5.15 GEOTECHNICAL RISK

A Geotechnical Investigation report was prepared by Douglas Partners to assess any geotechnical impacts and mitigation measures that may be needed, as well as groundwater issues.

The report found that most of the site is stable and suitable for residential and commercial buildings. Some areas of minor slope instability were identified in the south-western part of the site, with the steeper slopes and ridge of Johnson's Spur considered best left undeveloped or for limited development. The report recommended that sections of the site proposed for residential areas that extend into areas of less stable land be subject to detailed investigation by appropriately qualified consultants.

A Statement of Commitment has been included for areas shown as 'less stable land' and 'moderately unstable land' to demonstrate good engineering practice for hillside slopes. A Statement of Commitments was also provided to address groundwater issues.

Department's Consideration

This matter is considered to be suitably addressed in the EA and Statement of Commitments.

5.16 NOISE

A Noise Assessment was prepared by Wilkinson Murray, to address the potential impact of aircraft noise and safety due to the proximity of the site to the Illawarra Regional Airport.

The airport is owned and operated by Shellharbour Council under the control of the Civil Aviation Safety Authority. Council provided copies of the Airport Noise Exposure Forecasts (ANEF). Council also stated a new Airport Masterplan will be prepared in the future, although details of this plan are not publicly available.

Australian Standard AS2021 considers building types and construction standards dependant on the ANEF corridors. Development becomes restricted above ANEF 20 for buildings such as dwellings, schools, nursing homes and public buildings. The Noise Assessment included ANEF corridors plotted on an aerial photo. As no part of the development is within the ANEF 20 corridor, development of all building types on the site is acceptable without any additional noise mitigation.

Department's Consideration

The Department raises no issues with the Noise Assessment report and its findings.

5.17 UTILITIES INFRASTRUCTURE

An Infrastructure, Services and Facilities Implementation and Delivery Proposal was prepared by Delfin Lend Lease and details how these services will be delivered by the proponent for the project. Agreements with the relevant authorities will be required for the provision of sewer and water, electricity and gas, and telecommunications.

Concerns were raised in the submissions about the site using the excess Sydney Water capacity at Tullimbar.

Department's Consideration

The site will need to be provided with water, sewer, electricity, gas and communications utilities to support the level of urban development proposed. The information provided in the application indicates that providing these services are viable, although the proponent will need to make arrangements with the relevant utility providers to ensure that lots are fully serviced prior to the release of any lots for development.

The use of any excess or unused water or sewer capacity is the responsibility of Sydney Water, who owns the infrastructure.

5.18 SOCIAL AND COMMUNITY SERVICES

A Social and Community Planning Assessment was prepared by Elton Consulting. It reports that the population of Shellharbour LGA has experienced significant growth in the last 2 decades, has a younger than average population, although the population is also aging, especially in older suburbs. The predominant household type is families with children. The LGA has a higher than average proportion of one parent families. Single and group households are lower than average. Individual incomes are substantially lower than the state average, and household incomes are slightly below the average. The predominant dwelling type is low density single detached housing.

Areas surrounding Calderwood have relatively high proportion of households comprising families with children living in detached housing, The proportion of renters is below the state average. The Rural Balance area, covering most of the hinterland areas north of Calderwood, has a higher socio-economic profile, with few young adults or single person households. Albion Park Rail has the lowest levels of socioeconomic profile in the area. The populations are relatively stable.

Services provided in surrounding areas, and likely to be required by the proposal include schools, child care, family support services, aged care services, youth services, community halls/centres, libraries, emergency services and recreation/open space. These are provided by, or coordinated by State and local government agencies, and not for profit groups.

The proposal is likely to attract a much more diverse population than other new release areas, predominated by traditional detached dwellings and young families.

The report states that Shellharbour Council studies have identified a perceived split between the east and west of the LGA. Connections to the east, where facilities are concentrated (major retail, hospital, beaches) are exacerbated by limited public transport option

The proposal includes strategies to prevent the site being isolated. These include attempting to be self contained in terms of retailing, schools, facilities and recreation, delivery of these services early in the project, a community development program and activities to be initiated by a community development worker, and providing additional employment opportunities within the retail, hospitality and commercial facilities of the town centres and proposed schools, childcare and community facilities.

As a result of the finding, the application is proposing:

- A large multipurpose community resource centre incorporating a branch library, in the Town Centre (900m²)
- Temporary community centre in the Village Centre
- Community development strategy and worker
- Land for 2 public primary schools, a special needs unit and 1 high school
- One private school
- Up to 3 child care centres

The method for providing these are to be addressed either in a VPA between the proponent and the local council, a Section 94 Plan, or in accordance with a direction from the Minister of Planning. The provision of land for schools will be addressed in the State VPA.

The Statement of Commitments were amended in the PPR for the provision of a Community Development Strategy that would include the engagement of a community development worker.

Department's Consideration

The location and detailed design of the facilities will be considered as part of the applications for future development stages on the site and subject to the relevant either a VPA, Section 94 Plan, or in accordance with a direction from the Minister of Planning. The proposal is considered to be satisfactory in this regard.

5.19 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD) PRINCIPLES

The EP&A Act adopts the definition for ESD given in the *Protection of the Environment Administration Act 1991* including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms. The Department has considered the proposed development in relation to the ESD principles and has made the following conclusions:

- **Integration Principle** – The social and economic benefits of the proposal have been addressed in the Environmental Assessment. The report considers both the economic impact and environmental impact of the development. Constraints were identified so the most sensitive parts of the site will feature less development, and that the development on less constrained land will provide for a mix of uses which will enhance the social and economic benefits such as work close to home and housing diversity. It is considered that the proposal as recommended for approval does not compromise a particular stakeholder or limited the opportunity of others.
- **Precautionary Principle** – The Environmental Assessment is supported by technical and environmental reports that conclude that the proposal's impacts can be successfully mitigated. No irreversible or serious environmental impacts have been identified. The Concept Plan approval requires additional information at each stage of development to ensure the proposals' extent and nature is fully documented and opportunities are provided for proposed mitigation and management measures to minimise the impact of the development.

- **Climate Change** – The potential flood impact of the proposed Concept Plan was assessed in accordance with the Floodplain Development Manual 2005 and is not inconsistent with the DECCW Draft Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments, October 2009. The affect of climate change on flood levels was considered in the assessment and it is concluded that the proposed development will not significantly increase potential flood affectation on other development or property, will not result in an increased risk to human life, and is unlikely to result in additional economic and social cost. This issue should be addressed more thoroughly as part of the detailed building design, in relation to any specific application for development within the Concept Plan area.
- **Inter-Generational Principle** – Through implementation of the Concept Plan and environmental management practices will ensure the environment is protected for future generations. The benefits of the proposal include protection of environmentally sensitive lands, and increasing employment opportunities and services close to where people live, reducing the need for car travel. The Proponent has also committed to incorporate environmentally sustainable design principles in the design of buildings to improve energy and water efficiency, thereby conserving resources for future generations.
- **Biodiversity Principle** - The site has areas of high conservation value. Areas of an endangered ecological community have been identified on the site along with 4 threatened flora species and 22 threatened fauna species. A Flora and Fauna Report Site Rehabilitation was included in the Environmental Assessment and includes identification of areas for protection and rehabilitation areas within the site for implementation of regeneration and revegetation strategies to enhance the quality of the ecological communities found on the site, especially Johnson's Spur and the core riparian corridors.
- **Valuation Principle** – the Concept Plan seeks to promote new commercial and residential development enabling residents to live near work, leisure and other opportunities. The proposal also seeks to provide a range of housing option to assist in providing relatively affordable residential properties in the region. The provision of infrastructure will be subject to Voluntary Planning Agreements, S94 plans, or with regard to utilities, arrangements between the provider and developer.

5.20 OBJECTS OF THE ACT

It is considered that that the Concept Plan will meet the objects of the Act in section 5 of the EP & A Act 1979 which are as follows:

(a) to encourage:

- (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,
- (ii) the promotion and co-ordination of the orderly and economic use and development of land,
- (iii) the protection, provision and co-ordination of communication and utility services,
- (iv) the provision of land for public purposes,
- (v) the provision and co-ordination of community services and facilities, and
- (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and
- (vii) ecologically sustainable development, and
- (viii) the provision and maintenance of affordable housing, and

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

6 CONSULTATION AND ISSUES RAISED

6.1 DIRECTOR-GENERAL'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The Director General's Environmental Assessment Requirements (DGRs) were issued on 10 June 2009.

In the course of preparing the DGRs, the Department consulted with Shellharbour City Council, Wollongong City Council, the Department of Environment, Climate Change and Water (DECCW), the Roads and Traffic Authority (RTA), Transport NSW, NSW Rural Fire Service, Southern Rivers Catchment Management Authority, Lake Illawarra Authority, Department of Education and Training, and Industry and Investment.

The DGRs also required the proponent to consult with all of the above as well as the Ministry of Transport, Lake Illawarra Authority, Department of Primary Industries, Department of Education and training and all relevant utility providers.

6.2 PUBLIC EXHIBITION AND NOTIFICATION

The Environmental Assessment was exhibited from Wednesday 14 April 2010 to Friday 14 May 2010, and extended until 11 June 2010 for a total period of 59 days. Advertisements were placed in the Sydney Morning Herald Wollongong Advertiser (Wollongong, Shellharbour and Kiama distribution editions). Neighbouring residents/landowners were also notified of the exhibition by mail by the Department.

The EA was made available to the public at a number of sites including:

- Department of Planning, Information Centre, 23-33 Bridge Street, Sydney
- Department of Planning Southern Regional Office, Wollongong
- Shellharbour City Council administration office and Albion Park branch library
- Wollongong City Council administration office and Dapto branch library

The Preferred Project Report was lodged on 18 August 2010 and it was placed on the Department's website in accordance with the Department's policy.

6.3 SUBMISSIONS

The Department received a total of 121 submissions comprising 108 submissions from the public (69 against and 39 for) and 13 submissions from public authorities.

The Department is satisfied that adequate public consultation for the proposal has been undertaken in accordance with the legislation.

An assessment of the key issues has been undertaken in **Section 5** of this report. A summary of all submissions received can be found in **Appendix C**.

7 CONCLUSION

The Department has assessed the Environmental Assessment, Preferred Project Report and considered the submissions in response to the proposal. The key issues relating to the proposal are strategic planning for the region, traffic, flooding, ecological impacts, urban design, bushfire, and infrastructure servicing. Releasing the site for urban development is supported as it is generally consistent with the objectives of the Illawarra Regional Strategy, is an identified urban release area and contributes to the growth and dwelling targets for the subregion.

The Department has considered the issues relating to the proposal and supports the proposed Concept Plan, subject to recommendations for a number of modifications and further assessment requirements to ensure that all environmental and social impacts are minimised or managed to an acceptable level. Further project specific impacts will be assessed by the Department or other consent authorities as relevant on the basis of individual project or development applications.

Recommended modifications include:

- Deletion of the eastern fill pad in the south-eastern part of the site, in the Stage 1 area
- Environmentally Sensitive Land map to form part of the concept plan to provide more detailed protection of native vegetation
- Modifications to the development control strategy
- Management of curtilage around the cemetery

It is recommended that further assessment requirements are required for the following:

- A staging plan to be submitted with each Stage application for subdivision and infrastructure works
- Detailed traffic assessment for each Stage
- Detailed flooding report for each Stage
- More detailed Town Centre design to be submitted with the first application to develop the Town Centre
- Bushfire protection measures

The proposal is considered to be in the public interest as it provides an area for additional urban zoned land to meet the demands of a growing population in the Illawarra region, in conjunction with and other release areas in the region to ensure that housing construction targets are met. This may also have a positive impact on housing affordability in the region. The proposed development is considered to provide environmental, social and economic benefits to the region, subject to modifications to the Concept Plan.

8 RECOMMENDATION

It is recommended that the Minister:

- (A) **consider** all relevant matters prescribed under Section 75I of the *Environmental Planning and Assessment Act, 1979*, as contained in the findings and recommendations of the attached report;
- (B) **approve** the Concept Plan for the project, subject to conditions, under Section 75O of the *Environmental Planning and Assessment Act, 1979* having considered all relevant matters in accordance with A above;
- (C) **determine** under Section 75P(1)(b) that future development of this site be subject to Part 4 of the Act, unless it meet the criteria for Part 3A in Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*;
- (D) **sign** the attached instrument of approval (**Tag A**).

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APPENDIX A. INSTRUMENT OF APPROVAL

APPENDIX B. STATEMENT OF COMMITMENTS

APPENDIX C. SUMMARY OF SUBMISSIONS
