

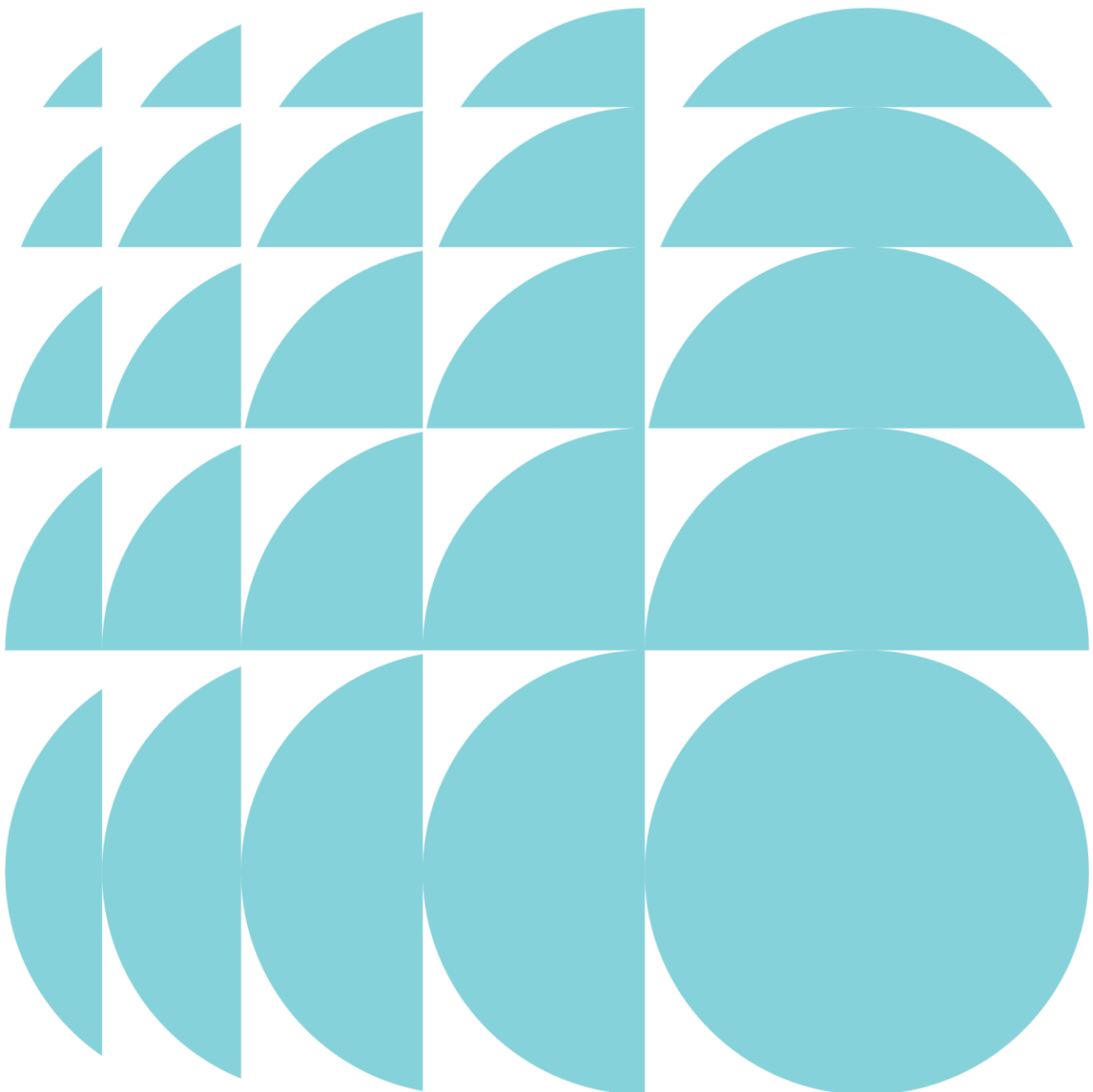
Environmental Assessment Report

Section 75W Modification (MOD 4) to MP09_0082
Calderwood Concept Plan

Submitted to Department of Planning and
Environment

On behalf of Lendlease Communities

9 August 2018 | 17119



Contents

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Statement of Validity

Section 75W Application Details

Applicant name	Lendlease Communities (Australia) Limited
Applicant address	Level 2, 88 Phillip Street, Parramatta NSW 2150
Land to be developed	Calderwood Urban Development Project Site
Proposed development	Proposed increase in dwelling density as described in Section 4.0 of this Environmental Assessment Report

Prepared by

Name	Jennie Buchanan
Qualifications	BPlan, MPIA
Address	173 Sussex Street, Sydney
In respect of	Section 75W Modification Application

Certification

I certify that I have prepared the content of this EAR and to the best of my knowledge:

- all available information that is relevant to the environmental assessment of the development to which the statement relates; and
- the information contained in the statement is neither false nor misleading.

Signature



Name Jennie Buchanan

Date 24 July 2018

Executive Summary

Purpose of this Report

This Environmental Assessment Report (EAR) has been prepared by Ethos Urban on behalf of Lendlease Communities in respect of a Section 75W modification to MP09_0082, being the approved Calderwood Concept Plan (Approved Concept Plan).

The modification seeks to allow for increased and more diverse housing supply at the Calderwood Urban Development Project (CUDP). Specifically, approval is sought to increase the number of dwellings permitted from approximately 4,800 dwellings to approximately 6,500 dwellings. The increase in housing supply is proposed to ensure that the existing area of urban zoned land in the CUDP is efficiently used for the continued supply of a range of housing types and lot sizes that both meet market demand and will assist address housing affordability pressures in the Illawarra region.

Allowing for increased housing supply will support the delivery of more integrated and small lot housing product in appropriate locations within the CUDP, including greater diversity in housing product. The increase in housing supply for the CUDP is proposed without any expansion of the footprint of urban zoned land (residential and mixed use zoned land) and without any change to the minimum lot sizes permitted under State Environmental Planning Policy (State Significant Precincts) 2005 (State Significant Precincts SEPP). It is also proposed without any change to the areas of land already approved for residential and other urban development under the existing Concept Plan Approval.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on 28 November 2017. Accordingly, the SEARs were issued on 1 February 2018. This EAR has been prepared to address the SEARs and is supported by the relevant technical reports and documents (see Table of Contents).

The Site

The CUDP site is located within the Calderwood Valley in the Illawarra Region. It is approximately 700 hectares in area with approximately 107 hectares of land in the Wollongong LGA (15%) and the balance in the Shellharbour LGA (85%).

Calderwood Valley is bound to the north by Marshall Mount Creek (which forms the boundary between the Shellharbour and Wollongong LGAs), to the south by the Macquarie Rivulet, to the south-west by Johnston's Spur and to the west by the Illawarra Escarpment. Beyond Johnston's Spur to the south is the adjoining Macquarie Rivulet Valley within the locality of North Macquarie. The CUDP site extends south from the intersection of North Marshall Mount Road and Marshall Mount Road to the Illawarra Highway.

Further site details are provided at **Section 3.0** of this EAR.

Planning Context

The Approved Concept Plan comprises the plans, drawings and documents cited by the proponent in its Environmental Assessment, Preferred Project Report and Statement of Commitments, subject to the modifications and further assessment requirements set out in Schedule 2 of the Concept Plan notice of determination. A Consolidated Concept Plan was prepared in March 2011 that includes the approved Concept Plan documentation. The Approved Concept Plan has been modified on one previous occasion in respect to subdivision of the special subdivision area (mod 2). Together, the planning controls at Schedule 3 of the State Significant Precincts SEPP and the Approved Concept Plan, as modified, establish the statutory planning regime for the development of the CUDP.

As per Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*, the CUDP is a transitional Part 3A project, and the repealed Part 3A continues to apply. The request to modify MP09_0082 was lodged prior to the 'cut off date' specified in clause 3BA and therefore the concept plan can be modified under Section 75W.

Section 6.0 of the EAR considers all applicable legislation in detail.

Proposed Modifications to the Concept Plan

In summary, the following modifications are proposed to the Approved Concept Plan:

- Increase in total number of dwellings from approximately 4,800 to approximately 6,500;
- Additional 5,000m² retail GFA in the town centre (total 25,000m²);
- Additional 14.2 ha recreation area/open space to be provided as 50/50 split active/passive open space (total 47.4 hectares);
- Expanded community centre – additional 300m²(total 1,200m²);
- Additional contributions towards library facilities in Shellharbour LGA – equivalent to an additional 220m² (total 845m² of library facilities);
- New housing typologies introduced into the Development Control Strategy (DCS);
- Additional locational criteria where integrated and small lot housing will be permissible being within 800m of the Town Centre and 400m of the Village Centre;
- Modified upgrades to Road Infrastructure, including:
 - Calderwood Road: upgrade from two to four lanes from Tripoli Way to the eastern boundary of the CUDP;
 - Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections; and
 - Other minor network changes reflecting the continuous alignment of Calderwood Road through the CUDP and proposed road layouts of non-core landowners;
- Updated Water Management Strategy, including minor amendments to areas of cut and fill across the site;
- Consequential changes resulting from subsequent Voluntary Planning Agreement (VPA) negotiations and discussions with other government bodies, including:
 - Confirmation of the location of the first primary school , confirmation of areas for the schools and changes to timing of transfer of land to the Department of Education to reflect the revised timing of delivery of the schools, in particular the high school which is now expected to be delivered around 2031;
 - Provision of a monetary contribution for library facilities in lieu of onsite provision consistent with the VPA with Shellharbour City Council (SCC); and
- A new holistic ESD Strategy seeking to achieve a Six Star Green Star Communities rating rather than provision of a solar farm and/or tri generation.

The following elements of the Approved Concept Plan generally remain the same:

- Zoning and developable area;
- Minimum lot sizes (as provided for by Condition B6 and the DCS);
- Land designated as being Environmentally Sensitive;
- Retention of core riparian zones Rehabilitation of riparian corridors and ecologically sensitive areas;
- Riparian crossing points (bridges);
- A treatment train approach for water quality management;
- Number and location of village and town centres;
- Provision of two primary schools and one high school;
- Public transport infrastructure;
- Bushfire protection measures – no change to Asset Protection Zones
- Management of Contamination
- Management of Acid sulfate soils
- Management of Ground water

- European Heritage Conservation, retention of Cemetery and Marshall Mount House (including a 2ha curtilage to Marshall Mount House)
- Management of Aboriginal archaeological sites
- Management of geotechnical constraints
- Open space structure and hierarchy
- Embellishment of local, district and citywide parks and sports fields
- Residential neighbourhood character areas
- Infrastructure Servicing Strategy
- Retention of Johnstons Spur
- Retention four environmental reserves
- Provision of permanent and temporary community centres
- Provision of pedestrian and cycle networks
- Provision of north-south and east west sub-arterial and major collector roads and a network of local roads

Environmental Impacts and Mitigation Measures

This EAR provides an assessment of the environmental impacts of the project in accordance with the SEARs and sets out the undertakings made by Lendlease Communities to manage and minimise potential impacts arising from the development. Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated. The environmental assessment of the proposed modifications is set out at **Section 6.0** of this EAR and a consolidated set of mitigation measures is provided at **Section 7.0**.

Economic and Social Impacts

The Illawarra Shoalhaven Regional Plan identifies a need for an additional housing supply of close to 1,200 per annum from the combined Wollongong and Shellharbour LGAs over the 2016-2036 period. To date supply has not met this demand and Calderwood Valley has provided a critical role in supplementing the Illawarra-Shoalhaven regional housing needs.

Calderwood Valley plays a fundamental role in the provision of affordable land and housing across the Illawarra-Shoalhaven region. Across greenfield projects, Calderwood building approvals have accounted for approximately 40% of additional supply of new detached houses. It will continue to play a vital role in the provision of housing in satisfaction of the estimated demand of 1,200 dwellings per year required in the Wollongong and Shellharbour Local Government Areas as outlined in the Illawarra-Shoalhaven Regional Strategy.

Notwithstanding the above, the shortages of housing supply across the Illawarra region remain in place, particularly for new small lot detached houses that represent affordable price points. The proposed amendment in project yield will contribute to long-term relief from persistent under-supply of greenfield and infill housing supply. This is particularly true in the next ten – fifteen years where additional density can be delivered in the CUDP whilst other major projects in the West Dapto Urban Release Area seek the relevant planning approvals and implement the infrastructure required to service that development.

The CUDP can also assist the local housing market by providing forms of housing that are more affordable, thereby reducing pressure on rental accommodation. Based on 2016 Census data, the average rental paid for a 3-bedroom house increased by 25% between 2011 and 2016 (for both LGAs). Even more concerning, NSW Government data indicates that rental growth for 2-bed units continued at 6% in both LGAs during 2017. The proposed amendment would allow for a larger number of properties that are attractive to investors, in the form of small lot detached homes and apartments, with density located close to the town centre. This housing would be ideal as a mode for rental properties, to meet the needs of tenants who qualify for rental assistance under FACS social housing programs.

A recent increase in local house prices represents a major challenge to affordability for first home buyers. An extended period of high rental growth and lack of new supply provided the stimulus to property prices, in a similar sequence to the conditions in Sydney. However, unlike Sydney, the Illawarra region remains affected by low rates of lot production, so rental growth remains solid, which is creating another round of strain for lower income households.

The proposed increase in the project yield will be modulated by greater provision of small lot housing. Lower price points are highly beneficial for first home buyers, and also attract investors. Calderwood can deliver affordable housing through small lots, at a production rate that can be quickly increased during the next decade. In addition, the concept plan amendment would raise the yield of townhouses and apartments adjacent to the town centre. As investor grade product, these specific dwelling formats would be highly suitable for rental under social housing programs, given the direct access to retail and household services.

The original Concept Plan proposed a total of 25,000m² retail floorspace in the town centre and 5,000m² floorspace in the village centre. This amount of floorspace was based on the conclusion of the 2010 Duane Location IQ assessment of retail floorspace (Appendix CC of the Consolidated Concept Plan) which concluded that a total sustainable retail floorspace within the project boundary was 31,500m² based on a project population of 12,400 people at capacity.

Notwithstanding the above conclusion, the Department in their assessment of the application and response to submissions made by both Wollongong and Shellharbour Councils, reduced the amount of retail floorspace in the Town Centre to a maximum of 20,000m². This was based on its conclusion that a retail floor area per population of approximately 2m² – 2.2m² was considered reasonable based on the Duane Location IQ Report and also ABS data.

As a result of the proposed modification to the Approved Concept Plan, the density of the CUDP is expected to increase to approximately 16,764 people. Assuming the above retail floorspace provision rates, this would equate to a demand of 33,528m² – 36,880m². Given that approval is sought for a town centre of 25,000m² and a village centre of 5,000m² the total provision of 30,000m² will be sustainable.

Further to the above, the proposed provision rate is considered to be conservative given that Duane Location IQ originally concluded that 31,500m² of retail floorspace, which is more than the amount of retail floorspace currently proposed, would be sustainable with a smaller population (12,400 people). In light of this, no adverse retail impacts are anticipated as a result of the additional 5,000m² retail floorspace in the Town Centre.

The proposed modification will generate an additional 150 jobs through the increased retail floorspace in the Town Centre, combined with the employment generated by the seniors housing and aged care facility.

Transport & Accessibility

Cardno has undertaken a traffic impact assessment of the proposed modifications. The revised model also took into account road upgrades and future approved roads in the locality which will also influence traffic movements. The analysis undertaken by Cardno shows that much of the road infrastructure as approved under the Concept Plan remains suitable to service the proposed increased density. However, the following intersections and roads will require the following modified upgrades:

- Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections;
- Priority control T intersections have been proposed at the Marshall Mount Road/Escarpment Drive and North Marshall Mount Road/Marshall Mount Road intersections to give priority to the traffic driving along Escarpment Drive which is expected to have the higher Average Daily Traffic Volume. The northern alignment of Escarpment Drive has been amended to reflect the new intersection arrangement and to provide more suitable gradients for bus services which will utilise this road as a trunk route;
- Calderwood Road from Tripoli Way to the eastern boundary of the CUDP be upgraded from a two lane road to a four lane road in line with the operation of the Town Centre retail and completion of Tripoli Way bypass.

Drainage, Water Quality and Flooding

It is proposed to retain the water treatment train approach to ensure that water quality targets are met within the CUDP. JWP has undertaken a MUSIC model assessment of the modified concept plan and has proposed an increase in size of the water quality measures so as to ensure that the development meets or exceeds the required water quality targets. The increase in size of the water quality measures is a result not only of the increased density, but also the higher water quality targets that the development must achieve, compared to those which were in place at the time the Concept Plan was approved in 2010.

In respect of flooding, JWP used the latest TUFLOW model for the Macquarie Rivulet and adapted to reflect the measures implemented by Cardno in the Approved Concept Plan as well as to reflect the modified proposal.

The refined modelling of the northern portion (Marshall Mount Creek) undertaken by JWP of CUDP confirms that during the 1% AEP event and PMF event, flooding within the main channel of Marshall Mount Creek is deeper than in existing conditions, as many of the secondary flowpaths that are present under existing conditions have been redirected back toward the main channel. This results in increased flows in the main section of the creek within the site. The modelling confirms that there are no impacts upstream of the site and there are also no measurable impacts downstream of the site.

Flooding within the Macquarie Rivulet has also become more consolidated. There are no impacts upstream or downstream of the site, with the exception of a small local increase just downstream of the site consistent with the impact documented in the Approved Concept Plan. Nearby Albion Park properties have less flood affectation than in the existing case.

JWP in their assessment have found that with the changes proposed to the flood storage along Marshall Mount Creek, the flood impacts upstream of the development have been removed, and the development is no longer causing far reaching flood impacts downstream of the site. Impacts are otherwise consistent with the previous concept plan.

Biodiversity Assessment

Eco Logical has reviewed the proposed amendments to the Approved Concept Plan and has concluded that the impacts of the revised proposal are generally consistent with the Approved Concept Plan. Where discrepancies occur, these are likely a result of mapping anomalies rather than change in footprint. They consider it unlikely that additional native vegetation would be directly affected as a result in the increase in yield.

During the assessment of the Approved Concept Plan, the proposal was referred under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) to the Commonwealth Department of Environment and Energy. Confirmation was issued that the development did not comprise a Controlled Action. The activity to be carried out pursuant to the proposed modification is generally consistent with the action referred to the Commonwealth on 2 March 2010 (EPBC 2010/5381) in terms of area and impacts on the listed matters.

Since the Approved Concept Plan, the Biodiversity Conservation Act 2016 (BC Act) has come into effect. Whilst this legislation is not a matter for consideration in the assessment of the s75W modification, future detailed applications will be subject to the provisions of the BC Act and as such Eco Logical has undertaken a review of the development to determine which stages are likely to require a Biodiversity Offset Scheme under the BC Act.

No additional impacts on groundwater dependent ecosystems are anticipated by the modified Concept Plan. Flows to and from terrestrial groundwater dependent ecosystems are expected to be maintained. The modified Concept Plan would not clear any additional lands mapped as groundwater dependent ecosystems and the maintenance of flows in both Marshall Mount Creek and Macquarie Rivulet are not expected to be altered as a result of the modified Concept Plan.

Riparian Assessment

The modifications to the Approved Concept Plan will result in the removal of Stream Reach 15. Eco Logical has reviewed the proposal and considers these impacts are acceptable. Eco Logical note that this reach is a first order stream and is located in a highly modified context. The section proposed for removal is the terminating arm, which is located in a paddock with no upper stream connectivity. There is little to no remnant native vegetation fringing this section of the reach 15. Two artificial wetlands (farm dams) are located on this segment proposed for removal. Removal of this segment of reach 15 is not likely to significantly affect overall riparian function in this part of the study area, or in Marshall Mount Creek, into which it flows. Conditions in Marshall Mount Creek where Stream Reach 15 enters was considered poor and areas of ESL downstream from this segment have been avoided.

Visual Impacts

Taylor Brammer has undertaken a revised Visual Impact Assessment and concluded that the modified Concept Plan would not generate any additional or adverse view impacts when compared to the Approved Concept Plan.

Noise and Vibration

Wilkinson Murray has undertaken a noise and vibration impact for the proposed development. Their assessment concluded that:

- Whilst the Concept Plan area is near to the Illawarra Regional Airport, it is outside of the ANEF 20 contour and as such Wilkinson Murray conclude that no acoustic mitigation measures are required in respect of aircraft noise.
- Traffic volumes along Escarpment Drive and Calderwood Road are below the threshold of where an acoustic assessment in accordance with the Infrastructure SEPP is required. However, Wilkinson Murray recommend that mitigation measures are adopted in accordance with the EPA Road Noise Policy. In this regard, deemed to comply acoustic design measures are included in the DCS which will only apply to future dwellings fronting these two roads.
- The DCS should also contain provisions which ensure that acoustic amenity criteria dealing with the co-location of land uses is provided to address potential noise impacts from actions such as servicing.
- Vibration is unlikely to be an issue due to the separation distance between existing and future development stages. Wilkinson Murray considered that this issue could be managed by incorporating mitigation and management measures in a Construction Management Plan.

Air Quality

Wilkinson Murray reviewed the data from the Albion Park South AQMS, which is typically good to very good. They concluded that the air quality at the site is suitable for the residential development on the site.

The CUDP, inclusive of the proposed modifications, is anticipated to have the following impacts on the existing air quality:

- Construction during project delivery stages (temporary);
- Traffic on major roads (ongoing); and
- Household emissions from wood heaters (ongoing).

The temporary construction impacts can be managed by way of a Construction Management Plan. Wilkinson Murray considered that the latter ongoing impacts did not require any management or mitigation due to the level of traffic volumes being below the threshold to impact on air quality levels. Any proposed installation of wood heaters will be assessed in accordance with current advice from NSW EPA (and as updated in the future) in any future DA for housing including wood heaters.

European Heritage

Paul Davies Heritage has reviewed the proposed modification in respect of potential impacts on the following three heritage items:

- Marshall Mount Homestead and Barn (located on Marshall Mount Road) – Mapped in the State Significant Precincts SEPP;

- Methodist Cemetery (located on the southern side of Calderwood Road) – Mapped in the State Significant Precincts SEPP; and
- Marshall Mount former Public School, residence and Progress Association Hall (located on the north-western side of Marshall Mount Road). In the vicinity, but outside the CUDP area.

As both Marshall Mount Homestead and Barn and the Methodist Cemetery retain separate, large allotments as part of the subdivision in the proposed modifications, the proposed modifications to the Concept Plan do not alter the overall heritage impacts on the two heritage items within the area. The heritage items retaining large discrete sites as part of the urban development proposal will protect heritage significance. Further commitment 57 has been satisfied in that a subdivision approval has been sought to create a 2ha lot for the Marshall Mount Homestead and surrounds.

In relation to the Marshall Mount former public school, a heritage item in the vicinity but not within the affected area, the same heritage impact applies, that there is no direct impact on the former school arising from the Calderwood Urban Development project generally or the current amendments, however the views and setting of the former public school will also change from rural to urban as a result of the Calderwood Urban Development project. The current amendments do not increase this impact.

Aboriginal Heritage

An Aboriginal Heritage Assessment statement has been prepared by Kelleher Nightingale in accordance with the relevant OEH guidelines. The Concept Plan, inclusive of proposed modifications, will potentially impact 39 Aboriginal archaeological sites which is the same as the potential impact of the Approved Concept Plan. The potential harm to Aboriginal cultural heritage as the result of proposed amendments to the approved Concept Plan is consistent with previous archaeological investigations and impact (due to no change in the development footprint) and no additional impact is expected to occur. No further mitigation is required in respect of this issue.

Bushfire

Peterson Bushfire Consulting has reviewed the original Bushfire Assessment prepared by Eco Logical and also the proposed modifications. Peterson note that the proposed bushfire protection measures set out in the Approved Concept Plan are conservative and remain appropriate for the proposed development. No further mitigation is required and detailed assessments will continue to be submitted with the subdivision application for each stage of the development.

Contamination, Acid Sulfate Soils, Geotech and Groundwater

Douglas Partners has reviewed the proposed modification and has confirmed that the existing management and mitigation measures in respect of contamination, acid sulfate soils, Geotech (land stability) and groundwater remain appropriate and do not require augmentation to accommodate the proposed increased density.

Ecologically Sustainable Development

Lendlease is proposing to take a more holistic approach to environmentally sustainable development within the CUDP and is now targeting a six-star Green Star Communities rating. In light of this it is no longer proposed to install a solar farm or co (or tri) generation plant within the town centre.

Aviation

As no sensitive land uses are proposed within the ANEF 20 contour and no variation is proposed to the maximum building height controls, the proposed modification is not expected to generate any adverse impacts on the operation of the nearby Illawarra Regional Airport.

Utilities

Cardno has reviewed the approved servicing strategy and has consulted with the following agencies in respect of the proposed modification:

- Jemena (gas)
- OptiComm (telecommunications)
- Endeavour Energy (electricity)
- Sydney Water (Water and Sewer)

Cardno has concluded that utility delivery can continue to be planned and delivered in consultation with the relevant provider.

Conclusion and Justification

This application relates to a Section 75W modification to MP09_0082, being the Approved Concept Plan. The proposed modification seeks to allow for increased and more diverse housing supply at the CUDP. Specifically, approval is sought to increase the maximum dwellings permitted from approximately 4,800 dwellings to approximately 6,500 dwellings. The increase in housing supply is proposed to ensure that the existing area of urban zoned land in the CUDP is efficiently used for the continued supply of a range of housing types and sizes that both meet market demand and will assist address housing affordability pressures in the Illawarra region.

Allowing for increased housing supply will support the delivery of more integrated and small lot housing product in appropriate locations within the CUDP, including greater diversity in housing product. The increase in housing supply for the CUDP is proposed without any expansion of the footprint of urban zoned land (residential and mixed use zoned land) and without any change to the minimum lot sizes permitted under State Environmental Planning Policy (State Significant Precincts) 2005 (State Significant Precincts SEPP). It is also proposed without any change to the areas of land already approved for residential and other urban development under the existing Concept Plan Approval.

Calderwood Valley now plays a fundamental role in the provision of affordable land and housing across the Illawarra-Shoalhaven region. Across greenfield projects, Calderwood building approvals have accounted for approximately 40% of additional supply of new detached houses. It will continue to play a vital role in the provision of housing in satisfaction of the estimated demand of 1,200 dwellings per year required in the Wollongong and Shellharbour Local Government Areas as outlined in the Illawarra-Shoalhaven Regional Strategy.

This Environmental Assessment Report has demonstrated that the impacts as a result of this modification are limited and will generally remain consistent with the approved development and mitigation measures are recommended where required. Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated. In light of these planning merits, it is recommended that the modification to the Approved Concept Plan approved.

1.0 Introduction

This Environmental Assessment Report (EAR) describes and assesses a proposed modification to the Calderwood Concept Plan Approval (MP09_0082) (Approved Concept Plan) for the Calderwood Urban Development Project (CUDP).

Ethos Urban has prepared this EAR on behalf of Lendlease Communities (Lendlease), being the proponent of the CUDP. This modification EAR:

- Provides background to the proposed modification by describing the already Approved Concept Plan and other modifications that have been previously approved;
- Documents the statutory planning framework, in particular the repeal of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), recent amendments to the structure and function of the Act as they relate to transitional Part 3A projects, and the other mechanisms to control and enable development at the CUDP including the State Environmental Planning Policy and documents that relate to the Approved Concept Plan including the Development Control Strategy (DCS) and the local and state infrastructure contributions arrangements;
- Describes the site, in particular the status of development approvals, construction, sales and occupancy of various stages of the CUDP, and how these contribute to the changes to overall dwelling yield;
- Describes the proposed modifications, including changes to the Approved Concept Plan and the related DCS;
- With reference to the Secretary's Environmental Assessment Requirements (SEARs), issued by the Department of Planning and Environment (DPE) on 1 February 2018 (**Appendix A**), assesses the environmental impacts of the proposed modification, and commits to (as necessary) measures to avoid, mitigate or manage impacts.

In describing and assessing the proposed modifications, it is critical to understand the significant progress that Lendlease and other land owners have made in delivery of the CUDP since the concept plan was approved in 2010. While in the early stages development progress was slower than predicted, subdivision, civil works, land sales and house construction are now proceeding faster than anticipated. This rate of growth is a clear indicator of strong demand for housing in the Illawarra. It also demonstrates the importance of providing affordable and suitable housing options for the growing populations of Wollongong and Shellharbour.

1.1 Purpose of the Proposed Modification

The Approved Concept Plan provides for the development of a total of approximately 700 hectares of land. Relevant to this modification, Condition A1(1) of Schedule 2 of the Approved Concept Plan determination states that approval is granted to the carrying out of development of approximately 4,800 residential dwellings and 50ha of mixed use employment land, open space and protection of environmentally significant lands, internal roads, service infrastructure and community facilities (including three schools). The Approved Concept Plan is described further at **Section 2.0**.

There are two main reasons for Lendlease proposing to modify the Approved Concept Plan. The first is to enable the delivery of more housing to meet strong demand for new housing in the Wollongong and Shellharbour council areas. The second is to enable Lendlease to continue to deliver more diverse housing types and houses on a greater range of lot sizes, to respond to changing homebuyer preferences and assist with easing housing affordability pressures that are particularly acute in the Illawarra. The increased residential capacity will also ensure that the existing area of urban zoned land at Calderwood is efficiently used for the continued supply of a range of housing types.

The proposed modifications have arisen from analysis of those development stages that are underway or complete, where lot sizes have been trending smaller than was anticipated to be representative of market demand at the time the Concept Plan was approved in 2010, and in recognition that resident demand for different forms of housing has been growing. The modifications are required to enable Lendlease to continue to deliver more efficient, affordable and suitable housing in the CUDP. The approximate yield approved by the concept plan in 2010 will no longer deliver the types of housing, and house prices, that meet the market, because housing preferences and affordability pressures have shifted markedly in the last 8 years, as evidenced by sales of smaller lots in the already completed stages of the CUDP.

The modification does not propose to change the boundaries of land use zones, or the general layout and mix of land uses already approved by the Concept Plan. The increased dwelling yield will result in a larger population and potential changes to the demographic profile (due to a different mix of dwelling types) and this EAR identifies where more, larger or different infrastructure (to that already proposed as part of the Approved Concept Plan and in the relevant Planning Agreements) is required to support a larger population.

The proposed modifications to the Approved Concept Plan are described at **Section 4.0**.

1.2 Legislative Context

On 8 December 2010 the Minister for Planning determined (with modifications) the Approved Concept Plan. Following approval of the Concept Plan, on 14 January 2011 Schedule 3 of *State Environmental Planning Policy (Major Development) 2005* (now the State Significant Precincts SEPP) was amended to establish zoning and other planning controls for the CUDP.

The Approved Concept Plan comprises the plans, drawings and documents cited by the proponent in its Environmental Assessment, Preferred Project Report and Statement of Commitments, subject to the modifications and further assessment requirements set out in Schedule 2 of the Concept Plan notice of determination. A Consolidated Concept Plan was prepared in March 2011 that includes the approved Concept Plan documentation. Together, the planning controls at Schedule 3 of the State Significant Precincts SEPP and the Approved Concept Plan, as modified, establish the statutory planning regime for the development of the CUDP.

As per Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*, the CUDP is a transitional Part 3A project, and repealed Part 3A continues to apply. The request to modify MP09_0082 was lodged prior to the 'cut off date' specified in clause 3BA and therefore the Approved Concept Plan can be modified under Section 75W.

1.3 Secretary's Requirements

In accordance with Section 4.39 of the EP&A Act, the Secretary of the Department of Planning and Environment issued the requirements for the preparation of the EAR on 1 February 2018. A copy of the Secretary's Environmental Assessment Requirements (SEARs) is included at **Appendix A**.

Table 1 provides a detailed summary of the matters listed in the SEARs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 1 Secretary's Requirements

Requirement	Location in Environmental Assessment Report
General	
1. An executive summary, which includes a summary of the proposed changes, a rationale for the proposal and a conclusion based on the findings of the assessment	See Executive Summary of this EAR
2. A site analysis including site plans, aerial photographs and a description of the surrounding environment	Section 3.0 and Appendix E
3. A background section covering the approval history for the site	Section 2.2
4. A detailed description of the proposed modifications and a comparison table outlining the proposed changes compared to the Concept Plan Approval	Section 4.0 and Appendix G
5. An assessment of the key issues (specified below) and a table outlining how those key issues have been addressed. This shall include a detailed assessment of the potential impacts of the proposal, particularly any additional impacts, beyond those already assessed and approved	Section 6.0
6. A description outlining how the potential impacts associated with the modification will be mitigated and managed, including any new or amended statement of commitments	Section 6.0, Section 7 and Appendix L

Requirement	Location in Environmental Assessment Report	
7. The plans and documents (outlined below) clearly showing the proposed changes compared with the Concept Plan Approval	See below	
8. A conclusion justifying the modified Concept Plan taking into consideration the environmental impacts of the proposal, the suitability of the site and whether it is in the public interest.	Section 8.0	
Key Issues	Report / EAR	Technical Study
1. Land Use Planning <ul style="list-style-type: none"> Address the statutory provisions applying to the site and all relevant strategic planning objectives outlined in the documents at Attachment A of the SEARs. Provide a detailed analysis of the likely future development outcomes for the site, including calculations of the current and proposed number of dwellings, the proposed dwelling mix and distribution of dwellings across the site. Justify the proposed increase in residential densities across the site in the context of relevant Environmental Planning Instruments and the broader strategic planning framework for the site and region (including planning for West Dapto). Assess the potential environmental and land use impacts associated with the proposal and demonstrate the additional density is suitable for the site and surrounding locality. 	Section 6.1 & 6.2 Sections 6.3 & 6.5 Sections 6.2 & 6.4 Section 6	Appendix E Appendix Q Various
2. Comparison with the Concept Plan Approval (MP 09_0082) <ul style="list-style-type: none"> Demonstrate how the proposed modification can be assessed and determined within the scope of section 75W of the Environmental Planning and Assessment Act 1979, and particularly address any environmental impacts beyond those already assessed for the Concept Plan Approval. Provide a comparative assessment (qualitative and quantitative) of the proposed modification against the Concept Plan Approval, a clear rationale for the proposed amendments, and comparison plans clearly identifying the proposed changes, including any changes to the approved staging. 	Section 1.2 Section 4	Appendix G
3. Socio-Economic Impacts <ul style="list-style-type: none"> Assess the social and economic impacts of the proposed modification, including potential impacts on employment opportunities, access to services and facilities and provision of affordable and social housing. 	Section 6.4	Appendix Q
4. Urban Design <ul style="list-style-type: none"> Provide an indicative subdivision development pattern responsive to the site conditions and constraints, including aspect, orientation, slope, drainage lines and vegetation. Demonstrate the additional lots would be provided with appropriate levels of residential amenity and access to services and facilities. Demonstrate the proposal would result in a high-quality urban design outcome for the site and prepare an updated Development Control Strategy to provide appropriate development controls for future subdivision and built form. Include measures to minimise land use conflicts, including appropriate landscaping, perimeter roads and buffer areas to adjoining land uses, riparian corridors, environmentally sensitive areas and major roads. Minimise culs-de-sac, battle axe blocks and rear property boundaries facing publicly accessible/visible areas. Include water sensitive urban design measures to minimise the extent of impervious areas and encourage stormwater infiltration, treatment and reuse. Provide details of any changes to the approved staging, including stage boundaries. 	Section 6.3 & 6.5 Section 6.3 & 6.5 Section 6.6 Section 6.3 Section 6.3 Section 6.14	Appendix E Appendix E Appendix E & I Appendix E & I Appendix P
5. Transport and Accessibility Provide a revised traffic and transport impact assessment in accordance with the <i>RMS Guide to Traffic Generating Developments</i> , which includes: <ul style="list-style-type: none"> modelling of traffic impacts associated with the proposal, including (but not limited to) an estimate of the total daily and peak hour trips generated by the modification, including vehicle, public transport, pedestrian and bicycle trips; an assessment of the current and future performance of key intersections providing access to the site under the approved and proposed scenarios, and 	Section 6.7	Appendix R

Requirement	Location in Environmental Assessment Report	
<p>10. Contributions and/or Voluntary Planning Agreement</p> <ul style="list-style-type: none"> Address the provision of additional public benefits, services and infrastructure having regard to Council's Contribution Plan and all existing applicable Voluntary Planning Agreements (VPAs) and Special Infrastructure Contributions (SIC), and/or provide details of any new/amended Contribution Plans and/or VPAs required to meet the additional demand generated by the proposed modification. 	Section 6.13	Appendix J
<p>11. Drainage, Water Quality and Flooding</p> <ul style="list-style-type: none"> Provide an updated assessment of the potential flood risks associated with the proposal in accordance with the NSW Floodplain Development Manual (2005) and consider any new/updated flood studies for the catchment/s and the potential impacts of climate change. Provide a revised Water Cycle Management Study which identifies the impacts of the proposed modification and how water quality and quantity impacts on the drainage system and natural waterways will be managed both internally and externally to the site 	Section 6.14	Appendix P
<p>12. Soils and Groundwater</p> <ul style="list-style-type: none"> Provide an updated: <ul style="list-style-type: none"> Geotechnical Assessment; Acid Sulfate Soils Assessment and Management Plan; and Groundwater Assessment 	Section 6.16	Appendix U
<p>13. Bushfire</p> <ul style="list-style-type: none"> Provide a bushfire assessment report which demonstrates that the proposal is capable of complying with the relevant provisions of Planning for Bush Fire Protection 2006. 	Section 6.15	Appendix O
<p>14. Contamination</p> <ul style="list-style-type: none"> Provide an updated contamination assessment report that demonstrates the site is suitable for the proposed modification in accordance with State Environmental Planning Policy No 55 – Remediation of Land. 	Section 6.16	Appendix U
<p>15. Heritage</p> <ul style="list-style-type: none"> Provide a revised Heritage Impact Statement that assess the impacts of the proposed modification on the curtilage of Marshall Mount House and Barn, the heritage values of the Methodist Cemetery, and the setting of the Marshall Mount School and residences. Provide an appraisal of Aboriginal cultural heritage against previous investigations and applicable OEH guidelines. 	Section 6.17	Appendix V & W
<p>16. Noise and Vibration Assessment</p> <ul style="list-style-type: none"> Provide an updated acoustic and vibration assessment for the proposed modification, including an assessment of aircraft noise associated with the Illawarra Regional Airport. 	Section 6.18	Appendix X
<p>17. Air Quality</p> <ul style="list-style-type: none"> Provide an air quality assessment for the proposed modification which considers any current air quality issues in the area, including potential cumulative impacts. 	Section 6.21	Appendix Y
<p>18. Ecologically Sustainable Design</p> <ul style="list-style-type: none"> Identify how best practice ecologically sustainable design principles will be incorporated into the design, construction and operation of the development. Identify how the Development Control Strategy responds to sustainable building principles and best practice, and will improve environmental performance through energy efficient and water sensitive urban design, technology and renewable energy 	<p>Section 6.20</p> <p>Section 6.6</p>	Appendix I
<p>19. Aviation</p> <ul style="list-style-type: none"> Address the potential impacts of the proposal on the Illawarra Regional Airport, in consultation with relevant authorities. 	Section 6.21	
20. Utilities	Section 6.22	Appendix K

Requirement	Location in Environmental Assessment Report	
<ul style="list-style-type: none"> In consultation with relevant agencies, address the existing capacity and requirements of the development for the provision of utilities and services, including staging of infrastructure works. 		
<p>21. Statement of Commitments</p> <ul style="list-style-type: none"> Include any new or modified Statement of Commitments detailing measures for environmental management, mitigation measures and monitoring for the project. 		Appendix L
Plans and Documents	Report	Technical Study
<p>The modification request must include all relevant plans and relevant documentation, including:</p> <ul style="list-style-type: none"> Site analysis plan; Site survey plan, showing existing levels, location and height of surrounding site features; Locality / context plan; Plans and photomontages clearly illustrating the proposed amendments compared with the Concept Plan Approval; Indicative subdivision plan which includes staging, road layouts, open space, riparian corridors and buffer areas; Revised Development Control Strategy Provisions; A plan clearly indicating Flood Planning Levels and Asset Protection Zones; and Public domain plans, including a landscape master plan. 	N/A	<ul style="list-style-type: none"> Appendix E Appendix D Appendix E Appendix T Appendix E Appendix I Appendix F Appendix H
Consultation		
<p>During the preparation of the EA, you are required to consult with the relevant local, State or Commonwealth Government authorities, service providers and other landholders within the Concept Plan land, including:</p> <ul style="list-style-type: none"> Wollongong City Council; Shellharbour City Council; Office of Environment and Heritage; Environment Protection Authority; Transport for NSW; Roads and Maritime Services; Department of Primary Industry; Rural Fire Service; and Department of Education. <p>The modification request must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to those issues. Where amendments have not been made to address an issue, a short explanation should be provided.</p>	Section 5	Appendix M

2.0 Approval to be Modified

2.1 The Approved Concept Plan (MP09_0082)

On 8 December 2010 the Minister for Planning determined (with modifications) the Approved Concept Plan. The Approved Concept Plan provides for the development of a total of approximately 700 hectares of land. Condition A1 describes the following development:

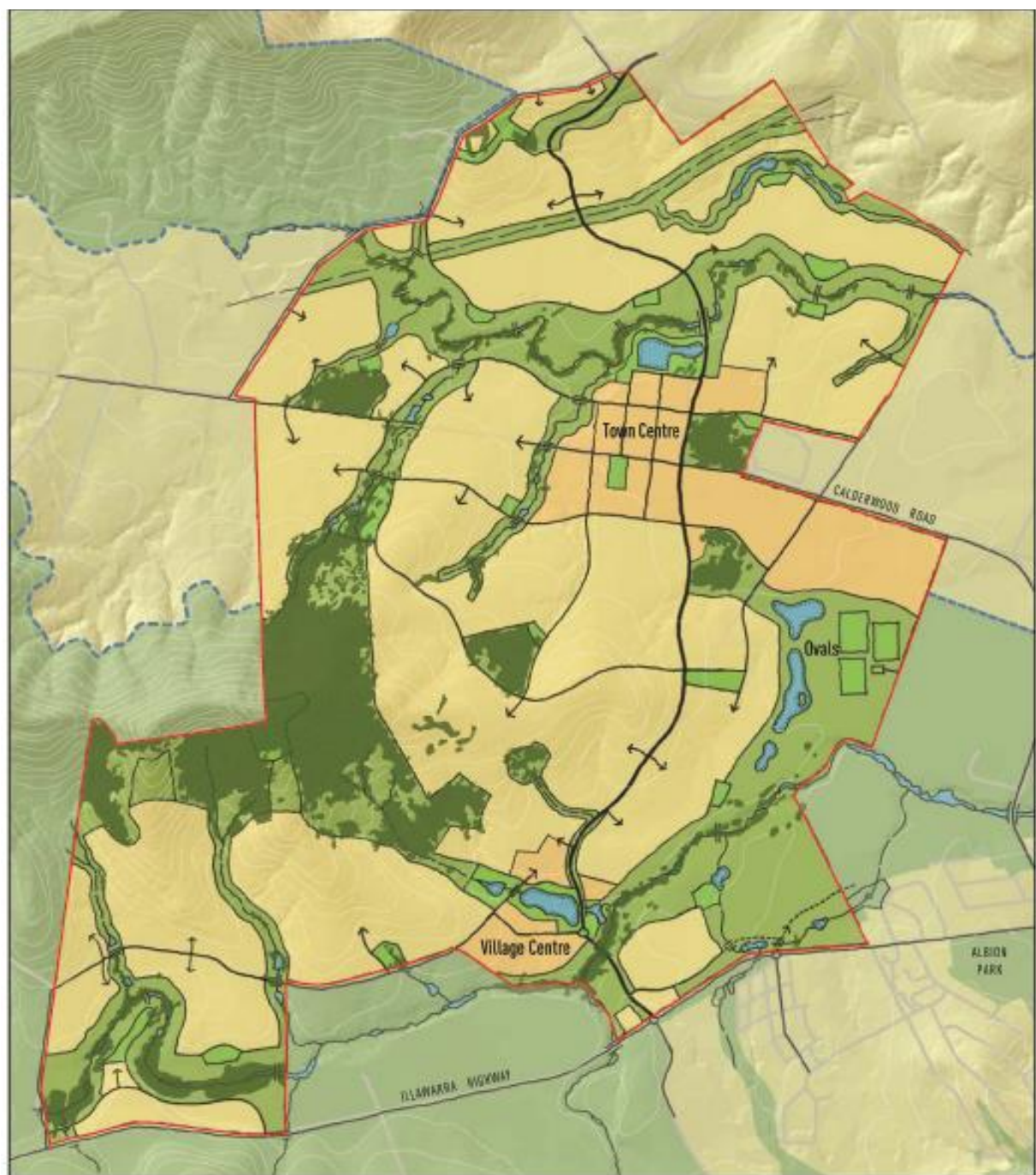
- Approximately 4,800 residential dwellings
- Approximately 50 hectares of mixed use land for a range of retail, commercial and light industrial uses;
- Open space and protection for environmentally significant lands
- Internal roads, service infrastructure and community facilities

The Notice of Determination of Determination and approved Concept Plan drawings are provided at **Appendix B**. The Approved Concept Plan is shown at **Figure 1**.

2.2 Modifications to the Approved Concept Plan

The Approved Concept Plan has been modified once, and a further three separate modification applications are currently under assessment in addition to this application:

- Modification 1 (under assessment): modification to Condition C12 Local Infrastructure Contributions to align with the Voluntary Planning Agreement between Lendlease and Shellharbour City Council and to reflect the findings of the Land and Environment Court of NSW (LEC) matter with respect to local contributions to be made to Wollongong City Council.
- Modification 2 (approved): Confirmation that no minimum lot size applies to the subdivision of special subdivision areas of the CUDP site, being the riparian/environmental corridors and environmental reserves to enable dedication of public infrastructure to the relevant council in a timely and efficient manner. The Notice of Determination for this modification is provided at **Appendix C**.
- Modification 3 (EAR being prepared): amendments to Condition B6 to clarify locational criteria for integrated housing, timing for subdivision of integrated housing and various minor amendments to the DCS.
- Modification 4: this application.
- Modification 5 (under assessment, made by others): permit subdivision of the land into lots of just over 2000m² size, to permit a residential housing estate on the site, which includes E3 Environmental Management zoned portions.



Concept Plan

Part 3A | Calderwood Urban Development Project

- Town and Village Centres**
Mixed Uses including Retail, Employment, Residential, Learning and Community Amenities
- Residential Neighbourhoods**
- Parks**
eg Citywide, district and local parks
- Principal Open Space and Drainage**
eg Environmental Conservation, Environmental Management and Drainage Corridors
- Indicative Water Bodies**



Subject to verification and detailed site survey 1:20,000 EIA 10m Contours February 2011

Figure 1 **Approved Concept Plan**
Source *Consolidated Concept Plan, March 2011 (JBA)*

3.0 Site Analysis

3.1 Site Location and Context

The site is located at Calderwood, to the west of Albion Park and south-west of Dapto, within the Wollongong and Shellharbour Local Government Areas.

The site's locational context is shown at **Figure 1**.

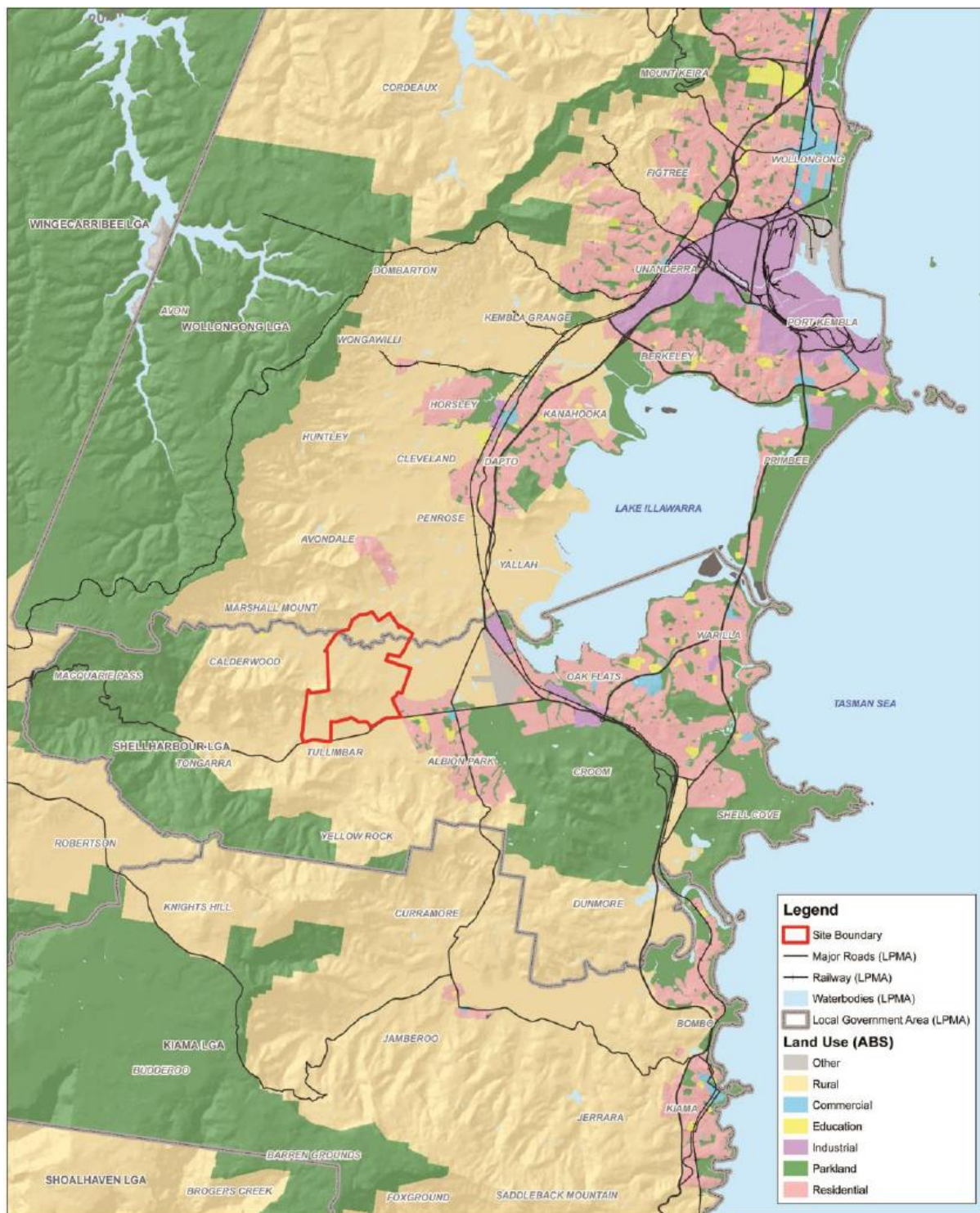


Figure 2 Site location

Source: Lendlease Communities

3.2 Site Description

The CUDP has a total area of approximately 700 hectares. A survey plan is located at **Appendix D**. An aerial photo of the site is at **Figure 3**.

A legal description of the site is also provided at **Appendix D**. While the modification relates to the Approved Concept Plan that applies to the whole Calderwood site, a significant number of land parcels have already been subdivided and sold, and other areas are subject to existing development consents for subdivision and civil works. No changes are proposed that would directly affect lots that have already been subdivided and sold, or those stages with current subdivision development applications (either under assessment by Council or approved).

Lendlease is the developer of the majority of the CUDP (i.e. it is the developer of approximately 609 ha of the overall 700 ha site). The component of the overall CUDP owned / or being delivered by Lendlease and to be developed by Lendlease in accordance with the Approved Concept Plan is illustrated at **Figure 4** below. Other areas of land, nominated as 'non-core lands', within the boundaries of the Approved Concept Plan are owned by and to be developed by separate entities/other private developers.

Lendlease has commenced the development of its component of the overall CUDP and will continue to develop the project in stages over an approximately 15+year period. To date Lendlease has obtained development consents for some 1,200 lots within Stages 1, 2a, 2b and 2c and 3a, and lodged development applications for another 650 lots in Stages 3b south and 3c of the overall project. Other developers have also lodged development applications for a further 824 lots on land within the Approved Concept Plan boundary that Lendlease does not own or control (i.e. on the non-core lands).

Key elements of the CUDP that have already been delivered include:

- The temporary community centre called 'The Sprout Hub' has been constructed;
- Two local parks: Flame Tree Park and Pine Tree Park have opened in Stage 1; and
- Fig Tree Park (3.8ha district park) is soon to be completed, also in Stage 1;
- Djindi Bridge over the Macquarie Rivulet has been constructed;
- New Route 75 bus service from Shellharbour to Calderwood Valley is operating;
- A new roundabout and entry on the Illawarra Highway has been constructed; and
- 372 residents already living in approximately 140 new homes.

A site analysis plan identifying the relevant site features is provided in the Urban Design Report prepared by RPS at **Appendix E**.



Figure 3 Aerial photograph

Source: Lendlease

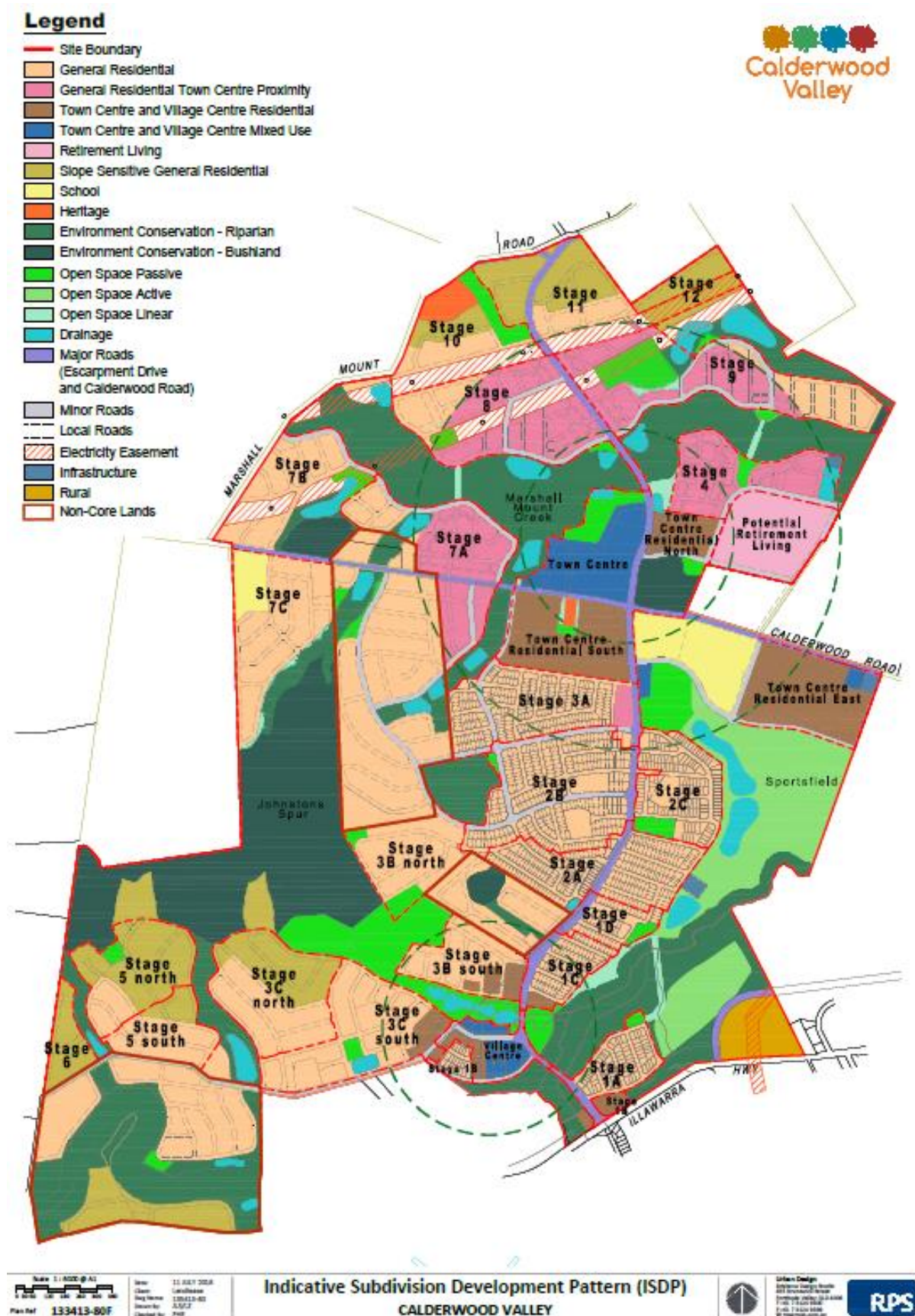


Figure 4 Indicative Subdivision Plan showing Ownership and approved stages with approved subdivision layout

Source: Lendlease and RPS

3.3 Surrounding Development

Development surrounding the site is still predominantly rural in nature as can be seen in the aerial photograph at **Figure 5**. However, since the concept plan was approved the following development and further planning in the surrounding locality has occurred:

- The first stages of the Tullimbar Development have been constructed to the south of the site – approximately 300 dwellings. Overall it is expected that 1,410 dwellings will be constructed as part of this development.
- Stage 5 Yallah Marshall Mount at West Dapto, north of the CUDP, has been rezoned. Approximately 1,000 hectares of land was rezoned from rural to a mix of residential, business, environmental, open space and industrial zones. This release area is forecast to deliver approximately 3,300 dwellings.
- The Tallawarra Concept Plan was approved in May 2013 which provides for the development of approximately 1,000 lots and 200 dwellings in a retirement village. A modification application has been lodged with the Department of Planning and Environment to increase the yield of the development up to a total of 1,480 lots.
- The Albion Park Rail Bypass has been approved by the Department of Planning and Environment (SSI 6878). The project will complete the missing link for a high standard road between Sydney and Bomaderry (just north of Nowra). The project would form part of the Princes Highway upgrade, which aims to provide a four-lane divided highway between Waterfall in southern Sydney and Jervis Bay Road, Falls Creek.

Shellharbour Council has finalised its planning of the Tripoli Way Extension which is the future bypass of Albion Park that runs parallel to Tongarra Road. Tripoli Way starts at the Illawarra Highway (north of Terry Street) through to the Illawarra Highway/Broughton Avenue intersection. The Shellharbour City Council project will alleviate traffic congestion along the Tongarra Road commercial area (Albion Park town centre) and provide an alternative route to the approved M1 motorway interchange.

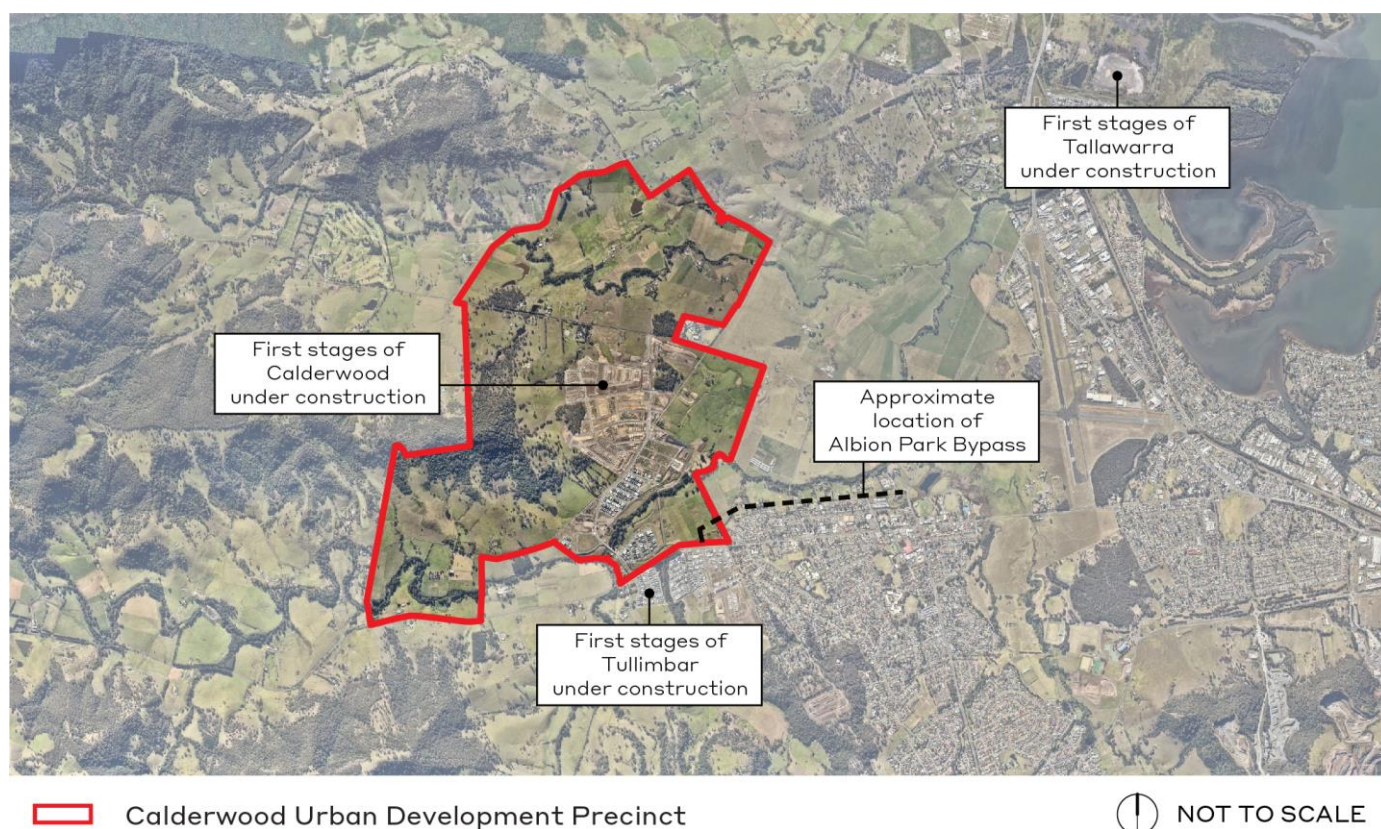


Figure 5 Calderwood and surrounding locality in 2018

Source: Nearthmap

4.0 Description of the Proposed Modifications

This chapter of the report provides a detailed description of the proposed modification. The amended Concept Plan drawings are included at **Appendix F**.

4.1 Purpose of Proposed Modifications to the Approved Concept Plan

The proposed modification to the Approved Concept Plan seeks to increase the total provision of housing (approximate number of dwellings) within the overall CUDP to respond to market demand for the provision of smaller housing types / lot sizes at affordable price points and to ensure the efficient use of urban zoned land within this context for the supply of housing.

It is proposed to increase the overall number of dwellings to be delivered within the existing area of land zoned R1 General Residential and B4 Mixed Use and also approved for urban development as shown on the Approved Concept Plan from approximately 4,800 to approximately 6,500 dwellings.

The increased residential yield proposed is predominantly due to affordability pressures that are driving stronger demand for smaller and more diverse housing types in the Illawarra. Those stages of development already approved in the CUDP include a more diverse mix of housing types and lot sizes than was supported by the market at the time the Concept Plan was originally approved in 2010, both in the Lendlease holdings and for those developments being progressed by others.

If current trends in demand for lot sizes and dwelling types continue, the overall yield anticipated by the Approved Concept Plan will be reached without some stages of the CUDP being developed. If this occurs, the currently approved yield would also constrain the delivery of low scale apartments within the town centre, given the residential component of the town centre is proposed to be developed in the later stages of the overall development. Existing land zoned for urban development and where housing is permissible would not be able to be taken up for ongoing housing supply. This would mean opportunities for housing close to shops, jobs and services, and to provide housing suitable for smaller households, will be missed. Allowing for increased housing supply will support the delivery of more integrated housing product in appropriate locations within the CUDP, including more diverse housing product.

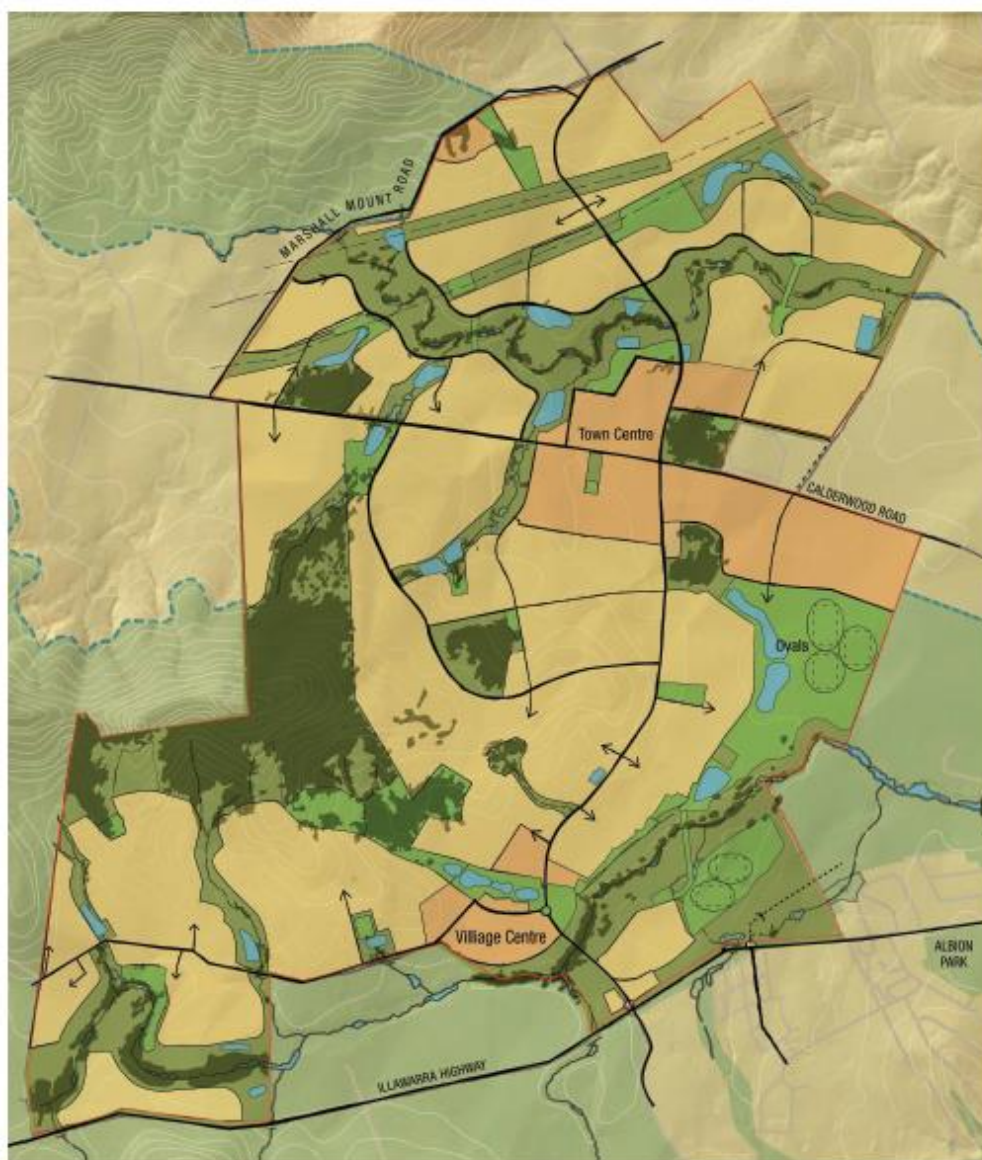
The increase in housing supply for the CUDP is proposed without any expansion of the footprint of urban zoned land (residential and mixed use zoned land) and without any change to the minimum lot sizes permitted under State Environmental Planning Policy (State Significant Precincts) 2005 (State Significant Precincts SEPP). It is also proposed without any change to the areas of land already approved for residential and other urban development under the existing Concept Plan Approval.

No substantive changes are proposed to the Approved Concept Plan in respect of approved land uses, the urban structure of the development, the road and pedestrian network within the site, the overall range of minimum lot sizes/dwelling types/lot types to be provided, nor the scope of environmental protection outcomes for the land including the quantum and configuration of riparian and environmental corridor and environmental reserve lands. Within the Approved Concept Plan framework, the proposed increased dwelling yield will be achieved via the delivery of a greater diversity of dwelling types and lot sizes within the R1 General Residential and B4 Mixed Use zones generally as follows:

- Within the R1 General Residential zone, additional yields will be achieved through the delivery of a more diverse range of housing types such as seniors housing and integrated housing and also by a different mix of lot sizes than was anticipated at the time of the Approved Concept Plan in 2010 (including a greater number of smaller lots) to respond to the changing and more diverse market expectations and housing affordability pressures. Specifically, increased densities in the R1 zone are proposed within 800m of the Town Centre and 400m of the Village Centre via additional locational criteria;
- Within the B4 Mixed Use zone, the number of dwellings to be provided will be increased through the provision of a combination of more shop top housing, mixed use development and stand-alone residential development.

A range of new provisions are proposed to be incorporated into the DCS to allow for the broader range of housing typologies, lot sizes and affordable housing options that are proposed to meet current market demand. There is no change proposed to the minimum lot sizes prescribed by the SSP SEPP, Condition B6 and as already prescribed by the DCS.

The proposed modified Concept Plan is shown at **Figure 6**. The revised concept plans are provided at **Appendix F** along side the approved concept plans so that a comparison can be made. Also provided in **Appendix F** is the modified concept plan with the zoning plan overlayed which shows that the approved development footprint has not changed. Rather the additional density is achieved by way of minor amendments to the layout of development within the development footprint and a greater range of housing types.



Concept Plan (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 6 Proposed modified Concept Plan

Source: Taylor Brammer

4.2 Comparison of the Approved Concept Plan and Proposed Modifications

A comparison of key elements of the Approved Concept Plan and the proposed modifications is set out in the table at **Appendix G**. In summary, the following modifications are proposed to the Approved Concept Plan:

- Increase in total number of dwellings from approximately 4,800 to approximately 6,500;
- Additional 5,000m² retail GFA in the town centre (total 25,000m²);
- Additional 14.2 ha recreation area/open space to be provided 50/50 split active/passive open space (total 47.4 hectares);
- Expanded community centre – additional 300m²(total 1,200m²);
- Additional contributions towards library facilities in Shellharbour – equivalent to an additional 220m² (total 845m² of library facilities);
- New housing typologies introduced into the DCS;
- Additional locational criteria where integrated and small lot housing will be permissible being within 800m of the Town Centre and 400m of the Village Centre;
- Modified upgrades to Road Infrastructure, including:
 - Calderwood Road: upgrade from two to four lanes from Tripoli way to the eastern boundary of the CUDP to be delivered with Town Centre retail;
 - Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections; and
 - Other minor network changes reflecting the continuous alignment of Calderwood Road through the CUDP and proposed road layouts of non-core landowners;
- Updated Water Management Strategy, including minor amendments to areas of cut and fill across the site;
- Consequential changes resulting from subsequent Voluntary Planning Agreement (VPA) negotiations and discussions with other government bodies, including:
 - Confirmation of the location of the first primary school, confirmation of areas for the schools and changes to timing of transfer of land to the Department of Education to reflect the revised timing of delivery of the schools, in particular the high school which is now expected to be delivered around 2031;
 - Provision of a monetary contribution for library facilities in lieu of onsite provision consistent with the VPA with Shellharbour City Council (SCC); and
- A new holistic ESD Strategy seeking to achieve a Six Star Green Star Communities rating rather than provision of a solar farm and/or tri generation.

The following elements of the Approved Concept Plan generally remain the same:

- Zoning and developable area;
- Minimum lot sizes (as provided for by Condition B6 and the DCS);
- Land designated as being Environmentally Sensitive;
- Retention of core riparian zones Rehabilitation of riparian corridors and ecologically sensitive areas;
- Riparian crossing points (bridges);
- A treatment train approach for water quality management;
- Number and location of village and town centres;
- Provision of two primary schools and one high school;
- Public transport infrastructure;
- Bushfire protection measures – no change to Asset Protection Zones

- Management of Contamination
- Management of Acid sulfate soils
- Management of Ground water
- European Heritage Conservation, retention of Cemetery and Marshall Mount House (including a 2ha curtilage to Marshall Mount House)
- Management of Aboriginal archaeological sites
- Management of geotechnical constraints
- Open space structure and hierarchy
- Embellishment of local, district and citywide parks and sports fields
- Residential neighbourhood character areas
- Infrastructure Servicing Strategy
- Retention of Johnstons Spur
- Retention four environmental reserves
- Provision of permanent and temporary community centres
- Provision of pedestrian and cycle networks
- Provision of north-south and east west sub-arterial and major collector roads and a network of local roads

4.2.1 Social infrastructure

The following additional social infrastructure is proposed to support the additional population in the CUDP:

- The community centre is to be increased in size by 300m² bringing the total size of the community facility to 1,200m². The community centre is to be relocated into the Town Centre on a site that is accessible and visually prominent.
- Additional monetary contributions are proposed for new library space equivalent to an additional 220m² of library space, increasing the total library floor space contributions to 845m².

It is noted that Condition C12 of the Approved Concept Plan currently requires the onsite provision of a library facility. However, during the negotiation of the VPA with Shellharbour City Council it was agreed that a monetary contribution be paid in lieu of the onsite provision and that the library was better placed elsewhere in the Shellharbour LGA in line with the *Shellharbour City Libraries and Museum Strategy 2024*. It is therefore proposed to amend Condition C12 to reflect the executed VPA in respect of the library contributions.

The provision of three schools on the site, two primary schools and one high school, remains the same under the proposed Concept Plan. However, further consultation with the Department of Education has revealed that the second primary school provided on the site need only be 2 hectares, rather than the 3 hectares currently approved. In light of this it is proposed to amend the Approved Concept Plan to reduce the size of the land allocated for the second primary school to 2 hectares as required by the Department of Education. The confirmed school locations are shown in **Figure 7**. It is also proposed to delay the timing of the provision of the land for the high school more inline as to when the Department of Education expects to deliver the high school in 2031.

4.2.2 Open space provision

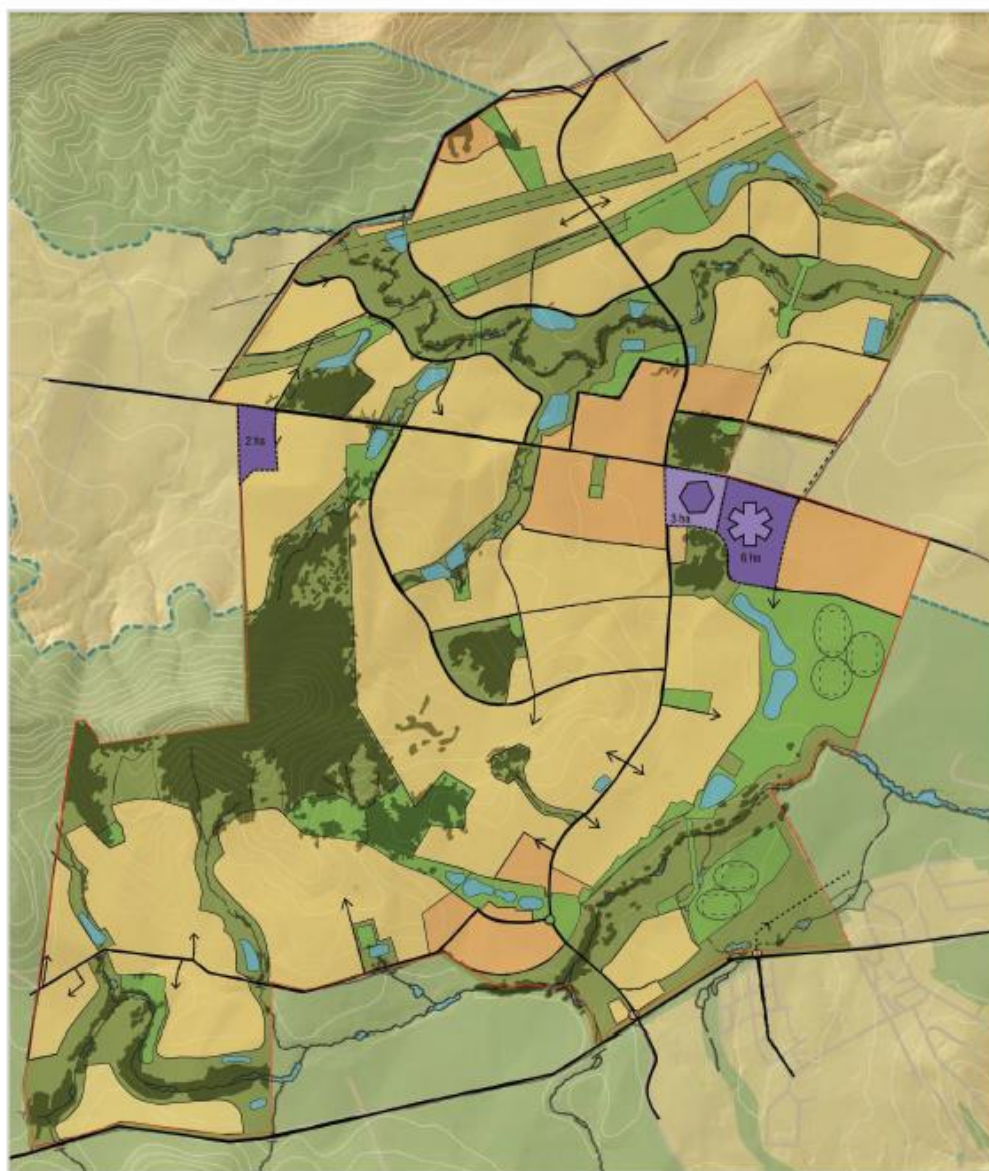
In addition to the above social infrastructure, it is proposed to increase the amount of open space provided within the CUDP by 14.2 hectares to support the additional population, bringing the total amount of open space provided up to 47.4 hectares. This is to be provided in the following manner:

- 23.7 hectares for sporting grounds (active open space); and
- 23.7 hectares for passive open space (local parks, district parks and city-wide parks).

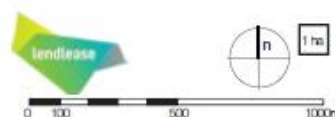
The locations of the new proposed open space are identified in **Figure 8** and at **Appendix H**.

4.2.3 Modifications to Town Centre

It is proposed to increase the amount of retail floorspace permissible within the Town Centre by 5,000m² of retail floor space, bringing the total amount of retail floorspace up to 25,000m². It is also proposed to clarify that employment uses will be located east and west of Escarpment Drive and not just to the east as stated in the Approved Concept Plan. A further discussion on the town centre and assessment of economic impacts is provided at **Section 6.4** and **Appendix Q**.



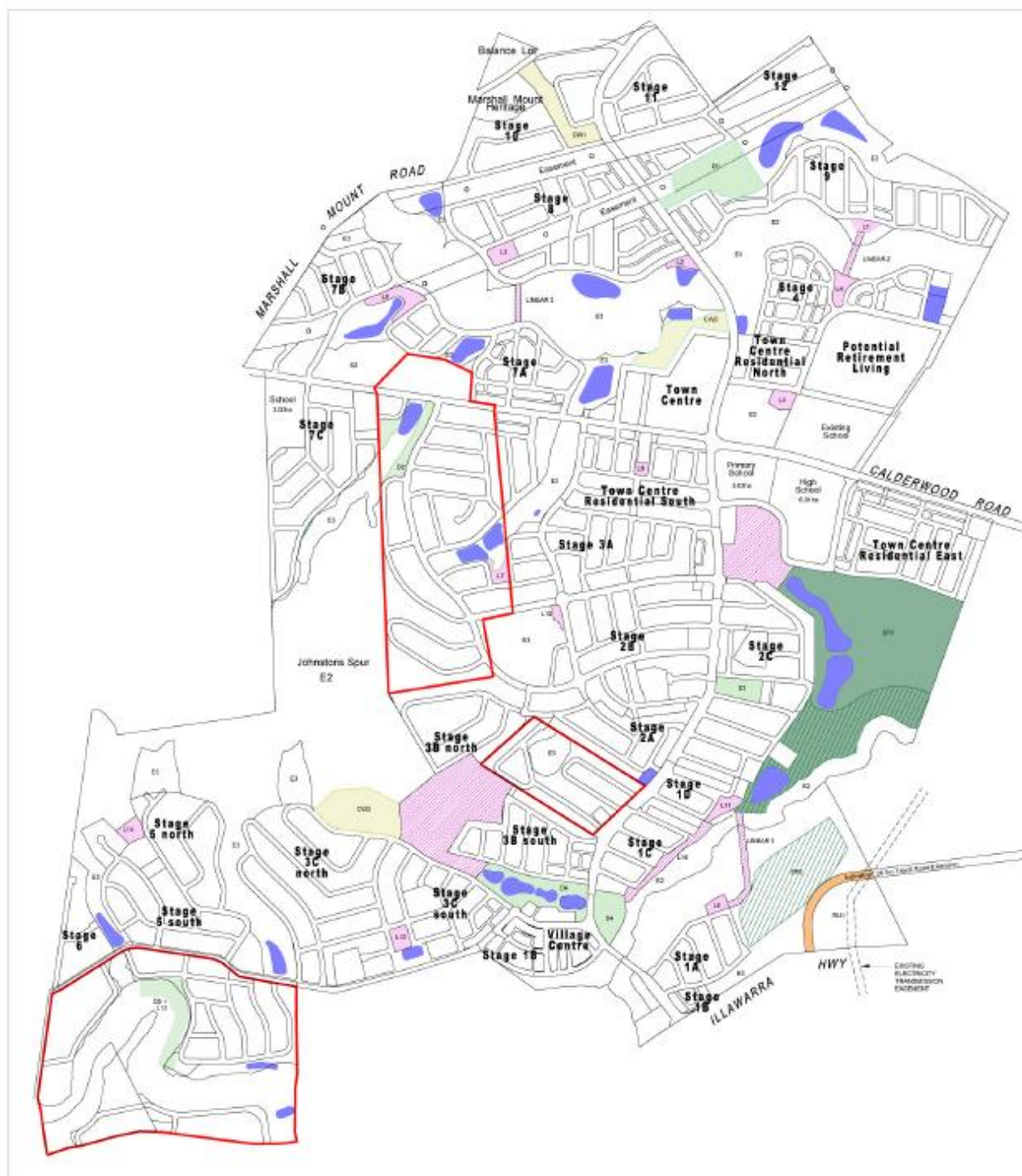
Possible School Sites (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 7 Plan showing confirmed school locations

Source: Taylor Brammer



Calderwood Open Space Analysis (MOD 4)

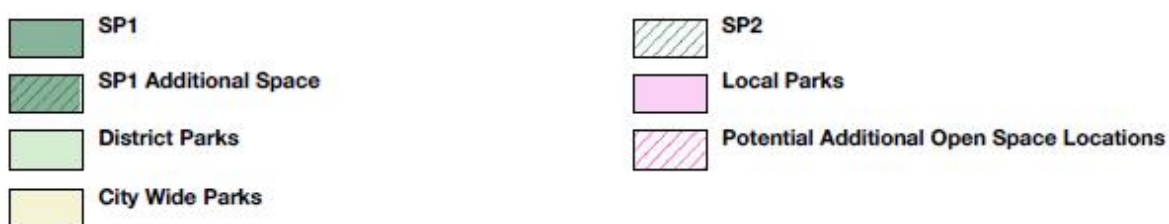


Figure 8 Plan showing locations of additional open space

Source: Taylor Brammer

4.2.4 Transport network modifications

In order to accommodate the increased traffic movements associated with the larger residential population, Cardno has identified that the following modifications to the proposed road network are required:

- Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections;
- Priority control T intersections have been proposed at the Marshall Mount Road/Escarpment Drive and North Marshall Mount Road/Marshall Mount Road intersections to give priority to the traffic driving along Escarpment Drive which is expected to have the higher Average Daily Traffic Volume.
- The northern alignment of Escarpment Drive has been amended to reflect the new intersection arrangement and to provide more suitable gradients for bus services which will utilise this road; and
- Upgrade of Calderwood Road from Tripoli Way to the eastern boundary of the CUDP from a two lane road to a four lane road to be delivered with the Town Centre retail.

In addition to the above modifications to the road network which are required to accommodate the increased densities, it is also proposed to modify the transport network concept plan to reflect the revised road layout that has subsequently been proposed by non-core landowners. This includes the extension of Calderwood Road through to the western boundary of the CUDP and revised local road network through non-core lands connecting to that section of Calderwood Road.

The above modifications to the road network are shown in **Figure 9**.

4.2.5 Flood and stormwater management modifications

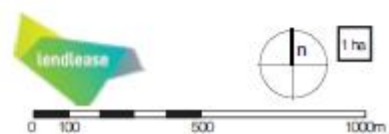
The concept of a treatment rain approach is maintained in the modified proposal, however, minor amendments are proposed to the extent of cut and fill within the CUDP to manage flood waters as shown in **Figure 10**. These remain generally consistent with those approved under the Concept Plan.

4.2.6 Environmentally Sensitive Lands and E2/E3 Land

There are no changes proposed to the location or extent of environmentally sensitive lands or land zoned E2 Environmental Conservation or E3 Environmental Management. It is proposed to delete stream reach #15 as shown circled in red in **Figure 11**.



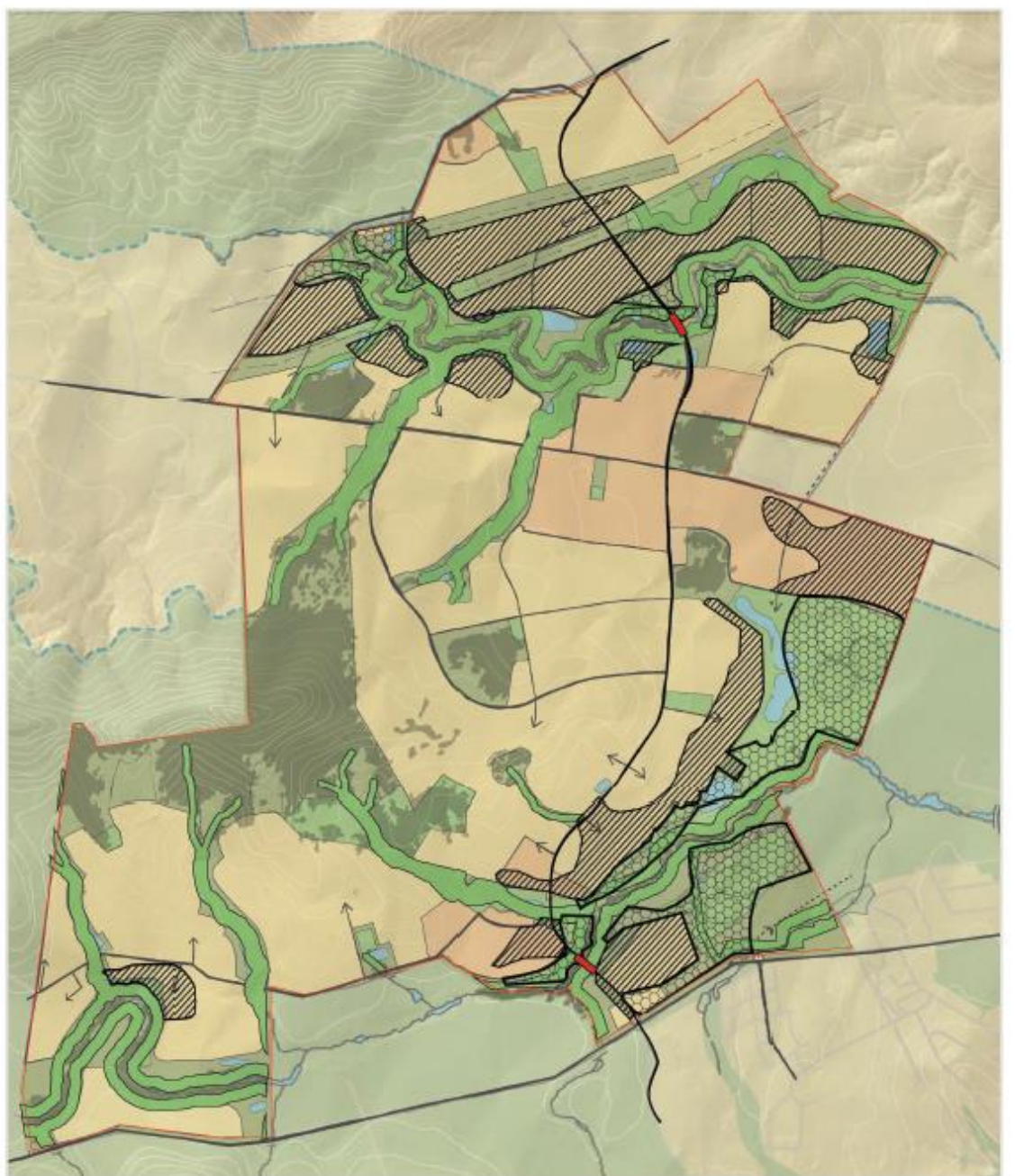
Road Layout and Hierarchy (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

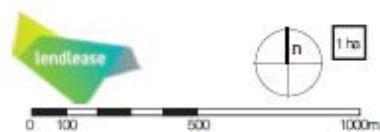
Figure 9 Modified road network

Source: Taylor Brammer



Flood Mitigation Plan (MOD 4)

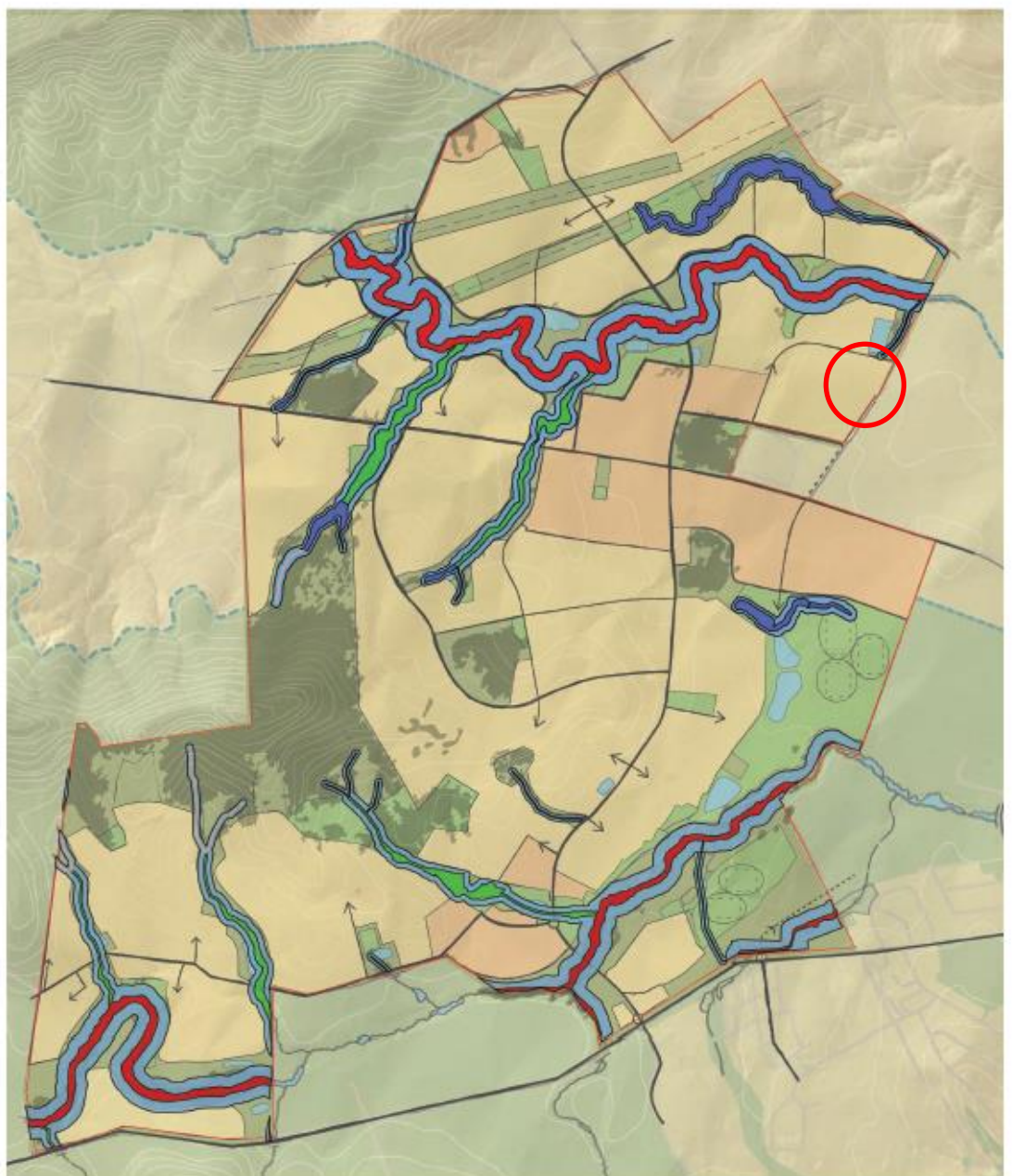
-  Floodplain regrade - increase elevation
-  Floodplain regrade - decrease elevation
-  Proposed Increased Roughness
-  Proposed Road Bridge



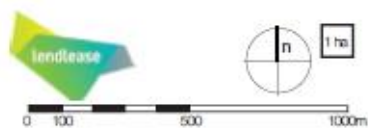
Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 10 Modified flood mitigation plan

Source: Taylor Brammer



Proposed Riparian Corridor Network (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 11 Riparian Corridor Network with modification

Source: Taylor Brammer

4.3 Proposed Development Control Strategy modifications

In order to achieve good urban design outcomes and improve housing affordability, several amendments are proposed to the Development Control Strategy (DCS). The modifications seek to introduce additional housing types not currently detailed in the DCS and also to align the Approved Concept Plan and DCS with the Growth Centres Housing Diversity Package and State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

The modifications proposed are summarised as follows:

- Introduction of additional housing typologies, including design criteria for those housing types;
- Amendments to the location criteria for Integrated Housing and small lot housing;
- Amendments to the timing of subdivision of Integrated Housing;
- Introduction of Urban Design Principles and Built Form objectives for the Town Centre; and
- Introduction of some additional road sections.

These are discussed in more detail at **Section 6.6** of this report and a tracked changes version of the DCS is provided at **Appendix I**.

As more detailed controls have now been included in the Town Centre section of the DCS which will form part of the modified concept approval, it is proposed to delete Condition C9 in its entirety which required more detailed controls to be inserted in the DCS for the Town Centre.

4.4 Development Staging

There is no change proposed to the development staging of the project. Staging plans will continue to be submitted with each detailed development application in accordance with Condition C1 of the Concept Plan.

4.5 Infrastructure and Services

Infrastructure can be augmented to service the additional population. Some modifications are proposed to the servicing routes of the infrastructure as shown in the diagrams contained within the report prepared by Cardno at **Appendix K**.

4.6 Proposed Modifications to Conditions of Consent and Statement of Commitments

4.6.1 Conditions

In order to implement the proposed changes to the concept plan it is proposed to make the following changes to the conditions of consent. Deletions are shown in ~~bold strike through~~ and additions in **bold italics**. The reason for each change is also provided under each condition.

Schedule 1 – Part A Project

Approval in summary for: Concept Plan for a development on approximately 700 hectares for approximately ~~4,800~~ **6,500** dwellings, 50 hectares of mixed use land, open space and land for environmental protections, and associated infrastructure.

Reason: To reflect the proposed increase in dwellings.

Schedule 2 – Part A – Administrative Terms of Approval

Condition A1 – Development Description

(1) Except as modified by this approval, Concept Plan approval is granted only to the carrying out of development solely within the Concept Plan area as described in the document titled “State Significant Site Study and Environmental Assessment Report – Calderwood Urban Development Project” dated March 2010, as amended by

the “Preferred Project Report – Calderwood Urban Development Project” dated August 2010, prepared by JBA Urban Planning Consultants and **Calderwood Concept Plan Environmental Assessment Report prepared by Ethos Urban dated July 2018**, to facilitate the following development:

- a) Approximately ~~4,800~~ **6,500** residential dwellings
- b) Approximately 50 hectares of mixed use land ~~for~~ **including** a range of retail, commercial, **residential, education, community** and light industrial uses
- c) Open space and protection for environmentally significant lands
- d) Internal roads, service infrastructure and community facilities

Reason: To refer to the updated EAR and to reflect the proposed increase in dwellings. The modification also seeks to make abundantly clear the range of uses permitted in the mixed use land which were described and described and approved in:

- Section 3.4 of the Consolidated Concept Plan Environmental Assessment Report,
- Sections 3 and 5.8 of the Director-General’s Assessment Report, and
- Condition B6 of the Notice of Determination, and
- are permissible with development consent in the B4 Mixed Use Zone.

The additional uses listed include residential, educational and community uses.

Condition A2 – Development in Accordance with Plans and Documentation

- (1) The development shall generally be in accordance with the following plans and documentation (including any appendices therein):
 “State Significant Site Study and Environmental Assessment Report – Calderwood Urban Development Project” dated March 2010, as amended by the “Preferred Project Report – Calderwood Urban Development Project” dated August 2010, prepared by JBA Urban Planning Consultants. Except for otherwise provided by the Department’s modifications of approval set out in Schedule 2, Part B and further assessment requirements set out in Schedule 2, Part C **and as modified by the Environmental Assessment Report prepared by Ethos Urban dated July 2018**.
- (2) ...

Reason: To refer to the updated EAR.

Condition B6 Urban Design

- (8) Residential lots less than 300m² in area are permitted within the General Residential Area (as outlined in the controls for ‘Integrated Housing’ in the Residential Development Controls table in **the Development Control Strategy Appendix G of the PPR**) but only where subdivision of these lots occurs after the construction of dwellings and are located where the dwellings directly adjoin or are located directly opposite the following:
 - (a) public parks at least ~~0.3ha~~ **0.2ha** in size, or
 - (b) the Town and Village Centres, **or**
 - (c) **where the dwellings are within 800m of the Town Centre or 400m of the Village Centre.**

~~The minimum allotment size can be varied for the subdivision of ‘Integrated Housing’ under the Exceptions to Development Standards – Other Development clause in the Major Development SEPP.~~

The consent authority may consider issuing a development consent for integrated development which allows for the issue of a Subdivision Certificate before the construction of the dwellings is complete, subject to the following criteria being imposed as a condition of consent allowing the early release of the subdivision certificate:

- 1. The completion of all civil/ subdivision works to the satisfaction of Council’s Construction Engineer.**

2. *The submission of a valid Section 73 Compliance Certificate issued under the Sydney Water Act 1994 confirming satisfactory arrangements have been made for the provision of water and sewer services.*
3. *The submission of a valid notification of arrangement certificate from Endeavour Energy or other energy provider confirming satisfactory arrangements have been made for the provision of electrical services.*
4. *The submission of a valid telecommunications infrastructure provisioning confirmation certificate from the relevant telecommunications provider authorised under the Telecommunications Act confirming satisfactory arrangements have been made for the provision of telecommunication services.*
5. *If required by a condition of consent; written confirmation from the relevant consent authority confirming that all applicable developer contributions have been paid.*
6. *The creation of a restriction on the title of all incomplete lots/ dwellings prohibiting development aside from the completion of the dwellings in accordance with the issued development consent. Separate development applications for dwellings on the lots created will not be accepted.*
7. *Where the dwellings have been partially constructed; the submission of a survey plan prepared by a Registered Surveyor confirming the location of the dwellings in relation to the proposed boundaries demonstrating compliance with the issued development consent.*
8. *The payment of a security bond to guarantee the completion of building works. The bond amount will be determined as part of Council's consideration of the early release application (above).*
9. *The payment of all outstanding Council fees associated with the subdivision component of the development, including a security bond application fee.'*

Reason: To provide increased densities (integrated housing and small lot housing on lots less than 300m²) in appropriate/strategic locations and to allow for subdivision certificates to be issued before the completion of dwellings. The amendment to the minimum park size is proposed to reflect the executed agreement with SCC. To make clear that the development standard in respect of minimum lot size is contained in the Concept Plan and a variation request is not required in respect of the minimum lot size control if the development application complies with the development standard contained in condition B6.

C8 – Retail Floor Space

The maximum retail floorspace for the Town and Village Centres shall be as follows:

- a) Village Centre – 5,000m²
- b) Town Centre – ~~20,000m²~~ 25,000m²

Reason: To reflect the proposed increase in retail floor space in the Town Centre.

~~C9 – Urban Design – Town Centre~~

~~Prior to the first application for development in the Town Centre, a strategy is to be developed and submitted to the Department of Planning for approval, to encourage the following:~~

- ~~a) Minimisation of land use conflicts through distribution of uses including the consideration of noise, odour, air quality, hours of operation, parking and commercial waste.~~
- ~~b) Buildings should address and define streets providing a relatively continuous street frontage for safe and attractive circulation.~~
- ~~c) Maximise active ground floor uses as possible and entrances located directly off the main street.~~
- ~~d) Provide weather protections for pedestrians in public areas in the form of awnings, sails or other climate appropriate methods.~~
- ~~e) The creation of a high quality public domain, including equity of access~~
- ~~f) Appropriate setbacks to the cemetery.~~

Reason: - Further design criteria for the Town Centre have been inserted in the DCS which are submitted with the modification application for approval. The requirements of this condition are thus satisfied and it can be deleted.

Condition C12 – Local Infrastructure Contributions

The requirements for local infrastructure **for all development carried out pursuant to this Concept Plan approval** shall be generally in accordance with the following **or as otherwise agreed with the relevant Council principles**:

- g) Community facilities – the following community facilities ~~as identified Appendix K of the Preferred Project Report~~ are to be provided:
 - a. A temporary community centre (approximately 120-150m²)
 - b. A permanent community centre (approximately ~~1,200m²~~ **900m²**), including the dedication of 4,000m² land; and
 - c. **Monetary contributions towards library facilities, equivalent to 845m² floor space. Branch Library (approximately 626m²) adjoining the community centre.**
- h) Open Space – the following open space areas are to be provided:
 - a. A total of approximately ~~23.7ha~~ **17.36ha** of open space (made up of local parks, district parks and city-wide parks); and
 - b. Sports fields/active open space of approximately ~~23.7ha~~ **15.84ha**,

Note: the area identified as Johnson's Spur and the ancillary open space areas (made up of drainage reserves and open space corridors reserves) are not to be included in the open space contributions.
- i) Local Roads – contribution towards the following road works are supported. The total cost, apportionment and timing of these works shall be determined in consultation with the Department of Planning:
 - a. Upgrade of Marshall Mount Road (referred to in the TMAP as 22, 23 & 24);
 - b. Upgrade of Yallah Road from Marshall Mount Road to Haywards Bay Drive (referred to in the TMAP as 25);
 - c. Upgrade to the intersection of Marshall Mount Road and Yallah Road (referred to in the TMAP as 36);
 - d. Construction of the Tripoli Way extension (referred to in the TMAP as 14, 15 & 16);
 - e. The construction of the intersection of Tripoli Way with the Illawarra Highway (referred to in the TMAP 30);
- j) Other Road Works – the following road works are needed to directly access to site and are therefore not to be included in the S94 framework. These will be required as per conditions of approval and the timing will be determined as part of future subdivision approval.
 - a. The upgrade of Calderwood Road from the site boundary to Tripoli Way extension (referred to in the TMAP as 32) **to be delivered with the Town Centre Retail;**
 - b. Construction of the internal north-south sub arterial road (referred to in the TMAP as 33, 34 & 35);
 - c. Upgrade of the intersection of the Illawarra Highway and Yellow Rock Road to provide site access (referred to in the TMAP as 37).

Reason: To reflect the additional local contributions to be provided as part of the modified development.

4.6.2 Statement of Commitments

A tracked changes version of the Statement of Commitments is provided at **Appendix L**. Changes proposed are made for one or some of the following reasons:

- The commitment has already been satisfied and is no longer relevant or required;
- The commitment requires updating to reflect the modified development; or
- A new commitment is required to address a new issue not previously covered.

The specific justification for each modification to the commitments is provided in the table at **Appendix L**.

Changes are proposed to the Commitments to also reflect that some of the works and public benefits will be delivered by 'non-core landowners' and not the Proponent (Lendlease). Given this it is considered that some of the commitments are better addressed as a condition of consent rather than a commitment.

5.0 Consultation

In accordance with the SEARs issued for this project, consultation was undertaken with the following stakeholders:

- Shellharbour City Council
- Wollongong City Council
- Sydney Water
- Department of Planning and Environment
- Office of Environment and Heritage
- Department of Primary Industries
- Department of Education
- Roads and Maritime Services
- Transport for NSW
- Department of Education
- Transgrid
- Endeavour Energy
- Jemena
- Opticom
- Illawarra Airport
- Rural Fire Service
- Calderwood Christian School
- Uniting Church
- Environmental Protection Authority
- Non-Core Landowners

A community information session was also held on 2 June 2018 at the Sprout Hub Community Centre which was attended by approximately 46 people. A Consultation Outcomes Report, prepared by Eltons and summarising the consultation activities undertaken, is submitted at **Appendix M**.

A summary of the issues raised and the proposed project response is presented in **Table 2**. Several consultants have undertaken additional consultation with relevant parties during the preparation of their reports.

The proposed development will be placed on public exhibition for 30 days in accordance with clause 83 of the *Environmental Planning and Assessment Regulation 2000*. During the public exhibition period Council, State agencies and the public will have an opportunity to make submissions on the project.

Table 2 Summary of Issues Raised and Response

Issue	Response
The impact that the proposed modification will have on existing dwellings and already purchased properties at Calderwood Valley.	There will be no change to any purchased or already developed properties. The proposed increase in dwelling numbers will be limited to sections of Calderwood Valley that have not been purchased or developed, in areas that were zoned residential and mixed use land in the Approved Concept Plan.
The proposed modification should not impede on the conservation areas and open spaces planned for Calderwood Valley under the Approved Concept Plan.	This modification will not include any change to Calderwood's conservation areas. There is no change to the footprint of zoned residential and mixed use land, and no encroachment on Calderwood's natural environment. Lendlease will continue to preserve the 220 hectares of open space and conservation lands around the community.

Issue	Response
	<p>There will be no loss of open space from the Approved Concept Plan. The modification will provide opportunities for additional green open spaces at Calderwood Valley, including passive recreational areas and sporting areas/fields.</p>
<p>The locations at Calderwood Valley where the increases in density are expected to occur.</p>	<p>The increase in density will primarily be located in the areas surrounding the town and village centres. Lendlease is helping meet market demand and assisting with housing affordability pressures in the Illawarra by delivering a greater diversity of homes in the CUDP, including terraces, low-rise apartments and housing on top of shops.</p> <p>Under the proposed modification there is also an opportunity for 270 retirement living units and aged care homes, potentially located in the northeast of the site. The Approved Concept Plan does refer to retirement living and seniors housing as part of future residential and mixed use development.</p> <p>Under the proposed modification, Lendlease will develop 5,300 dwellings (including retirement living) at Calderwood Valley on some 609ha of land with the remaining 1,200 dwellings to be developed and delivered by other private developers.</p>
<p>There should not be high rise apartments or high density housing at Calderwood Valley.</p>	<p>Under the proposed modification, there will be no change to the land use zoning or height provisions under the State Significant Precinct SEPP. Condition B6 of the approved Concept Plan currently permits integrated and small lot housing directly adjoining areas of higher amenity including local parks and town and village centres.</p> <p>The current Development Control Strategy permits apartments up to 6 storeys in the town and village centres. The majority of the site will remain as standard density residential development, with additional location criteria to enable integrated and small lot housing within 800 metres proximity of the Town Centre and 400 metres of the Village Centre.</p> <p>The approved Concept Plan currently provides for a range of housing options – terraces, low-rise apartments and housing on top of shops.</p> <p>This increase in residential yield will help activate the village and town centres, make public transport more feasible and support the delivery of community amenities, such as health care and medical facilities, childcare, shops, cafés and retailers.</p> <p>There will also be no change to the 18-metre height restrictions from the original Approved Concept Plan generally across the B4 Mixed Use Zone</p>
<p>The current road network and transport infrastructure will not be able to support the increase in density at Calderwood Valley.</p>	<p>Lendlease has engaged Cardno to provide up-to-date traffic modelling to ensure the local road infrastructure and public transport network can support the proposed increase in density.</p> <p>A range of transport upgrades have already been delivered to support increases in dwelling numbers at Calderwood Valley. These include:</p> <ul style="list-style-type: none"> • New roundabout and entry statement on the Illawarra Highway • Djindi Bridge across the Macquarie Rivulet now open • Premier Illawarra bus service Route 75 from Shellharbour to Calderwood Valley now operating • Share way (shared bike/pedestrian pathway) on Escarpment Drive. • Pedestrian pathway link between the new Calderwood Valley community along Illawarra Highway to facilitate safer access to the Tullimbar Public School. • Ongoing transport upgrades are also being delivered to support the Calderwood Concept Plan including: • New internal road – Escarpment Drive – now under construction to Calderwood Road • Future Escarpment Drive including a new bridge across Marshall Mount Creek and linking to Yallah-Marshall Mount Release Area. • Contributions toward the future Albion Park Bypass. • Transport upgrades proposed to be delivered to support the increasing number of residents:

Issue	Response
	<ul style="list-style-type: none"> Future Calderwood Road upgrade with the delivery of the retail component of the town centre and/or Tripoli Way works
The modern housing options proposed for Calderwood Valley will not fit with rural character of the surrounding neighbourhoods.	Lendlease's priority is to provide the community with a development that meets their demands and needs. Market research conducted by Lendlease has shown that Calderwood Valley's customers are hoping to purchase a 'home that looks like a home', with the benefits of rural living and the conveniences of city life. To meet this demand, Lendlease is proposing to develop modern housing options that still fit with the rural character of the surrounding neighbourhoods.
The proposed modification should not mean Calderwood Valley loses the community facilities promised under the original Approved Concept Plan.	<p>Lendlease is continuing to deliver the community facilities promised under the original Approved Concept Plan. The proposed modification will also enable Lendlease to boost the community by:</p> <ul style="list-style-type: none"> Providing opportunities for expanded community facilities Supporting the delivery of community amenities, such as new schools, child care and medical facilities Potentially delivering additional open space, including new sports fields Providing 5,000 square metres in additional retail floor space in the town centre.
Ensuring connectivity between community facilities both across the site and with surrounding neighbourhoods.	<p>The proposed modification will not reduce connectivity across the Calderwood Valley site and with the surrounding Shellharbour and Wollongong neighbourhoods. This can be seen by:</p> <ul style="list-style-type: none"> Internal and external road upgrades that increase accessibility to Calderwood Valley's open spaces, town centre and other community facilities New footpaths, walking tracks and bike trails Greater connectivity through the riparian corridors A higher population at Calderwood Valley will allow for improved community facilities – including additional retail space and more viable public transport Opportunities for co-sharing spaces in the town centre and in the education precinct.
Increasing the population of Calderwood Valley will create additional flood risks.	<p>Lendlease has engaged JWP to review the Calderwood Valley water management plan to mitigate local flood risks and water quality.</p> <p>The updated plan will ensure there is adequate flood storage areas, reduce the risks of flooding in areas on-site that are prone to inundation and maintain high safety standards for both Calderwood Valley residents and the surrounding community.</p>
The increase in density will impact water quality at Calderwood Valley.	<p>JWP, as part of their water management plan, have assessed how existing water quality devices can be improved to support the proposed population increase at Calderwood Valley.</p> <p>JWP have taken a holistic, site-wide water management approach to ensure that water quality standards are maintained across both the Lendlease and privately-owned sections of the site.</p> <p>A Water Cycle and Flood Management updated Strategy has been prepared by JWP. In terms of water quality, the strategy proposes a treatment train of Water Sensitive Urban Design including on lot controls, gross pollutant traps, raingardens and absorption trenches / level spreaders, consistent with the approved Concept Plan and subsequent development applications.</p>
The importance of preserving native vegetation, biodiversity, wetland areas and the riparian corridors at Calderwood Valley.	<p>Under the proposed modification, Lendlease will maintain its commitment to preserving Calderwood Valley's conservation areas, local vegetation and riparian corridors. Lendlease is dedicated to preserving natural heritage at Calderwood Valley. There is no change to land zoned E2 Environmental Conservation or E3 Environmental Management including Johnston's Spur and the four environmental reserves.</p> <p>Lendlease is willing to work closely with relevant stakeholders to ensure that Calderwood Valley continues to be a sustainable community.</p>

6.0 Environmental Assessment

This section of the report assesses and responds to the environmental impacts of the proposed modification. It addresses the matters for consideration set out in the SEARs (see **Section 1.5**). The Mitigation Measures at **Section 7.0** complement the findings of this section.

6.1 Relevant EPIs, Policies and Guidelines

The relevant environmental planning instruments, policies and guidelines as set out in the SEARs are addressed in **Table 3**.

Table 3 Summary of consistency with relevant Strategies, EPIs, Policies and Guidelines

Instrument/Policy/Guideline	Comments
State Legislation	
Biodiversity Conservation Act 2016	To be addressed at the detailed application stage as confirmed by the Office of Environment and Heritage. Refer to Biodiversity Assessment Report at Appendix N for an initial analysis of the proposal under the BC Act.
Environmental Planning and Assessment Act 1979	<p>The proposed development is consistent with the objects of the EP&A Act for the following reasons:</p> <ul style="list-style-type: none"> The proposed modification reflects the proper management and delivery of new development within the CUDP by refining the development framework to reflect changes in market conditions and to increase the supply of a greater range of housing types. The proposed modifications to the Approved Concept Plan retain all principles of environmental protection and management that were integral to the original approval including preservation of riparian corridors, stormwater management, flood mitigation works, which will enable a better environment for the future community of CUDP. The proposed modifications directly respond to market demand for a greater range of housing typologies and therefore this modification provides a coordinated approach to the orderly and economic delivery of the Approved Concept Plan. The proposed modifications have resulted in a review of proposed local and regional infrastructure and facilities to ensure that the infrastructure demands can be met in an orderly and coordinated manner. An assessment of the proposed modifications in relation to the principles of ecologically sustainable development is provided at Section 8.3 of this report. Overall, it is considered that this modification will directly contribute to the supply of housing within the Illawarra Region to assist with achieving housing affordability within the local area. <p>The proposed development is consistent with Division 4.7 of the EP&A Act, particularly for the following reasons:</p> <ul style="list-style-type: none"> the development has been declared to have state significance; the development is not prohibited by an environmental planning instrument; and the development has been evaluated and assessed against the relevant heads of consideration under section 4.15(1). <p>Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated.</p>
Rural Fires Act 1997	The proposed modification does not alter the bushfire hazard or development boundary with respect to the hazard. Refer to Section 6.16 and Appendix O .
Water Management Act 2000	The relevant approvals will be sought under the Water Management Act for works within the Riparian Corridors.
State Environmental Planning Policies	
State Environmental Planning Policy (State Significant Precincts) 2005	No changes are proposed to the controls applying under the SSP SEPP. The proposed development remains consistent with the relevant controls and an assessment of compliance will continue to be undertaken during the assessment of detailed development applications.

Instrument/Policy/Guideline	Comments
State Environmental Planning Policy (Housing for Seniors and People with a Disability) 2004	An assessment of the proposed Aged Care Facility and Independent Living Units will be made at the time a detailed application is made for this accommodation.
State Environmental Planning Policy (State and Regional Development) 2011	Separate future development applications will be made with consideration of this SEPP and will be assessed and determined by the relevant consent authority.
State Environmental Planning Policy (Infrastructure) 2007	<p>The proposed development comprises traffic generating development and will be referred to the RMS during the assessment of the application.</p> <p>In order to deliver some of the road works associated with development it will be necessary to rely on the provisions in the SEPP which allows for the construction of roads on behalf of a public authority. It will therefore be necessary for both Wollongong and Shellharbour City Councils to assist with these works.</p>
State Environmental Planning Policy No 55 (Remediation of Land)	The proposed development does not seek to alter the land uses proposed within the CUDP. The Environmental Assessment submitted with the Approved Concept Plan remains unchanged and demonstrates that the site can be made suitable for the development as envisaged by the Approved Concept Plan, inclusive of the proposed modifications.
State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development;	Refer Appendix E which demonstrates that the intended future residential development subject to SEPP 65 will be delivered in accordance with the ten design principles contained within SEPP 65. Any future DA for a residential flat building, shop top housing or mixed use developments being 3 storeys or more and containing four or more dwellings, will need to demonstrate compliance with SEPP 65 and achievement of the objectives of Part 3 and Part 4 of the ADG.
State Environmental Planning Policy No. 64 – Advertising and Signage	SEPP 64 will continue to apply to any future development application for signage.
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	Future applications for dwellings will be required to comply with the detailed provisions of SEPP BASIX. Nothing within this modification application will limit the ability of future compliance.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008	The proposed modifications will not alter the application of the Codes SEPP in relation to the CUDP. Modifications are proposed to the DCS which align with this SEPP. It is noted that the Greenfield Housing Code will apply to Calderwood.
State Environmental Planning Policy (Coastal Management) 2018	The northern portion of the CUDP site includes land identified as within the coastal zone, being coastal wetlands. The proposed modifications will not give rise to any additional impacts on the coastal wetlands or area in the proximity of coastal wetlands. This is addressed further in the Biodiversity report at Appendix N .
Local Environmental Plans	
Shellharbour Local Environmental Plan 2013	<p>The detailed provisions of the Shellharbour LEP 2013 do not apply to the CUDP. Notwithstanding this, the proposed modifications to the Approved Concept Plan are consistent with the aims of the LEP in that:</p> <ul style="list-style-type: none"> • The proposed modifications directly aim to increase the diversity in housing types available within the precinct; • The concept plan as proposed to be modified will promote environmental protection including riparian corridors and deliver an improved environmental outcome for the site; • The overall project will deliver a balanced social, environmental and economic development for the precinct; • The proposed modifications have considered environmental hazards including bushfire risk, flooding and geotechnical constraints and detailed mitigation measures are set out in Section 7 of this report; and • The proposed modifications will not impact on existing heritage items within and surrounding the site.
Wollongong Local Environmental Plan 2009	<p>The detailed provisions of the Wollongong LEP 2009 do not apply to the CUDP. Notwithstanding this, the proposed modifications to the Approved Concept Plan are consistent with the aims of the LEP in that:</p> <ul style="list-style-type: none"> • The proposed modifications are the result of a revised consideration of the capacity of the site to deliver a range of housing choices in response to market up-take and environmental constraints;

Instrument/Policy/Guideline	Comments
	<ul style="list-style-type: none"> The concept plan as proposed to be modified will continue to protect and enhance riparian corridors and biodiversity assets; A detailed review of infrastructure has been completed as part of the proposed modifications to ensure that the development forecast by the concept plan can be adequately serviced; and The proposed modifications will not impact on existing heritage items within and surrounding the site.

6.2 Strategic Planning Goals and Objectives

The relevant strategic plans, policies and guidelines as set out in the SEARs are addressed in **Table 4**.

Table 4 Summary of consistency with relevant strategic plans, policies and guidelines

Strategy/Plan	Comments
NSW State Priorities	Addressed in detail in Section 6.2.1.
Illawarra-Shoalhaven Regional Plan 2015	Addressed in detail in Section 6.2.2.
NSW Long Term Transport Master Plan	<p>The proposal remains consistent with the Plan in that it:</p> <ul style="list-style-type: none"> Provides a range of transport options for existing and future residents; Facilitates public transport connections to the town and village centres of the development, also the regional centre of Shellharbour City Centre and Albion Park and Oak Flats Rail Stations; Locates seniors housing close to the town centre where services for an ageing population can be provided and accessed by a variety of transport options; Provides transport solutions that will maintain the amenity of and character of the area; and Contributes towards the upgrade of the rural highways/road network through State Contributions (VPA).
Draft Future Transport Strategy 2056	<p>The proposal is consistent with the Regional NSW Customer Outcomes in that it:</p> <ul style="list-style-type: none"> Provides appropriate transport options for the scale of development proposed; Lendlease is monitoring the precinct with technology allowing for improvements to transport options if and when they arise; Access to transport will be improved and more flexible with the potential introduction of a car share scheme on the site; Transport options are provided linking residents with major places of employment, education and cultural activities within the region; and The road network has been designed to be resilient to significant weather events. <p>Calderwood will be a successful place with a high level of liveability, amenity and economic success which is enhanced by the transport options provided. The additional density will make more frequent public transport options and a potential bus link to Wollongong City Centre more viable.</p>
Draft Regional NSW Services and Infrastructure Plan	<p>The proposal is consistent with the draft Regional NSW Services and Infrastructure Plan in that it:</p> <ul style="list-style-type: none"> Provides alternative transport options which will provide options for residents to utilise public and active forms of transport rather than sole reliance on private motor vehicles; and A public transport option is provided to the nearest regional city of Shellharbour City Centre and also Albion Park and Oak Flats rail stations. <p>In respect of the infrastructure committed to, the following is noted:</p> <ul style="list-style-type: none"> The Albion Park Bypass has been considered in the traffic modelling for the project. High speed connections between Wollongong and Sydney would benefit residents of Calderwood should the future bus connection be provided by Premier Buses to Wollongong City Centre.

Strategy/Plan	Comments
RMS Guide to Traffic Generating Developments	The proposal has been assessed in accordance with the requirements of this document and the consultant team have met with the RMS to discuss the proposed road network design. The application will also be referred to the RMS during the assessment process
Public Transport Service Planning Guidelines: Rural and Regional NSW (2015)	<p>The proposal is generally consistent with the Public Transport Service Planning Guidelines in that:</p> <ul style="list-style-type: none"> • The majority of dwellings will be within a ten-minute walk of a bus stop; • The transport options proposed and existing are consistent with and support the proposed land uses within the precinct; • The public transport options operating are consistent with the strategic hierarchy of the locality; • Bus services provided are accessible to people with disabilities; • The existing public transport routes are connected with other forms of transport including rail and broader regional transport options in the city centre; • The bus route runs hourly on weekdays, however there is potential to improve frequency with greater density; and • The transport is legible and easy to navigate.
Austroads Guidelines	All roads within the Calderwood Precinct will be designed to comply with the Austroad Guidelines. The proposed modification does not change this.
NSW Bicycling Guidelines	All bike paths provided on the site will be designed to comply with the NSW Bicycle Guidelines. One of the key design principles of the precinct is to provide a high level of connectivity to encourage both cycling and walking. The provision of additional open space will create the opportunity to better connect the cycle routes through the precinct.
NSW Planning Guidelines for Walking and Cycling	<p>The proposal remains consistent with the guidelines in that it:</p> <ul style="list-style-type: none"> • Comprises a modified grid street hierarchy and engaging and active streets that promote permeable connections and accessibility, trip containment, walking, cycling and use of public transport. • Provides walking and cycling networks designed to provide for both commuter and recreation users linking key amenities within the project as well as providing access to existing neighbouring facilities.
NSW State Rivers and Estuaries Policy	Refer to JWP report at Appendix P .
Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-Use Planning Decisions	
Illawarra Floodplain Risk Management Study and Plan 2012	
Macquarie Rivulet Flood Study	
Crime Prevention Through Environmental Design (CPTED) Principles	A requirement to consider CPTED principles during the preparation of detailed development applications is provided at Section 1.6.6 of the DCS.
Better Placed – An integrated design policy for the built environment of NSW	The key design principles outlined in this document are discussed further in the urban design report at Appendix E .
Healthy Urban Development Checklist, NSW Health	<p>The proposed modifications will continue to provide a development that encourages a healthy urban development. In particular:</p> <ul style="list-style-type: none"> • Retail floorspace is maintained and fresh food will be sold within the village and town centres; • There is no impact on any agricultural land; • Bicycle and pedestrian paths are provided throughout the precinct as are quality local and regional open space all of which encourage physical activity; • The modification will allow for an increased dwelling diversity and will promote more affordable housing; • Regular public transport is provided and car share programs are being negotiated; • Free WIFI is provided in some public spaces;

Strategy/Plan	Comments
	<ul style="list-style-type: none"> • Employment opportunities are to be created within both the village and town centres. Services are also proposed which will enable people to work from home; • The development will be constructed with CPTED principles incorporated; • The proposal includes features to encourage the active use of public open space, bushland and the like; • Streets will be appropriately landscaped and design for pedestrian and cyclist safety; • A significant amount of social infrastructure is proposed to support the community including schools and a community centre; • Lendlease are running community programs which seek to encourage and foster social cohesion and social connectivity, this includes the new Sprout Hub community centre; and • Environmental protection measures have been integrated into the proposed design to avoid adverse environmental impacts.
NSW Waste Avoidance and Resource Recovery Strategy 2014-2024 & NSW Government Waste Less, Recycle More Initiatives	<ul style="list-style-type: none"> • Lendlease is committed to undertaking a sustainable development. As part of its Green Star application it has committed to repurposing, reusing or recycling a proportion of the construction and demolition waste. • For operational waste minimisation the Council's residential recycling and green waste services will apply.

6.2.1 NSW State Priorities

The NSW Premier has set 12 Priorities which seek to ensure that a 'whole of government' approach is taken to tackling important issues for the people of New South Wales.

Of particular relevance to the proposed modification application are the priorities relating to accelerated land release for housing, improving housing affordability, reduced time taken to obtain housing approvals and providing housing stock more appropriate for people's needs.

By amending the anticipated dwelling yield within the CUDP, the proposed modification will increase the supply of housing to respond to the differing needs of the community. It will facilitate the delivery of an additional 1,700 residential dwellings capable of accommodating a range of housing types at varying price points. The proposal will contribute to increasing the supply of housing and will help to place downward pressure on housing prices and is consistent with the NSW State Priorities.

6.2.2 Illawarra Shoalhaven Regional Plan

The Illawarra Shoalhaven Regional Plan 2015 applies to the local government areas of Kiama, Shellharbour and Wollongong.

The Illawarra Shoalhaven Regional Plan identifies that the population of the Illawarra-Shoalhaven area is projected to grow to 463,150 by 2036, amounting to an additional 60,400 people. In addition to this population growth, it is recognised there is a growing demand for housing that responds to the needs of lower-income earners. In particular, it is anticipated there will be a strong demand for detached housing and smaller dwelling types, including one, two and three bedroom homes.

A key aim of the plan is to increase the provision of housing and provide a diversity of housing choices which respond to the varying needs and lifestyles of the growing population. A clear direction is that housing delivery must be accelerated to meet the needs of the growing population and changing demographics, including an increasingly ageing population together with improved housing affordability, supply and choice.

The Plan identifies the region will need at least 35,400 new homes between 2016 and 2036, equating to an average of 1,770 dwellings each year across the region. Notwithstanding, a supporting study recognises that there is a declining growth in the average supply of dwellings. Calderwood is identified in the Regional Plan as one of the key opportunities to supply new homes within the Illawarra. This view is supported by Ethos Urban's economic consultant and is discussed further at Section 6.4 of this report.

The proposed modification is consistent with the objectives of the Plan in that it will facilitate the delivery of an additional 1,700 dwellings, including a more diverse range of housing types and sizes suited to the projected housing needs of residents and an increased supply of housing within the Calderwood Town Centre area, a growth area with good connections to the surrounding centres of Wollongong and Shellharbour City.

Due to the rapidly growing proportion of older people, the Plan projects that there will be significant growth in one and two person households resulting in more demand for smaller dwelling types. The proposed increase in residential yield will directly contribute towards the provision of smaller dwelling types and more diverse housing types that cater to the changing lifestyle demands of the community including opportunities for suitable locations and options to deliver housing for seniors and retirement living.

Consistent with Goal 3 of the Plan, the proposed modification and CUDP seeks to deliver a community that is strong, healthy and well connected, demonstrated by the extensive open space, hike and bike and walk/cycle networks throughout the site, and the proposed delivery of a range of different housing types to suit a diverse community.

Goal 5 of the plan identifies a focus on a region that protects and enhances the natural environment. The proposed increase in yield will not adversely impact the existing commitments to protection, rehabilitation and manager of important riparian land or remnant vegetation within the site.

6.2.3 A Plan to Improve Housing Affordability

On 1 June 2017, the NSW Government delivered a package of reforms and new measures aimed at improving housing affordability across NSW. The package outlines policies that take into account the difficulty that first home buyers face in entering the market, the state's growing population and the need to ensure that development occurs close to essential infrastructure such as roads, railway lines and schools.

Key principles of the reforms relevant to the CUDP include:

- Boosting housing supply.
- Support for First Home buyers by facilitating the delivery of smarter and compact apartments (for example, with less floor space) in well-designed buildings that complement the neighbourhood.
- Accelerating Infrastructure to support growing communities – providing substantial financial and physical infrastructure contributions as part of project delivery.

The proposed modification will directly facilitate the delivery of the proposed reforms and measures identified as key priorities of the Minister, contributing to relieving current pressures of housing affordability in the Illawarra region.

6.3 Land Use Planning

6.3.1 Residential Densities and Dwelling Mix

As set out in Section 4.1, the proposed modification to the Approved Concept Plan seeks to increase the total provision of housing (approximate number of dwellings) within the overall CUDP to respond to market demand for the provision of smaller housing types / lot sizes at affordable price points and to ensure the efficient use of urban zoned land within this context for the supply of housing. Specifically, as detailed in Section 4.1, the proposed increase in dwelling is responding to:

- Affordability pressures that are driving stronger demand for smaller and more diverse housing types as evidenced by the lot sizes and housing types of the CUDP already approved and constructed;
- The need to ensure sufficient yield under the Approved Concept Plan to ensure all land zoned for residential development can be taken up for the supply of housing as smaller lot sizes and more diversity in housing types has resulted in less land being taken up to deliver the approved yield than originally anticipated;
- The need to accommodate low scale apartments in the town centre, as the residential component of the town centre is proposed to be developed in the later stages of the CUDP close to shops, jobs and services, and to provide housing suitable for smaller households; and
- A desire to support the delivery of more integrated housing product in appropriate locations within the CUDP, including more diverse housing product.

RPS has undertaken a detailed assessment of the proposed layout and densities achievable on the land owned by Lendlease within the Approved Concept Plan. They have prepared an urban design report (**Appendix E**) which outlines an indicative dwelling density for each stage of the development and the dwelling types that are to be delivered within the different precincts of the CUDP. The indicative dwelling numbers and density estimated for each stage are summarised in **Table 5**. The density has been calculated by the number of dwellings divided by the net developable area (area of local roads and development lots).

As depicted in **Figure 12**, increased densities are proposed in the Town and Village Centres as well as the residential stages that are within 800m of the Town Centre (10 minute walk) and 400m of the Village Centre (five minute walk) where there is close access to services, employment, shops and public transport. Increased density is already permitted nearby local parks and in the Town and Village Centres where a higher level of amenity is provided as per condition B6 of the Approved Concept Plan. Lower densities are proposed in areas which are more environmentally constrained and are located further away from the Town and Village Centres.

Locating additional density within an 800m radius of a Town Centre is consistent with strategic planning policies in New South Wales as it provides a higher level of amenity to the residents and tends to reduce reliance on private motor vehicles.

There is no change proposed to the indicative mix of housing in the CUDP being:

- 60% – 85% detached dwellings, attached dwellings, semi attached dwellings and dual occupancies; and
- 15% - 40% other, including multi dwelling housing, shop top housing and residential flat buildings.

In respect of dwelling mix it is important to note that the Approved Concept Plan specifically does not pre-determine the number of dwellings or mix within each future stage and does not approve the indicative dwelling mix. This is because dwelling mix is subject to change over the significant time period for implementation of the development as the market requirements change.

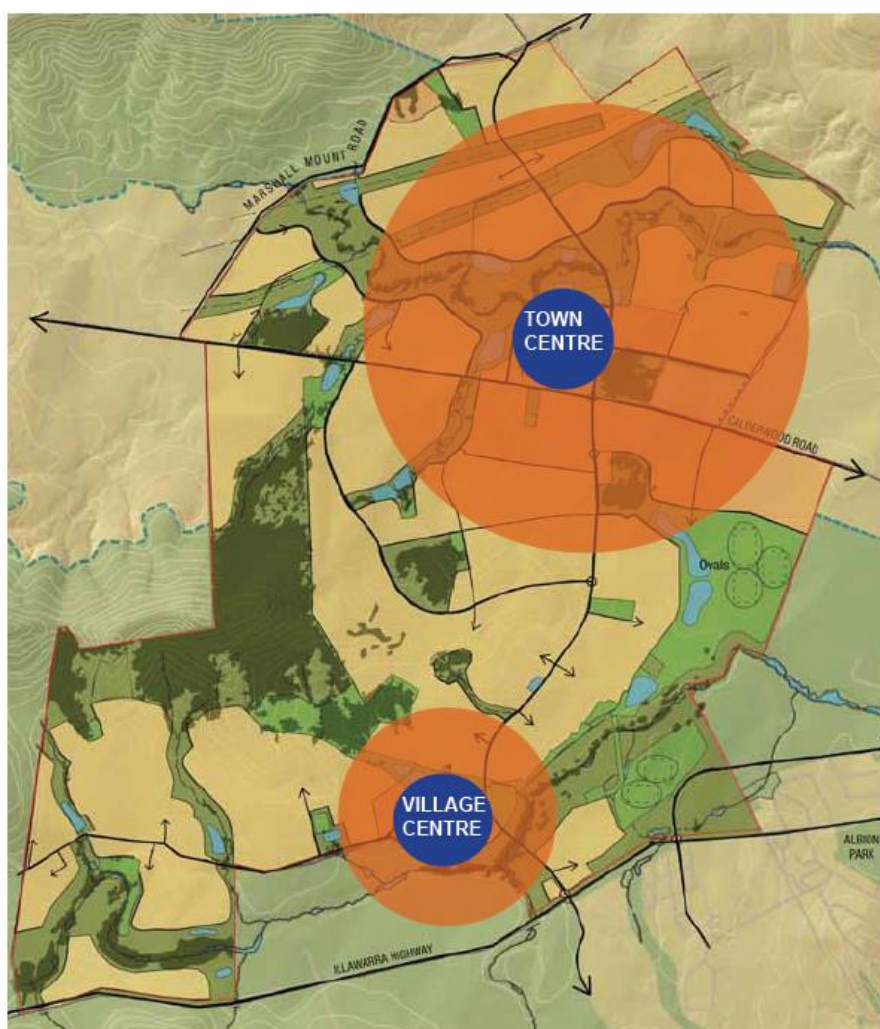


Figure 12 Location of additional density

Source

RPS

Table 5 Existing / Indicative Densities of each stage

Stage	Status	Dwellings	Net Developable Area (ha)	Existing/Indicative Density
1A	Approved	75	5.52	13.6
1B	Approved	43	2.13	20.2
1C	Approved	86	5.27	16.3
1D	Approved	56	3.58	15.6
2A	Approved	224	14.38	15.6
2B	Approved	275	18.18	15.1
2C	Approved	167	7.37	22.7
3A	Approved	302	15.19	19.9
3B SOUTH	Approved	156	8	17.4
3B NORTH	Future Indicative	113	96	12.4
3C NORTH	Future Indicative	201	9.11	12.2
3C SOUTH	Future Indicative	246	16.43	17.0
4	Future Indicative	200	14.48	18.3
5 NORTH	Future Indicative	116	10.95	9.6
5 SOUTH	Future Indicative	89	12.04	11.9
6	Future Indicative	15	4.47	3.6
7A	Future Indicative	269	4.13	21.9
7B	Future Indicative	150	12.28	16.3
7C	Future Indicative	201	13.39	15.0
8	Future Indicative	277	13.39	20.7
9	Future Indicative	272	14.66	18.6
10	Future Indicative	65	6.43	10.1
11	Future Indicative	124	12.96	9.6
12	Future Indicative	12	3.10	3.9
Village Centre	Future Indicative	91	3.70	24.6
Town Centre Residential	Future Indicative	988	30.80	32.1
Potential Retirement Living	Future Indicative	270	11.10	24.3
Town Centre Mixed Use	Future Indicative	300	2.85	105.3
Non-Core Landowners	Future Indicative	902	54.56	16.5
Non LL Resi Lots	Future Indicative	215	11.07	19.4
Total		6500	354.71	18.3

Source: RPS/Lendlease

6.4 Socio-Economic Impacts

A Social and Economic Impact Assessment has been prepared by Ethos Urban and is provided at **Appendix Q**. The assessment looks at the demand for housing in the Wollongong and Shellharbour LGAs and the ability for Calderwood to supply some of that demand.

Housing Supply and Demand

Since its inception, Lendlease's Calderwood project has provided a critical role in supplementing the Illawarra-Shoalhaven regional housing needs. The shortages of housing supply across the Illawarra region remain in place, particularly for new small lot detached houses that represent affordable price points. The proposed amendment in project yield will contribute to long-term relief from persistent under-supply of greenfield and infill housing supply.

The Illawarra Shoalhaven Regional Plan identifies a need for an additional housing supply of close to 1,200 dwellings per annum from the combined Wollongong and Shellharbour LGAs over the 2016-2036 period. Whilst building approvals have been reported at 1,800 per year, many of these approvals require demolition of existing dwellings or relate to holiday homes.

The outlook for the next ten years is not expected to be as strong and, as the property cycle weakens, supply is expected to drop well below the target average of 1,200 dwellings per annum for the combined Shellharbour and Wollongong region. The proposed increase in project yield will be critical to achieving the Strategy target in the next ten-fifteen years.

Shortages of housing supply are evident in the local rental market and rental growth remains high. Based on 2016 Census data, the average rent paid for a 3-bedroom house increased by 25% between 2011 and 2016 (for both LGAs). In addition to this, NSW Government data indicates that rental growth for 2-bed units continued at 6% in both LGAs during 2017. Clearly the regional rental markets remain very tight. In contrast, Sydney's rental growth has softened, as the boom in dwelling completions has begun to gradually erode the city's stock deficiency.

Calderwood has accounted for approximately 40% of the additional supply of new detached houses. Whilst land has recently been released for development in the West Dapto Urban Release Area (WDURA) progress remains within the constraints of critical investment in services infrastructure. The cost base within this release area may prove to be onerous, as a result of the Section 94 contributions combined with a Special Infrastructure Contribution that is yet to have a defined value. It is likely that Calderwood will continue to supply a significant proportion of new housing in the region until major projects across WDURA can combine to supplement the market.

The proposed increased yield from Calderwood can deliver swiftly and act as a safeguard for the Government in terms of a shortage of housing supply in the next ten years in the Illawarra region. As shown in **Figure 13**, our projections of housing supply are that Calderwood can achieve sales of 300 lots per annum during the 2020s, compared with 378 per annum from the WDURA region (based on current information regarding infrastructure funding). The combined total would still be well short of the Strategy target for the Wollongong & Shellharbour LGAs but improving from the outcomes observed during the 2010s.

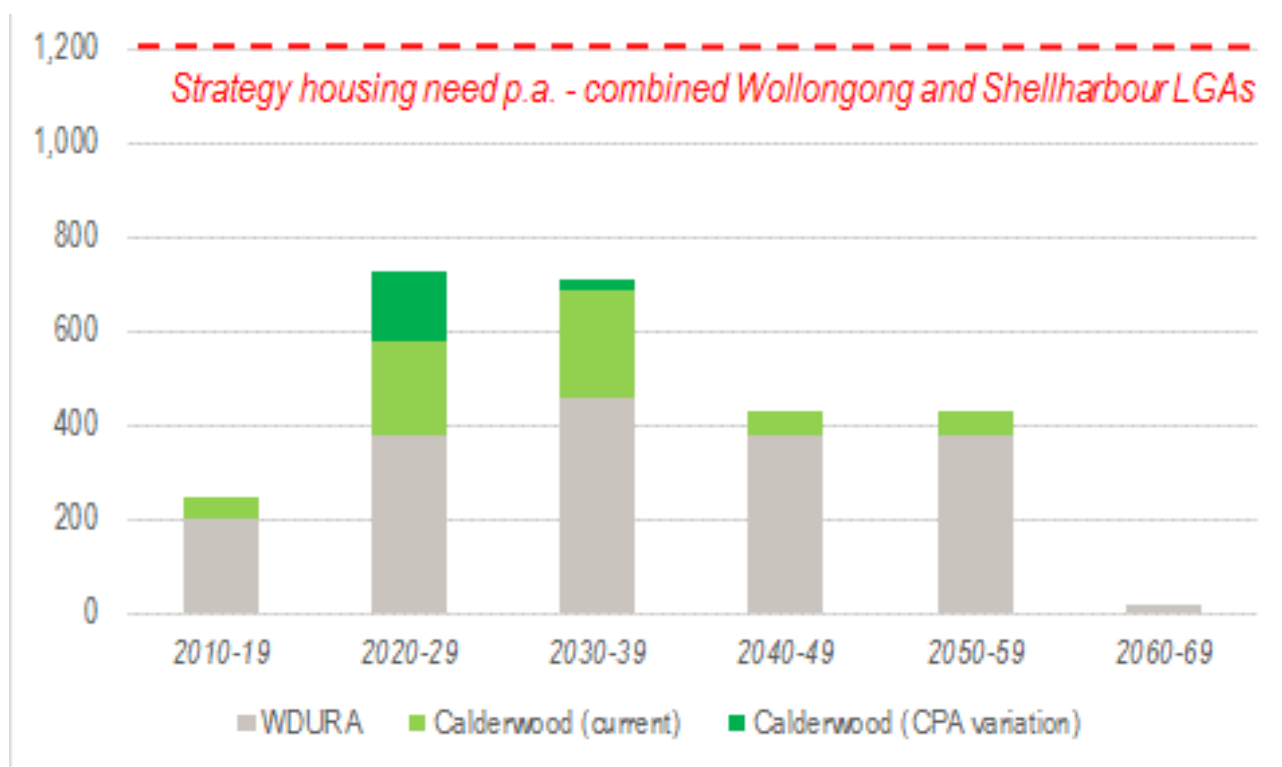


Figure 13 Calderwood & WDURA - projected dwelling yields by developable area p.a

Source: Housing Needs: Department of Planning (2015); Calderwood: Ethos Urban; WDURA: IPART (2016)

Social and Affordable housing

The proposed additional density can also improve conditions for affordable and social housing in the region. The proposed amendment would allow for a larger number of properties that are attractive to investors, in the form of small lot detached homes and apartments, with density located close to the town centre. This housing would be ideal as a mode for rental properties, to meet the needs of tenants who qualify for rental assistance under FACS social housing programs.

A recent increase in local house prices represents a major challenge to affordability for first home buyers. An extended period of high rental growth and lack of new supply provided the stimulus to property prices, in a similar sequence to the conditions in Sydney. However, unlike Sydney, the Illawarra region remains affected by low rates of lot production, so rental growth remains solid, which is creating another round of strain for lower income households.

The proposed increase in the project yield will be modulated by greater provision of small lot housing. Lower price points are highly beneficial for first home buyers, and also attract investors. Calderwood can deliver affordable housing through small lots, at a production rate that can be quickly increased during the next decade.

It is noted that there is no policy direction on the provision of affordable rental housing or social housing in either the Wollongong or Shellharbour LGAs.

Additional Retail Floorspace

The original Concept Plan proposed a total of 25,000m² retail floorspace in the town centre and 5,000m² floorspace in the village centre. This amount of floorspace was based on the conclusion of the 2010 Duane Location IQ assessment of retail floorspace (Appendix CC of the Consolidated Concept Plan) which concluded that a total sustainable retail floorspace within the project boundary was 31,500m² based on a project population of 12,400 people at capacity.

Notwithstanding the above conclusion, the Department in their assessment of the application and response to submissions made by both Wollongong and Shellharbour Councils, reduced the amount of retail floorspace in the Town Centre to a maximum of 20,000m². This was based on its conclusion that a retail floor area per population of approximately 2m² – 2.2m² was considered reasonable based on the Duane Location IQ Report and also ABS data.

As a result of the proposed modification to the Approved Concept Plan, the density of the CUDP is expected to increase to approximately 16,764 people. Assuming the above retail floorspace provision rates, this would equate to a demand of 33,528m² – 36,880m². Given that approval is sought for a town centre of 25,000m² and a village centre of 5,000m² the total provision of 30,000m² will be sustainable.

Further to the above, the proposed provision rate is considered to be conservative given that Duane Location IQ originally concluded that 31,500m² of retail floorspace, which is more than the amount of retail floorspace currently proposed, would be sustainable with a smaller population (12,400 people). In light of this, no adverse retail impacts are anticipated as a result of the additional 5,000m² retail floorspace in the Town Centre.

Employment

The proposed amendments are expected to generate the following additional employment in the CUDP:

- An additional 150 jobs would be enabled by the proposed additional town centre floorspace yield, combined with the RACF and retirement living components. In addition, there is a substantial proportion of households where working from home is the primary mode of activity.
- Construction activity is a vital form of employment associated with subdivision development, albeit limited to the project's delivery phase. During the 2020s, additional building and civil works are projected to add close to 180 FTE jobs per annum.

6.5 Urban Design

RPS has prepared an indicative subdivision layout for the future development of the CUDP (see **Figure 14** and **Appendix E**). The indicative subdivision plan is the result of a detailed analysis of the site constraints. This is evidenced by the fact that lower densities are indicated in areas which are more constrained by either slope or flooding (e.g. stages 5, 6, 10, 11 and 12) as opposed to the less constrained parts of the site such as the town centre and stages surrounding the town centre (stages 7A, 8 & 9).

The additional density has also been focused in the centre of the CUDP which is where the Town Centre is located. This ensures that the density is located within a 10-minute walk of the Town Centre and thereby provides convenience and close access of those residents to shops, services, employment, citywide parks and public transport connections to larger strategic centres. As noted in section 6.3 previously, focusing the additional density in close proximity to the Town and Village Centres is consistent with current strategic planning policy as it ensures that residents will be provided with a suitable level of amenity and access to service and facilities.

The proposed increase in density is not expected to impact on the character of the area as envisaged under the DCS. The different neighbourhood types are proposed to remain and it is expected that the rollout of future development in the residential areas will be consistent with that already developed or approved in the CUDP.

Controls which ensure that future development will be of a high quality design are already included in the DCS and are not proposed to be changed with this application. Section 1.6 of the DCS contains the general housing siting and design controls and Appendix C of the DCS provides the housing typology diagrams which ensure appropriate presentation to the street and also an appropriate interface between neighbouring dwellings.

As can be seen in the indicative subdivision layout, the design of the CUDP has been designed to provide perimeter roads along riparian corridors, minimise battle-axe blocks and rear property boundaries facing publicly accessible visible areas. These design measures will be further reviewed at the detailed DA stage for the subdivision of the rest of the CUDP.

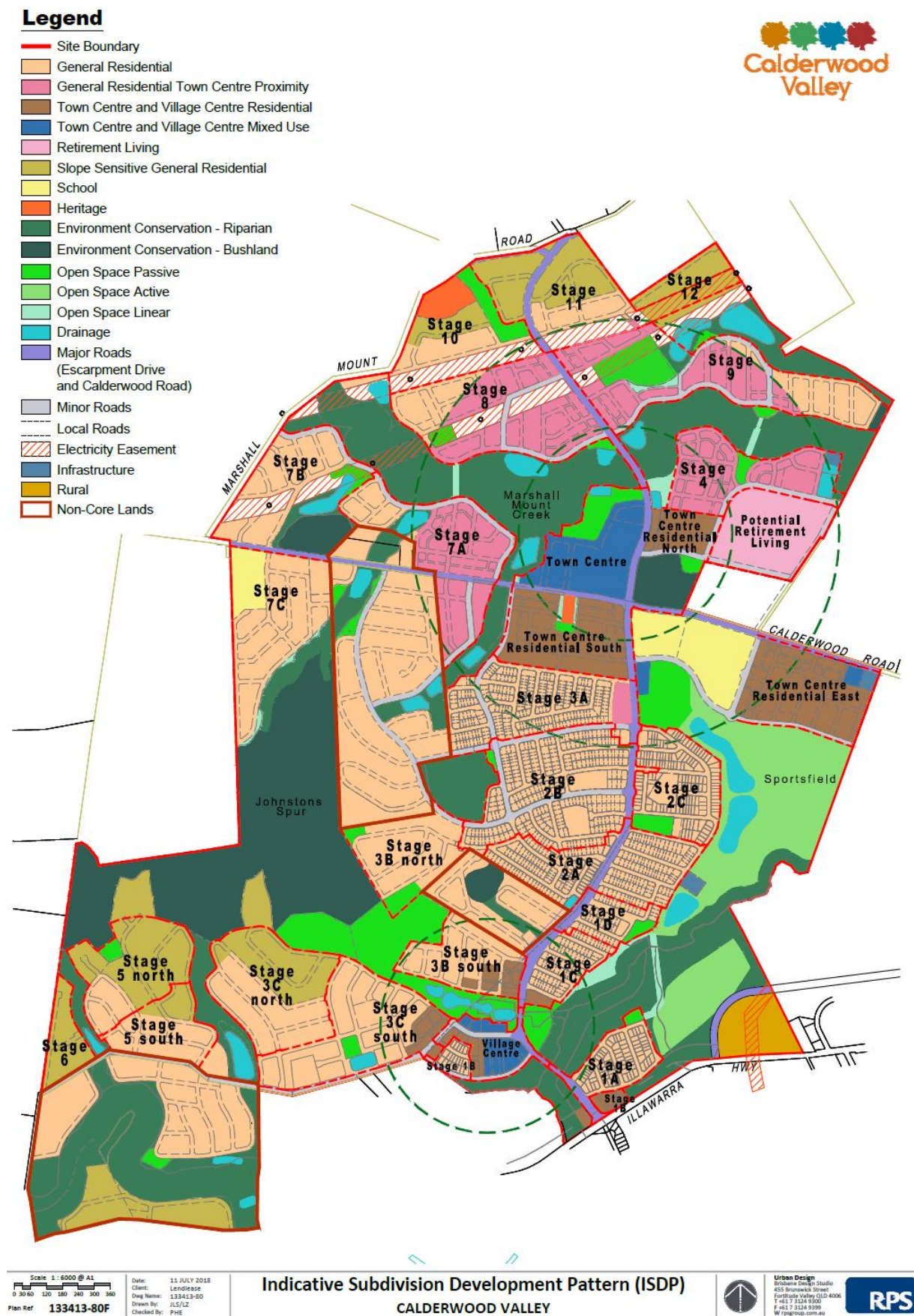


Figure 14 Indicative Subdivision Layout

Source RPS

6.6 Development Control Strategy

In order to achieve the urban design outcomes discussed in the previous section and the Urban Design Report at **Appendix E**, several amendments are proposed to the DCS. The modifications also seek to align the Approved Concept Plan and DCS with the Growth Centres Housing Diversity Package and State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

The modifications proposed are summarised as follows:

- Introduction of additional housing typologies, including design criteria for those housing types;
- Amendments to the location criteria for Integrated Housing and small lot housing;
- Amendments to the timing of subdivision of Integrated Housing;
- Introduction of some additional road sections; and
- Amendment to the rural Landscape / Lifestyle Landscape Character Area.

6.6.1 Dwelling Types

As above, a range of new housing typologies are proposed. Section 1.5 of the DCS has been updated to provide a description of each of these. The new housing typologies include:

- Urban Sleeve/Nano Homes (front and rear access);
- Town Home Dwellings
- Strata Four Pack (rear access);
- Manor Homes (rear access);
- Patio Homes;
- Duplex Dwellings; and
- Strata studios.

Photos of some of the housing to be provided in the CUDP are provided below. The increased range of dwelling types caters for a broader range household types and introduces more affordable housing options. This is one of the key drivers of the changes proposed to the DCS. New design criteria have also been introduced in Appendix C of the DCS to ensure that a suitable design outcome is achieved when the new housing typologies are constructed.

6.6.2 Street Types

One new street typology is proposed to be introduced into the DCS which is to be known as B3 Major Collector adjacent Rural Lands. This new street typology is proposed to be located in areas adjacent to rural lands as shown highlighted yellow in **Figure 1**. It is proposed to only provide a footpath on one side of the major collector road in these parts of the site as limited pedestrian movement will occur along the rural interface and thus the provision of a second footpath is not warranted.

Several existing street types have been amended (A1, A2, B1, B2, C1, C2, D1 and D2). The changes include a general increase in travel lane width, reduction in median width and cycle lanes, resulting in a (generally) reduction in overall carriageway widths. Footpaths have been increased in size where possible. All carriageway widths are consistent with the relevant Australian Standards.

The new street typology and changes to existing typologies are proposed to allow for flexibility in urban design of the streetscape and also to provide opportunities to introduce the new housing typologies proposed. It is noted that these street types will be subject to a thorough engineering design and review as part of the DA process.



Detached dwelling on lot above 300m²

Source RPS



Detached dwelling on lot above 300m²

Source RPS



Terraces on lots less than 300m²

Source RPS



Terraces on lots less than 300m²

Source RPS



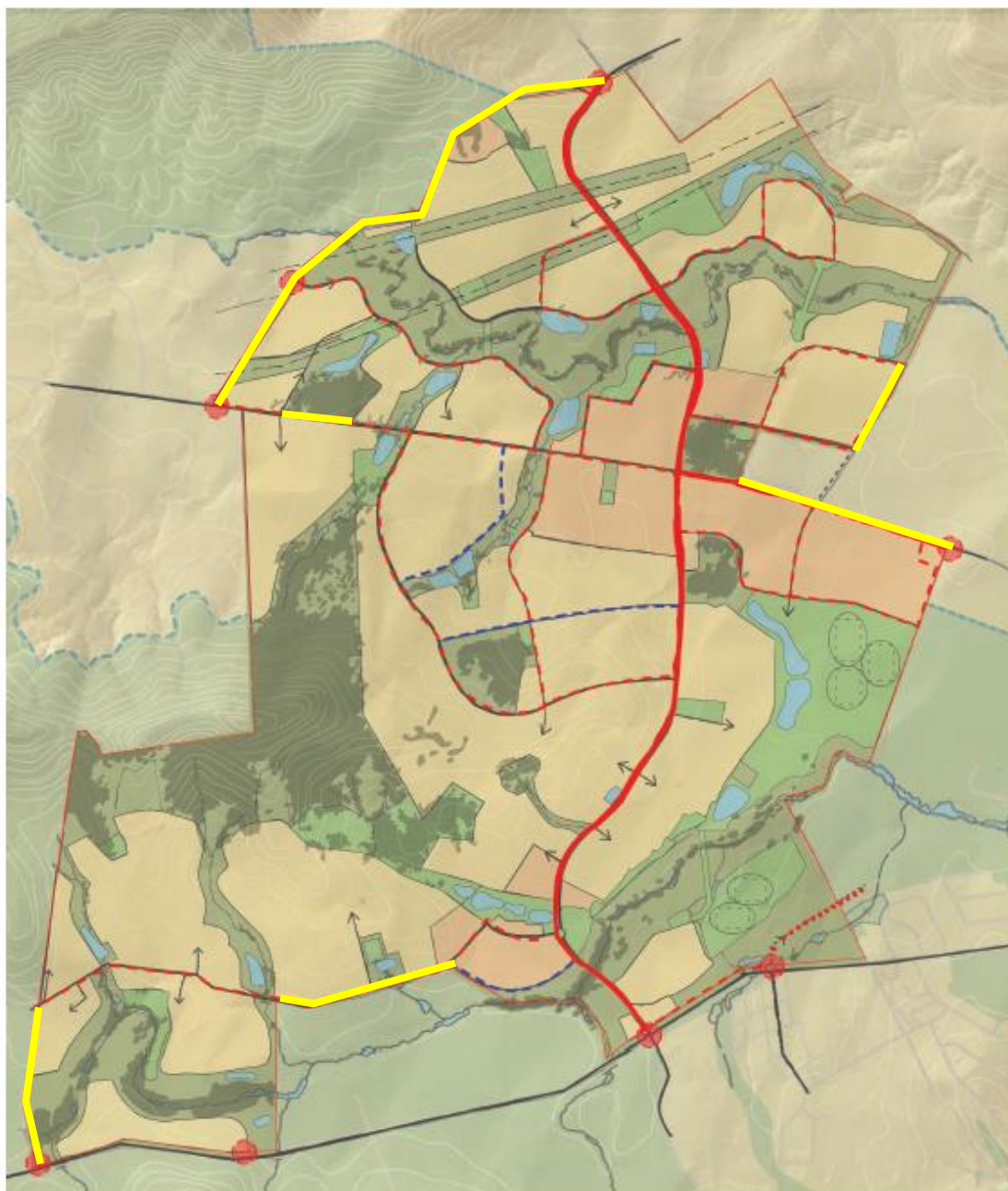
Shoptop Housing

Source RPS

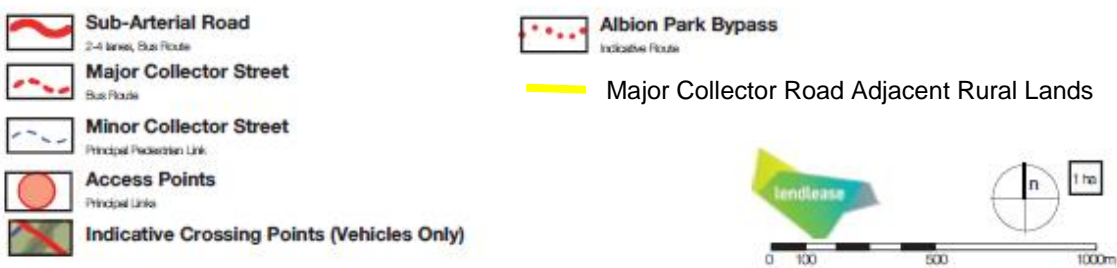


Residential Flat Building

Source RPS



Road Layout and Hierarchy (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 15 Proposed locations of B3 Major Collector adjacent Rural Lands (yellow)

Source: Taylor Brammer and Ethos Urban

6.6.3 Character Areas

The DCS contains, as it stands, four Character Areas – General Residential Neighbourhood, Town and Village Centre, Country Residential and Bushland Edge. It is proposed to introduce additional location criteria to the General Residential Neighbourhood Character Area which allows for further flexibility in the permitted housing typologies in areas where there is a high amenity.

The location criteria proposed to apply to land/lots:

- adjoining land identified for public parks (minimum area of 0.2ha) or land that is separated from land identified for a public park only by a public road; or
- within 800m of the Town Centre; or
- within 400m the Neighbourhood Centre.

These Character Areas are further defined in the amended Planning and Design Principles for Urban Character Table (Table 3 of the DCS). This table outlines the desired housing types for these areas, open space provisions and public transport availability, including clearly defining the additional flexibility presented by Location Criteria lots.

It is also proposed to amend the Rural Landscape / Lifestyle Character Area to reflect the proposed use of that area for recreational purposes.

6.6.4 New section for Subdivision Pathways

In order to provide the Calderwood site with a planning process more closely related to the Growth Centres, a new section (Section 1.4) has been inserted into the DCS which outlines the available planning pathways for Subdivision Approval. The table formalises the process for Council and applicants and builds upon the operation of condition B6 as amended.

By releasing the subdivision certificate earlier in the approvals process the cost of housing is reduced and benefits are obtained by all three parties involved in the development:

- The landowner achieves settlement sooner;
- The builder receives progress payments earlier; and
- The sale price is reduced, thus reducing the stamp duty payable by the future homeowner.

It is noted that there are several Sydney metropolitan councils which have formalised this process. One example is the Hills Shire Council <https://www.thehills.nsw.gov.au/Council/Fact-Sheet-Directory/Subdivision>.

6.6.5 Urban Design Town Centre

Section 1.7 of the DCS has now been further developed to detail a Vision and Masterplan Design Criteria for development within the Town Centre. The proposed town Centre Framework is shown in **Figure 16**, the following key elements are proposed:

- Develop a major retail and mixed use precinct for Calderwood and the Illawarra Community;
- Integrate the open space network including the existing cemetery and riparian corridors;
- Create a distinctive town centre street character for Calderwood Road that reinforces address and relationship to open space.
- Create a minor road and laneway network and maintain servicing separate to pedestrian movement.
- Consider height to reinforce the gateway nature of the major and secondary gateways and take advantage of green space and escarpment views.
- Introduce landmark architecture.
- Orientate the higher density lots to views over parkland, distant views to the escarpment and immediate access to open space.

- Consider an architectural character that supports the town centre typology.
- Deliver mixed-use outcomes across the precinct.
- Enable flexibility of retail offer based on market needs.

The amenity of residential development will be achieved by way of the design criteria contained within the DCS as well as the provisions of SEPP65 and the Apartment Design Guide (where relevant).

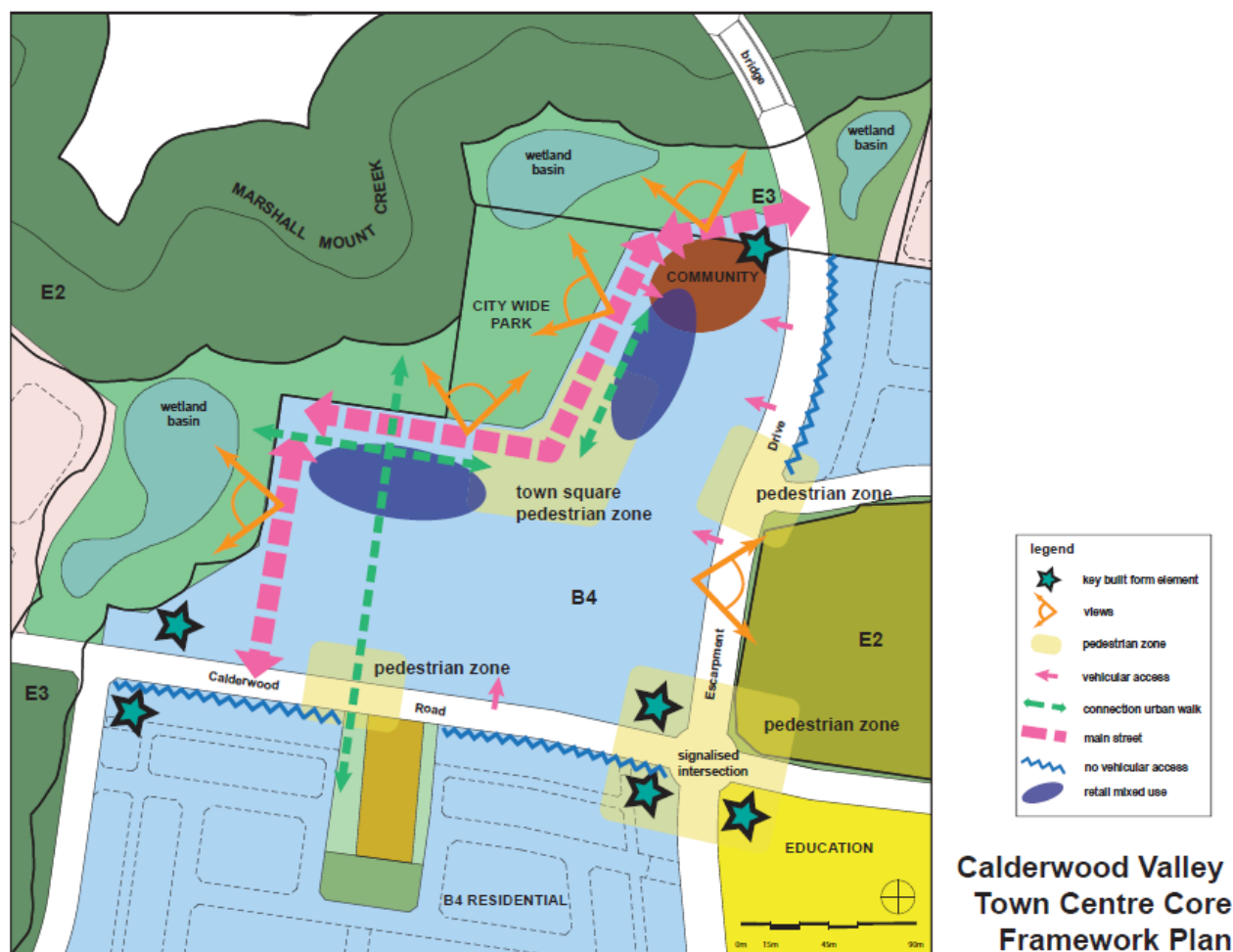


Figure 16 Calderwood Town Centre Core Framework

Source RPS/Lendlease

6.7 Transport and Accessibility

A traffic and transport report has been prepared by Cardno and is included at **Appendix R**. In undertaking the assessment Cardno has referred to the TMAP prepared for the original Concept Plan application in 2010 and has updated the model to reflect changes that have occurred or are approved within the surrounding road network and development. These include:

- The Albion Park Rail bypass concept design as now approved;
- Council's preferred configuration of Tripoli Way (Albion Park bypass); and
- The land use assumptions for the wider West Lake Illawarra region – consistent with that reported in the Albion Park Bypass Environmental Impact Statement.

It is noted that the TRACKS model, developed as part of the TMAP (2010) study, had already assumed town centre retail area of 25,000 sqm as that is what was originally proposed. As such, the proposed increase in town centre retail area is not expected to have any significant impacts on performance of road network in the area of influence. Therefore, the Cardno report only considers the residential yield increase (4,800 to 6,500 dwellings) to assess the impacts on existing and planned road infrastructure in the area of influence and to propose additional upgrades, if required.

The results of the traffic assessment undertaken by Cardno revealed that the following additional peak hour trips, one way, would result from the proposed increase in density:

Table 6 Assessment of Additional Trips on Key Roads (2036 Horizon) in any direction

Road	Additional peak hour trips (AM Peak)	Additional peak hour trips (PM Peak)
Calderwood Road	85	227
Escarpment Drive	125	83
Marshall Mount Road	100	61
Tongarra Road	58	75
Yallah Road	65	23
M1 Princes Motorway	46	23
Princes Highway	34	15

Source: Cardno

Intersection Performance Assessment and Upgrades

The analysis undertaken by Cardno shows that much of the road infrastructure as approved under the Concept Plan remains suitable to service the proposed increased density. However, the following intersections will require the following modified upgrades:

- Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections; and
- Priority control T intersections have been proposed at the Marshall Mount Road/Escarpment Drive and North Marshall Mount Road/Marshall Mount Road intersections to give priority to the traffic driving along Escarpment Drive which is expected to have the higher Average Daily Traffic Volume.
- The northern alignment of Escarpment Drive has been amended to reflect the new intersection arrangement and to provide more suitable gradients for bus services which will utilise this road as a trunk route. The proposed intersection layout and road alignment is shown in **Figure 17**.



Figure 17 Proposed Marshall Mount Road/Escarpment Drive T Intersection

Source Cardno

Road Performance

In order to assess the performance of road infrastructure in the area, Cardno analysed the difference in mid-block volumes of all roads in the area of influence. This analysis showed that all of the roads as currently existing or approved under the Concept Plan would continue to perform at a suitable level with the exception of Calderwood Road from Tripoli Way to the eastern boundary of the CUDP. In light of this, Cardno has recommended that Calderwood Road be upgraded from a two lane road to a four lane road. This would include widening of the existing bridge over the Macquarie Rivulet. Whilst the mid-block capacity of Calderwood Road is unlikely to be exceeded until full occupation of the CUDP, Cardno recommends that the Calderwood Road upgrade is completed with the opening of the Town Centre retail and the Tripoli Way bypass is being constructed (circa. 2026/2028) for the following reasons:

- To provide a conforming, safe road geometry appropriate to the sub-arterial function of the road.
- To ensure safe pedestrian and cyclist connectivity between Calderwood Road and Albion Park.
- To serve as an appropriate gateway to the CUDP.

Internal Road Network and Parking

As discussed previously there are some minor changes proposed to the internal road network. These are:

- Extension of Calderwood Road from the Town Centre through to the western boundary of the CUDP;
- Reconfiguration of the local road network as proposed by a non-core landowner; and
- Changes to street sections as proposed in the DCS.

Parking will continue to be provided in accordance with the parking rates of the relevant Council. Within the Town Centre, the provision of shared parking will be investigated and, if proposed, will be supported by a detailed traffic analysis supporting the proposal.

As per the Approved Concept Plan, the design and layout of roads and parking will be the subject of detailed development applications for subdivision and development.

Pedestrian/Cyclist Connectivity

In order to encourage pedestrian and cycling movements within the CUDP, Cardno has proposed a potential cycling network which has the following key features:

- Shared paths to encourage cycling within the CUDP, to the surrounds and for through trips, and
- Shared paths link with the regional cycle network along Marshall Mount Road indicated in the West Dapto Urban Release Area plans

The proposed routes are shown in **Figure 18**.

Public Transport Assessment

Calderwood is currently serviced by the Route 75 bus service operating between Shellharbour City Centre and Calderwood. It operates as a one-way clockwise loop service from Illawarra Highway/ Calderwood Road in Albion Park. Services operate from Monday to Friday departing from Calderwood from 5:53am to 9:53pm. Service frequency is approximately hourly.

Proposed bus stops have been placed along the local/ feeder bus routes is provided at approximately 400 metre spacing's, in line with TfNSW guidelines and so that most residents are located approximately 400 metres from a bus stop.

In order to improve public transport patronage, Cardno have made the following recommendations:

- Provide pedestrian and Cyclist provisions at bus stops to encourage walking and cycling in the area
- Provision of infrastructure that allows access for people with a disability / limited mobility

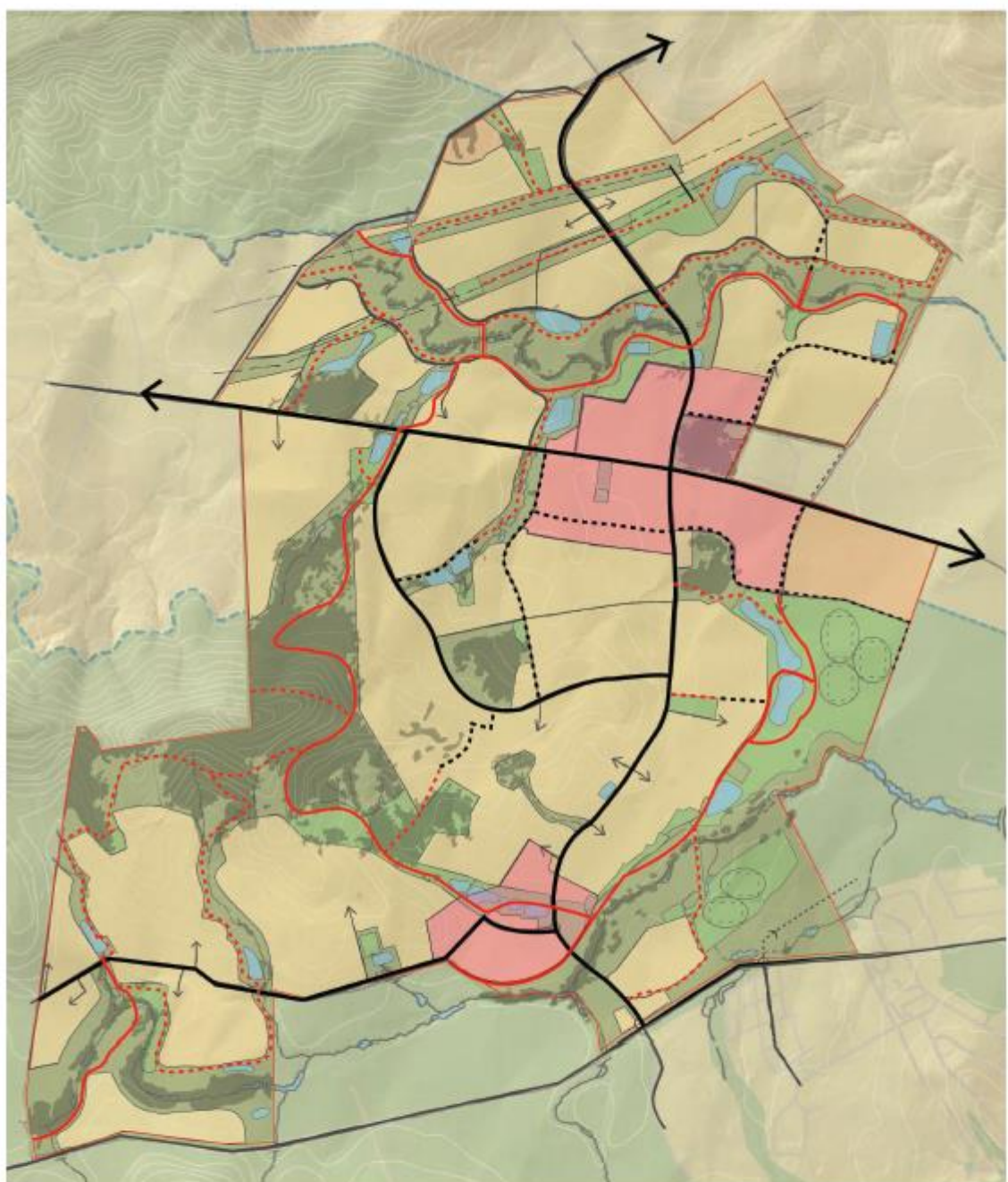
Sustainable Travel Choices

The Approved Concept Plan included several sustainability measures which are being delivered on site as the site is developed. These measures included:

- Creation of walkable neighbourhoods
- Installation of public transport infrastructure (bus stops etc)
- Pedestrian and cycle infrastructure and prioritisation where appropriate
- Infrastructure to support work from home

In order to reinforce and strengthen these measures, Cardno has recommended the following additional measures which could be explored on site to further encourage sustainable travel choices:

- Bike share
- Point to point transport
- Car share schemes



Proposed Pedestrian & Cycle Network (MOD 4)



Subject to verification and detailed site survey 1:20,000 @ A4 10m Contours July 2018

Figure 18 Proposed Pedestrian and Cycle Network
Source Taylor Brammer

6.8 Community Facilities and Open Space

Elton Consulting has undertaken a review of the Social Infrastructure provision requirements for the CUDP. A summary of their assessment is provided below and the full report is provided at **Appendix S**. It is noted that since the approval of the concept plan, Lendlease has built a temporary community facility which is now up and running. A community coordinator is now also employed full time and works within the Calderwood Valley Sales and Information Centre.

In determining what additional infrastructure would be required, Elton first undertook an assessment of the future population projections. Based on the average household size of 2.58 persons per dwelling (2016 Census) Elton have calculated that the population of the CUDP with a total of 6,500 dwellings would be 16,750 people. This is an increase of 4,750 from the original population of 12,000 assumed for the Approved Concept Plan.

Community Centre & Library

To accommodate the social needs of the increased population, Elton has identified that the following additional social infrastructure is required to be provided:

- 300m² of additional community centre floor space (total 1,200m²)
- 220m² of additional library floor space (total 845m²)

Elton recommends that the community centre is positioned within the Town Centre which is central to its catchment population and easily accessible to the majority of the people that will use the facility. In line with this the community centre has been relocated from a position near the primary school at the intersection of Escarpment Drive and Calderwood Road to the mixed use zone of the Town Centre. Elton note that a community facility of 1,200m² will not be warranted until a population of around 3,000 households has moved into Calderwood and that further it will not be feasible to build the community centre until the town centre has been established, and its timing will depend on the overall staging of the development and sequencing of infrastructure servicing.

In respect of the library space, it was agreed with Shellharbour City Council that a monetary contribution would be paid in lieu of onsite provision. This is in accordance with the Shellharbour City Libraries and Museum Strategy 2024. Elton report that an extension and refurbishment of the Albion Park library is planned for 2022.

Schools & Childcare

Elton Consulting identified the need for two primary schools (each with capacity of 1,000 students) and one high school (with capacity for 2,000 students) to service the population of the Approved Concept Plan. This level of provision remains sufficient for the proposed increase in population as Elton anticipate the following demand for Government schools in Calderwood:

- 1,116 primary school places; and
- 825 high school places.

In discussions with the Department of Education they put forward an option for Lendlease to reduce the land area for the second primary school from 3ha to 2ha as well as extend the timeframe for delivery. The Concept Plan has been modified to reflect the smaller school size and it is proposed to amend the timing of provision of the school in the VPA to reflect the likely timing of delivery of the school by the Department of Education.

In respect of childcare, Elton anticipate that there will be demand for approximately 105 childcare spaces in Calderwood which means that one or two large childcare centres will be required. However, as with the Approved Concept Plan, it is not proposed to designate where these centres will be provided but rather provide for further flexibility. Both the zoning of the Village and Town Centres permit childcare centres with development consent. Elton note that there has been a substantial shift in the provision of childcare in recent years, such that the private sector is now the provider of the majority of childcare centres in Australia.

Public Open Space

The standards of provision outlined in Shellharbour Council's Open Space, Recreation and Community Facilities Needs Study Report to guide the planning of open space include:

- There should be an overall provision of 2.83 ha of open space per 1,000 people

- Local parks are to be of a minimum size of 2,000 sqm and to be provided within 400 m or 5 minute walk of most dwellings
- District parks are to be of a minimum size 1 ha and to be provided within 800 m or 10 minute walk of most dwellings.

However, it is noted in the report that these standards are to act as a guide only, and if applied, should be used to consider open space requirements alongside a more qualitative needs based analysis.

It is proposed to increase the amount of open space provided within the CUDP by 14.2 hectares, bringing the total amount of open space provided up to 47.4 hectares. In accordance with Shellharbour standards, this is to be provided in the following manner:

- 23.7 hectares for sporting grounds (active open space); and
- 23.7 hectares for passive open space (local parks, district parks and city-wide parks).

Taylor Brammer has prepared an open space plan which is provided at **Appendix H**. The manner in which the above parks will be embellished is also addressed in the same report.

Mitigation Measures

In order to ensure the provision of the additional social infrastructure, amendments to condition C12 (see **Section 4.7** of this report) have been proposed and Lendlease will prepare a letter of offer addressing the additional contributions **Section 6.13** of this report). No additional mitigation measures are required beyond these measures.

6.9 Public Domain

Taylor Brammer has prepared a Public Domain Plan for the CUDP (see **Appendix H**). The Public Domain Plan is to be used as the overall framework which will guide the future character and detail design of the Calderwood Valley vision for landscape development. The document will work as a guide for the final design directions for:

- Public domain character and presentation
- Key public domain green corridors and open space elements
- Preferred design and material treatments

The plan considers the special needs of all target groups including:

- Younger children (0-4 years),
- Older Children (4 – 12 years)
- Teenagers
- Adults
- Older People
- People with a disability

The plan seeks to ensure that the design of the public domain promotes safety, activation, connectivity and is a high quality design creating a unique character for the CUDP. Future applications will need to demonstrate consistent with the principles and preferred design and materials outlined in the plan.

Taylor Brammer has also prepared a new open space plan which shows the location of existing and proposed additional open space (**Appendix H**). As can be seen, additional active and passive open space is proposed to address the needs of the additional population proposed. The new open space creates additional linkages between existing approved open space, thereby connecting the green grid in the CUDP, consistent with strategies proposed within the District Plans applying to the Sydney Metropolitan area.

Mitigation Measures

Commitment 21 to be updated to refer to the 2018 Public Domain Plan prepared by Taylor Brammer.

6.10 Biodiversity Assessment

Eco Logical Australia has undertaken a Biodiversity Assessment for the proposed modification. Their report is provided at **Appendix N** and is summarised below. The report is informed by additional studies that have been undertaken since the original approval was granted, including:

- Eco Logical Australia 2012. Targeted survey of *Pterostylis gibbosa* (Illawarra Greenhood) for the Calderwood Urban Development Project. Prepared for Lendlease.
- Eco Logical Australia 2017. Calderwood Stage 3C Flora and Fauna Assessment. Prepared for Lendlease.

Vegetation

Eco Logical undertook a review of the impact on the vegetation communities identified on the site by way of comparing the approved and proposed indicative lot layout plans. Eco Logical found that the extent of impact remains similar and the discrepancies (identified in **Table 7**) are likely a result of mapping anomalies rather than change in footprint. They consider it unlikely additional native vegetation would be directly affected as a result of the increase in yield.

Table 7 Assessment of Impact on Vegetation Communities

Vegetation Community	Cleared Area under 2010 Plan (ha)	Cleared Area under 2018 Plan (ha)	Retention under 2010 Plan (ha)	Retention under 2018 Plan (ha)
Acacia Scrub	0.02	0.02	13.43	13.42
Artificial Wetlands	4.93	5.28	6.67	6.32
Coastal Grassy Red Gum Forest	21.40	21.68	30.16	29.89
Fig Trees	0.48	0.48	0.00	0.00
Lowland Dry-Subtropical Rainforest	0.14	0.18	3.59	3.54
Lowland Woollybutt-Melaleuca Forest	6.04	6.29	11.13	10.88
Moist Box-Red Gum Foothills Forest	0.73	0.74	9.94	9.94
Riparian River Oak Forest	2.20	2.49	24.55	24.26
Weeds and Exotics	8.17	8.38	12.50	12.28
Total	44.11	45.54	111.96	110.53

Source: Eco Logical

EPBC Act Listed Matters

During the assessment of the Approved Concept Plan the site was found to contain 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. In addition to this the biodiversity assessment identified four threatened flora species, and eight threatened fauna species listed in the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) to be likely or potentially likely to occur on the site, although none were found. The matter was referred to the Department of the Environment, Water, Heritage and the Arts which determined that the proposed development was not a controlled action, and did not require further assessment or approval under the EPBC Act

The activity to be carried out pursuant to the proposed modification is generally consistent with the action referred to the Commonwealth on 2 March 2010 (EPBC 2010/5381) in terms of area and impacts on the listed matters.

Biodiversity Offset Scheme

It is noted that since the Concept Plan was approved The *Biodiversity Conservation Act 2016* (BC Act) has come into force in addition to the EPBC Act. Any future development application lodged will be subject to the assessment provisions of the BC Act and as such has been taken into consideration in Eco Logical's assessment of the proposed modification but is provided for information purposes only for the assessment of the modified Concept Plan.

Eco Logical has undertaken a review of the future stages of the development to determine which stages are likely to require a Biodiversity Offset Scheme under the BC Act. These are identified in **Table 8** along with the estimate of the credits required.

Groundwater Dependent Ecosystems

No additional impacts on groundwater dependent ecosystems are anticipated by the proposed Concept Plan. Flows to and from terrestrial groundwater dependent ecosystems are expected to be maintained. The proposed Plan would not clear any additional lands mapped as groundwater dependent ecosystems and the maintenance of flows in both Marshall Mount Creek and Macquarie Rivulet are not expected to be altered because the proposed modification.

Table 8 Potential Credit Requirements to Offset Removal of Native Vegetation above BC Act Thresholds

Stage	Vegetation Communities Impacted	Area (ha)	Estimate of Number of Credits Required (Low Impact)	Estimate of Number of Credits Required (High Impact)
Stage 3B North	Coastal Grassy Red Gum Forest	5.54	198	367
	Lowland Dry-Subtropical Rainforest	0.04		
	Moist Box-Red Gum Foothills Forest	0.06		
Total		5.64		
Stage 7B	Lowland Woollybutt-Melaleuca Forest	1.68	59	110
Total		1.68		
Stage 7C	Coastal Grassy Red Gum Forest	1.79	104	193
	Lowland Woollybutt-Melaleuca Forest	1.17		
Total		2.96		
Town Centre	Lowland Woollybutt-Melaleuca Forest	0.37	13	25
	Riparian River Oak Forest	0.01		
Total		0.38		
Grand Total		13.19	374	695

Source: Eco Logical

Mitigation Measures

Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated.

The following mitigation measures are recommended in respect of biodiversity:

- New Commitment to be inserted which requires the preparation of a Construction and Environmental Management Plan to be submitted with each application to address issues of sediment run-off, dust, noise and vibration impacts.
- Future development applications are required to be accompanied by a Biodiversity Assessment carried out in accordance with the BC Act.

6.11 Riparian Assessment

Eco Logical has also undertaken an assessment of the proposed modification for potential riparian impacts (also at **Appendix H**). Their assessment is summarised below.

Riparian Impact Assessment

The Approved Concept Plan requires:

- retention of the riparian corridors that have been assessed and determined to have a requisite hydrological function as shown on Concept Plan Drawing Riparian Corridors;
- a riparian corridor of 92 m total width to be provided to Marshall Mount Creek and Macquarie Rivulet; and
- a riparian corridor of 48 m total width to streams extended from the main valley floor environmental corridors to Johnston's Spur.

As shown in **Figure 11**, Stream reach 15 (Figure 5 of the Approved Concept plan), near the proposed retirement village, is proposed to be affected by fill for this part of the development. Therefore, this modification to the Approved Concept Plan seeks to have this part of the riparian corridor removed. Eco Logical note that this reach is a first order stream and is located in a highly modified context. The section proposed for removal is the terminating arm, which is located in a paddock with no upper stream connectivity. There is little to no remnant native vegetation fringing this section of reach 15. Two artificial wetlands (farm dams) are located on this segment proposed for removal. Removal of this segment of reach 15 is not likely to significantly affect overall riparian function in this part of the study area, or in Marshall Mount Creek, into which it flows. Condition in Marshall Mount Creek where stream reach 15 enters was considered poor and areas of ESL downstream from this segment have been avoided.

Eco Logical has concluded that the modifications proposed to the Concept Plan will not generate any additional impacts on riparian and aquatic values of the site. All riparian corridors marked for retention would be subject to the implementation of a Vegetation Management Plan as required by condition C3 of the Approved Concept Plan. The Vegetation Management Plans will:

- be submitted as a condition of development consent
- be consistent with NRAR guidelines for planting densities and the Approved Concept Plan
- develop suitable key performance indicators to measure implementation
- monitor and report against key performance indicators would occur as part of the VMP reporting requirements
- be implemented for five years and the Plans listed on title
- require liaison between proponent, Council and NRAR following implementation.

In light of the above management and mitigation measures in place, no additional mitigation measures are required or proposed.

Future Management and Ownership Arrangements

It is the intention of Lendlease to subdivide the land according to its riparian and public purposes. In order to ensure that the riparian and environmental lands are not further fragmented, the amendments introduced by modification 2 to the Approved Concept Plan require the staged consolidation of all contiguous riparian/environmental land. There is thus a safeguard already in place which seeks to minimise fragmentation of the riparian lands.

In respect of land ownership, Lendlease maintains that the environmental and riparian lands are best vested in Council ownership. However, Lendlease is continuing to search for alternative ownership arrangements for the long-term management of the land consistent with the proposed land ownership plan in the Consolidated Concept Plan.

Mitigation Measures

No additional mitigation measures required

6.12 Visual Impacts

Taylor Brammer has undertaken visual impact analysis of the proposed amendments to the Concept Plan. In undertaking this assessment, Taylor Brammer took photos from the same locations assessed in the visual impact assessment submitted with the original concept plan.

As can be seen in the images provided at **Appendix T** and as concluded by Taylor Brammer, there is no additional visual impact associated with the proposed density increase. This is because the development maintains the same footprint as that originally approved and no additional height is proposed.

The mitigation measures recommended and approved in the concept plan remain valid. These are:

- Restricting development to the less visually prominent parts of the site;
- Increased lot sizes in the 'Bushland Edge' and 'Country Residential' character zones
- Use of appropriate colour palettes for built form; and
- Maintaining the existing maximum building height controls.

Mitigation Measures

No additional mitigation measures required

6.13 Contributions / Voluntary Planning Agreements

Since the Concept Plan was approved, Lendlease has entered into Voluntary Planning Agreements (VPAs) with:

- The Minister for Planning – addresses State Infrastructure Contributions comprising the following:
 - A contribution of \$5,647 per dwelling for State transport infrastructure (subject to CPI);
 - The dedication of a total of 12 hectares of land for education purposes comprising 2 public primary schools at 3ha each and 1 public high school at 6 hectares incorporating a special needs unit;
- Shellharbour City Council – addresses local contributions for community facilities (community centre and library), open space (passive and active open space) and road upgrades; and
- Wollongong City Council – addresses local contributions for road upgrades.

Lendlease and the Department have agreed to amendments to the VPA with the Minister for Planning (now executed) which include:

- Clarifications to the mechanism for payments towards State transport infrastructure Contributions; and
- Changes the threshold to deliver land for the first primary school from the 600th to the 1,500th dwelling.

The development contemplated by the Approved Concept Plan is being carried out largely by Lendlease but some land within the scope of the Approved Concept Plan is owned by other parties and development is being carried out or will be carried out by those parties. In order to ensure that the delivery of local and State contributions is fair and equitable between all developers at Calderwood, Lendlease is in discussions with those landowners to facilitate a mechanism through which those developers will contribute to the existing local and State contribution obligations which already exist under the Approved Concept Plan. Lendlease is committed to ensuring that this process will maintain the scope and quantum of existing contributions already committed to being delivered under the existing VPAs by Lendlease or by other landowners.

In addition to the above it is noted that Lendlease is delivering many public benefits which are in addition to those contained with the VPAs and which would normally be funded through Section 7.11 contributions. These include:

- Local roads (Escarpment Drive – a new sub arterial road linking the Illawarra Highway and Marshall Mount Road)
- Provision of shared cycle/pedestrian paths;
- Bus stops;
- Rehabilitation and conservation of riparian corridors;
- Local roads, drainage and other local infrastructure;
- Employment of a local community liaison officer; and
- Public art.

State Contributions

As part of this s75W modification, Lendlease is proposing the following further modifications to the State VPA:

- Reduce the area of land for the second school site to 2ha as recommended by the Department of Education and delay the timing of provision of the land for the primary school to prior to the issue of Subdivision Certificate for the 5,000th dwelling;
- Change the timing of when the land for the high school is required to be delivered. It is currently required prior to the Subdivision Certificate for the 1,500 dwelling – which is likely to be delivered circa 2020. Education has indicated that they are unlikely to deliver a high school until 2031;
- Confirmation that the same payment regime for the State Infrastructure Contributions will apply the additional dwellings proposed as part of this modification application.

The above amendments are consistent with discussions held with the Department of Education and their future planning needs for educational facilities in the region as outlined in the Elton Report at **Appendix S**.

Local Contributions - Shellharbour

As the additional dwelling yield proposed under this modification application will be delivered by Lendlease, it is proposed that the additional contributions proposed will be delivered by Lendlease pursuant to supplementary or amended voluntary planning agreement.

The supplementary or amended voluntary planning agreement will deliver additional infrastructure required to support the yield increase including:

- 14.2 ha of additional open space (split 50/50 for active and passive);
- Additional 300sqm of community space (900sqm to 1,200sqm);
- Additional contributions towards the library (i.e. additional 220sqm equivalent floor space in contributions, 625 to 845sqm).
- Upgrades to Road Infrastructure, including:
 - Calderwood Road: upgrade from two to four lanes from Tripoli Way to the eastern boundary of the CUDP;
 - Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections (collectively, the Additional Contributions).

It is noted that the above additional contributions are based on a yield of 1,700 additional dwellings (as justified in the Elton Report at **Appendix S**) and that if the number of dwellings approved is reduced to less than 1,700 additional dwellings it is proposed that the additional contributions would be reduced proportionately.

As the road works are not located on land owned by Lendlease the supplementary or amended voluntary planning agreement will need to address the delivery of these works under the Infrastructure SEPP and the need for Council to negotiate or acquire the land needed to deliver the works.

Mitigation Measures

Subject to discussions with Shellharbour City Council, Lendlease will prepare a letter of offer for the delivery of the Additional Contributions.

The existing VPA between Lendlease and Wollongong City Council already sufficiently provides a mechanism for development contributions for road upgrades to be delivered for the proposed additional dwelling yield as confirmed in the Cardno report at **Appendix R**. Cardno conclude that no further road upgrades would be required above and beyond the VPA agreement as a result of the CUDP yield review.

6.14 Drainage, Water Quality and Flooding

J. Wyndham Prince (JWP) has prepared a Watercycle and Flood Management Strategy Update for the proposed modification which is included at **Appendix P**. A summary of the assessment and proposed mitigation measures are provided below.

In preparing the update JWP has referred to the following previous flood studies which have been prepared for the site and locality:

- The Reinco Flood Study (2009)
- The Cardno Model (2011)
- The WMAwater Macquarie Rivulet Model (2017)

It is noted that the impacts discussed below are generally consistent with Cardno's model, however, they do differ, due to the model version and base model changes. The updated model also reflects the more detailed flood modelling that has been undertaken for the developed parts of the CUDP.

Water Quality

The Water Cycle Management Plan approved under the Concept Plan (provided at **Appendix B**) identifies possible locations of water bodies that are both on-line and off-line ponds serving ornament, water quality and water detention purposes.

The proposed increase in lot yield results in an increase in development density and an increase in impervious area. This will in turn increase the pollutant loads generated. Therefore, Water Quality measures previously proposed for the approved concept design will need to be increased in order to meet the pollutant targets for an increased lot yield. However, this is not the only reason for the increase in the size of the water quality measures, the following factors have also contributed to the changes proposed:

- The original assessment used MUSIC version 3.0, while the current assessment uses version 6.2. In the past eight (8) years there has been significantly improved in the assessment tool and in turn, the effectiveness of water quality treatment device better understood. This together with the increase in the dataset used in MUSIC has resulted in an improved understanding the treatment train needs and is considered to be a better representation of the treatment devices sizes in comparison to the 2010 assessments.
- In 2010 the target treatment parameters where 80% reduction in TSS, 45% reduction in TP, 45% reduction in TN. The appropriate standard now requires 85% reduction in TSS, 65% reduction in TP, 45% reduction in TN thus increasing the size and configuration of the treatment devices needed to deliver these elevated targets.
- The modelled areas are now better aligned with the Concept Plan and result in a larger treated area when compared to the original Concept Plan. However, it should be noted that there is no increase in the overall development footprint.

JWP undertook MUSIC modelling of the modified concept plan and have confirmed that with the proposed water treatment measures in place, the modified development will achieve the required water quality outcomes as that of the approved Concept Plan. The modelling results are replicated in **Table 9**.

Table 9 Reduction in Estimate Mean Annual Pollutant Loads

Pollutant	Target Reduction	Total Reduction Achieved (Macquarie Rivulet)	Total Reduction Achieved (Marshall Mount Creek)
Total Suspended Solids	85%	91%	88%
Total Phosphorous	65%	72%	68%
Total Nitrogen	45%	45%	47%
Gross Pollutants	90%	100%	100%

Source: JWP

It is noted that the issue of water quality is already addressed by Commitments 45, 47 and 48 and as such no further mitigation is required in regard to this issue.

Flooding

JWP used the latest TUFLOW model for the Macquarie Rivulet and modelled the following three (3) scenarios in both the WBNM and TUFLOW models.

- Existing Conditions – Natural Catchment conditions.
- Approved Development Conditions – Includes approved development within the CUDP only, which has been used in this assessment as the basis for all comparisons to assess the impacts associated with the S75W amendments.
- Proposed Developed Conditions - Modelling updated to consider the modified CUDP concept plan.

JWP made some refinements to the model reflecting the original parameters adopted by Cardno to support the original concept plan and also to reflect the revised pad levels for development that have been adopted to ensure they are located above the 1% AEP event. JWP have sought to maintain the same principles adopted by Cardno in the approved concept plan and have sought to avoid impacts on the core riparian zones.

The refined modelling of the northern portion (Marshall Mount Creek) undertaken by JWP of CUDP confirms that during the 1% AEP event and the PMF event, flooding within the main channel of Marshall Mount Creek is deeper than in existing conditions, as many of the secondary flowpaths that are present under existing conditions have been redirected back toward the main channel. This results in increased flows in the main section of the creek within the site.

Flooding within the Macquarie Rivulet has also become more consolidated. There are no impacts upstream or downstream of the site, with the exception of a small local increase just downstream of the site consistent with the impact documented in the Approved Concept Plan. Nearby Albion Park properties have less flood affectation than in the existing case.

In the 1% AEP event, JWP has found that the proposed urban development is effectively flood free, and there are no impacts upstream of the site. There are also no measurable impacts downstream of the site. During the PMF event, there are no impacts greater than 300 mm external to the site which are consistent impacts to what was accepted by the Land and Environment Court.

In respect of peak flows, JWP note that the modelling demonstrates that there is a marginal increase in peak flows downstream of the site of 1.36 m³/s (i.e. 0.5% increase in the 1% AEP event) with no detention. However, the shift in peak timing associated with the earlier release of local flows arising from the urbanisation of the CUDP improves existing flooding downstream of the confluence of the Macquarie Rivulet and Marshall Mount Creek. Therefore, there is no need for formal detention within the CUDP.

Mitigation Measures

No additional mitigation required.

6.15 Bushfire

Peterson Bushfire has reviewed the report prepared by Eco Logical Australia (2010) with respect to Bushfire Hazard and the relevant protection measures. In their letter provided at **Appendix O** they note that the proposed modification does not alter the bushfire hazard or development boundary with respect to the hazard, and that the bushfire legislation has not changed since the approval and as such the original report remains valid.

Peterson Bushfire note that the bushfire asset protection zones (APZ) of 10m – 15m for residential development and 40m – 70m for Special Fire Protection Purposes (SFPP) development set within the approved Concept Plan are conservative and will ensure that future development can occur at the interface of these hazards whilst accommodate the required APZ. They conclude that no further mitigation measures are required beyond those already approved and that compliance with those measures will be assessed at the detailed development application stage as has been done with the first stages of the development already.

Mitigation Measures

No additional mitigation measures required.

6.16 Contamination, Acid Sulfate Soils and Groundwater

Contamination

A Phase 1 contamination report was submitted with the original Concept Plan application. The report was prepared by Douglas Partners and identified 59 Areas of Environmental Concern (EAC). The majority of the EACs identified related to buildings or farm related structures that will require Hazardous Building material surveys prior to demolition due to the age and time of construction.

Due to the size of the site, Douglas Partners also anticipated that during the course of earthworks or construction that isolated occurrences of contamination may be encountered. In order to deal with such occurrences, it was recommended that an Unexpected Finds Protocol be developed prior to commencement of earthworks. This document would detail the course of action to be taken should instances of contamination been found.

Overall Douglas Partners concluded that contamination was not considered to be a significant constraint to development and that further investigations of the site and AECs be undertaken and managed in accordance with SEPP 55.

In review of the proposed modification to the Concept Plan Douglas Partners did an inspection of the site on 21 May 2018. With the exception of the recent development that has occurred within the residential subdivisions, surface conditions were consistent with those observed during preparation of their 2010 reports. In light of this Douglas Partners are of the opinion that further investigations specific to the Concept Plan modification are not required as the development footprint and proposed land uses remain the same. Additional investigation and assessment will be required as the planning and design of the project proceeds in the detailed subdivision stages (Commitments 72 & 73).

Acid Sulfate Soils and Groundwater

Whilst undertaking the site inspection, Douglas Partners was also reviewing the site to identify whether or not any surface conditions had changed in respect of the issues of Acid Sulfate Soils and Groundwater.

Douglas Partners did not identify any physical changes which would warrant further testing of the site at the Concept Plan stage and as such the current management measures for these two issues remain relevant as already approved. These being:

- Condition C2 – which requires the consent authority to consider salinisation of soil and water; and the quality of the groundwater;
- Statement of Commitment 67 – Which requires further ASS investigations at the detailed application stage; and
- Statement of Commitment 71 – Which requires further field investigations to be undertaken at the detailed application stage in areas of concern for groundwater.

Refer to the letter from Douglas Partners at **Appendix U** confirming the above.

Mitigation Measures

None required.

6.17 Heritage

European Heritage

A Heritage Impact Statement has been prepared by Paul Davies and is included at **Appendix V**. The Approved Concept Plan affected three heritage items (two within the CUDP boundary), namely:

- Marshall Mount Homestead and Barn (located on Marshall Mount Road) – Mapped in the State Significant Precincts SEPP;
- Methodist Cemetery (located on the southern side of Calderwood Road) – Mapped in the State Significant Precincts SEPP; and
- Marshall Mount former Public School, residence and Progress Association Hall (located on the north-western side of Marshall Mount Road). In the vicinity, but outside the CUDP area.

The extent of impacts and mitigation measures of the approved Concept Plan were assessed as appropriate in the original assessment of the project.

Both Marshall Mount Homestead & Barn and the Methodist Cemetery retain separate, large allotments as part of the subdivision in the proposed modifications. Therefore, the proposed modifications to the Concept Plan do not alter the overall heritage impacts on the two heritage items within the area, as the heritage items retain large discrete sites as part of the urban development proposal, which will protect heritage significance. Further design criteria have been included in the Town Centre section of the DCS to further protect the significance of the Cemetery at detailed DA stage.

In relation to the Marshall Mount former public school, a heritage item in the vicinity but not within the affected area, the same heritage impact applies, that there is no direct impact on the former school arising from the Calderwood Urban Development project generally or the current amendments, however the views and setting of the former public school will also change from rural to urban as a result of the Calderwood Urban Development project. The current amendments do not increase this impact.

In respect of Marshall Mount Homestead it is noted that a subdivision application has now been approved (D16/1277) which provides for the creation of a two hectare lot around the homestead.

Indigenous Heritage

An Aboriginal Heritage Assessment statement has been prepared by Kelleher Nightingale in accordance with the relevant OEH guidelines and is submitted at **Appendix W**. The Concept Plan, inclusive of proposed modifications, remains the same in that it will potentially impact 39 Aboriginal archaeological sites. The potential harm to Aboriginal cultural heritage as the result of proposed amendments to the approved Concept Plan is consistent with previous archaeological investigations.

The sites and associated development lands will require an AHIP prior to any impact to Aboriginal objects. An AHIP can be obtained by following the OEH guide: Applying for an Aboriginal Heritage Impact Permit: Guide for applicants (2011).

Mitigation Measures

No additional mitigation measures required, heritage issues already addressed in Statement of Commitments.

6.18 Noise and Vibration Assessment

Wilkinson Murray have undertaken an Acoustic and Vibration Assessment (**Appendix X**) of the proposed modifications to the Concept Plan. The key issues arising out of that assessment are summarised below.

Vibration Assessment

In respect of vibration, Wilkinson Murray has reported that construction is not expected to involve activities which generate high levels of vibration or if those activities are required they are unlikely to occur in close proximity (less than 20m) from occupied parts of the development. In light of this Wilkinson Murray recommends that Construction and Environmental Plans in relation to any of the future development applications address potential vibration issues and mitigation/management measures if required. A new commitment is proposed to reflect this recommendation.

Noise

Wilkinson Murray has considered noise generated by traffic, the Illawarra Regional Airport, Construction Noise and Operational Noise.

Whilst the Concept Plan area is near to the Illawarra Regional Airport, it is outside of the ANEF 20 contour and as such Wilkinson Murray conclude that no acoustic mitigation measures are required in respect of aircraft noise.

Wilkinson Murray's review of the composite N60 and N70 future contours indicates that there are less than 10 flights per day above 70dBA, but in the eastern part of the site there may be some areas where there will be 10 flights per day above 60dBA. This primarily affects the Town Centre East precinct but is not of sufficient magnitude to require acoustic mitigation measures.

In respect of traffic noise, the two primary roads through Calderwood are Escarpment Drive and Calderwood Road. As these roads are predicted to carry only between 10,000 and 15,000 vehicles per day an acoustic assessment in accordance with the Infrastructure SEPP is not required. However, Wilkinson Murray still recommend that mitigation measures are adopted in accordance with the EPA Road Noise Policy. In this regard, deemed to comply acoustic design measures are included in the DCS which will only apply to future dwellings fronting these two roads. Where an alternative design solution is proposed, the relevant development application will need to be accompanied by an acoustic assessment demonstrating that a suitable level of amenity will be maintained.

In order to minimise disturbance from Construction Noise, Wilkinson Murray recommend that Construction Environmental Management Plans address the issue of noise and vibration and nominate mitigation and management measures as part of future development applications. A new commitment is made reflecting this recommendation.

The final acoustic issue relates to the design of the Town Centre. In this instance Wilkinson Murray recommend that amenity criteria dealing with the co-location of land uses is provided to address potential noise impacts. To address this recommendation, new acoustic criteria has been included in the Town Centre section of the DCS.

Mitigation Measures

The following acoustic mitigation measures are proposed:

- Aircraft Noise – none required.
- Traffic Noise – new acoustic deemed to satisfy design measures for dwellings fronting Escarpment Drive and Calderwood Road in the DCS.
- Construction Noise – Acoustic and vibration management measures to be implemented through Construction and Environmental Management Plans (new commitment)
- Mixed Use Zones – New acoustic amenity criteria included in the Town Centre Section of the DCS.

6.19 Air Quality

An Air Quality Assessment has been undertaken by Wilkinson Murray and is included at **Appendix Y**. A summary of the assessment and proposed mitigation measures are provided below. It is noted that the requirement to undertake an air quality assessment is a new requirement and that this matter was not required to be assessed in the original concept plan application.

Assessment

Air Quality monitoring data OEH AQMS at Albion Park South has been used to characterise the ambient air quality in the area surrounding the project site. A summary of the air quality monitoring results for relevant air pollutants at the Albion Park South AQMS over the period 2013 – 2017, is provided at **Appendix Y**.

The existing ambient air quality in the area surrounding the site, as described by the data from the Albion Park South AQMS, is typically good to very good. The ambient concentrations of all monitored air pollutants are below criteria, except where they have been influenced by extreme events such bushfires and hazard reduction burning, and by extreme weather conditions.

Potential sources of air pollution, which may affect air quality at the site have been identified as:

- Tallawarra Power Station;
- Illawarra Regional Airport; and
- Albion Park and Dunmore Hard Rock Quarries.

However, each of these industries are existing and any pollutants would be captured in the Albion Park South AQMS data. Additionally, the site has a greater separation distance to these potential pollution sources than the Albion Park South AQMS.

The Calderwood Valley development, inclusive of the proposed modifications, is anticipated to have the following impacts on the existing air quality:

- Construction during project delivery stages (temporary);
- Traffic on major roads (ongoing); and
- Household emissions from wood heaters (ongoing).

Mitigation Measures

The following mitigation measures are proposed:

- Construction impacts: The Construction Environmental Management Plan (CEMP) for each stage of the Project is to include measures to minimise construction dust impacts as recommended in the Air Quality Assessment at **Appendix Y**. Refer to Commitment 77
- Traffic on major roads – none required. The Air Quality Assessment at **Appendix Y** confirms that the anticipated traffic volumes are below the threshold to impact on air quality levels.
- Household emissions: Detailed assessment of any proposed installation of wood heaters in accordance with current advice from NSW EPA (and as updated in the future) in any future DA for housing including wood heaters.

6.20 Ecologically Sustainable Design

6.20.1 Six Star Green Star Communities Rating

Lendlease has a strong commitment to delivering a sustainable community at Calderwood Valley and is striving to achieve a 6 star Green Star Communities Rating from the Green Building Council of Australia. Green Star – Communities assesses the planning, design and construction of large scale development projects at a precinct, neighbourhood and/or community scale. It provides a rigorous and holistic rating across the five impact categories outlined below:

- Governance

- Liveability
- Economic
- Prosperity
- Environment
- Innovation

Some of the initiatives that Lendlease will be investigating at Calderwood Valley include:

- Working in partnership with the Go Get car share group (or other similar provider) to provide a strategy to deliver up to 25% of all non-residential parking on site as share cars over the life of the project (subject to market acceptance);
- Managing the Heat Island Effect by way of:
 - Roof colour control and mandating a maximum Solar Absorptance Rating of 0.8 on roofing materials;
 - Temperature monitoring; and
 - Innovative tree clustering on public roads;
- Researching alternative water sources to provide non-potable water to major infrastructure items, such as ovals.
- Delivering a Smart Communities solution with an Internet Of Things (IOT) system which will include the ability to monitor and collect data on the following:
 - Light pollution;
 - Water consumption;
 - Noise pollution;
 - Temperature; and
 - Air quality;
- Providing smart infrastructure lighting with an LED commitment;
- Investigating opportunities for future residents of Calderwood to take advantage of sustainability initiatives and awareness campaigns
- Providing healthy placemaking such as hike and bike paths, interconnected walking trails, accessible parks and active and passive recreational facilities.

With Lendlease striving to achieve 6 Star Green Star, Lendlease is no longer considering the introduction of alternative technologies such as a solar farm or co (or tri) generation plant in the Town Centre as these have not proven to be feasible and a partner to deliver such technologies has not been found. A more holistic approach, such as that of the Green Star Communities rating tool is considered to be a more favourable approach to take for the CUDP. Commitment 24 has been updated to reflect the revised sustainability measures being implemented on the site.

6.20.2 Sustainable Design

The CUDP has been master planned to maximise lot orientation and incorporate passive design principles, around the natural slopes of the environment. This allows dwellings to maximise solar gain and utilise breeze paths for heating and cooling across both winter and summer seasons. The Lendlease team also engaged with project builders about the passive design principles and site responsive products, they can incorporate into their home designs taking full advantage of the local conditions and helping to reduce home owners energy and water demands.

In addition to the above broader community ESD initiatives, the mandatory BASIX targets, and the engagement with project builders, the DCS includes a section on energy and water efficiency (Section 1.6.9 of the DCS) which encourages sustainable design. The Calderwood Valley Home Design Guidelines (available at the following link: <https://communities.lendlease.com/calderwood-valley/search/design-guidelines/>) also encourage residents to consider installation of the following house features when designing their home, noting that including these features during the initial design is more cost effective than retrofitting later and will also result in lower operational costs:

- Solar panels;
- Solar hot water;
- Efficient appliances; and
- LED lights

Mitigation Measures

Commitment 24 to be updated to reflect revised sustainability commitments.

6.21 Aviation

The two key design factors relating to the operation of the Illawarra Airport are building height and acoustic design.

No change is proposed to the maximum building heights permitted within the Calderwood Area under State Significant Precincts SEPP and as discussed in **Section 6.18**, all of the proposed development is located outside of the ANEF 20 contour. Consequently, the proposed development as approved, and as proposed to be modified, is not expected to have any impact on the operation of the Illawarra Regional Airport and conversely, the airport is not expected to adversely affect the amenity of the proposed residential development.

As part of the preparation of the Environmental Assessment Report Ethos Urban contacted the Airport Compliance and Operations Coordinator for the Illawarra Regional Airport to see if there were any specific matters that were required to be addressed as part of the environmental assessment for the project. The relevant officer advised that Council would review the application in detail once lodged and would advise if any additional matters needed to be addressed then.

Mitigation Measures

No additional mitigation measures required

6.22 Utilities

Cardno has undertaken a review of the Utility Services to be provided to the Calderwood Development to determine if they are capable of servicing the modified development or if they are required to be augmented to increase capacity such that they can meet the demands of the increased density. The review is provided at **Appendix K**.

Water and Sewer

The approved Concept Plan included the provision of two new sewage pump stations (SPS) SPS1192 and SPS1193, three new water boosting pump stations (WPS) and trunk water and waste water lead-ins bringing the Sydney Water network to the CUDP. SPS1192 is currently under construction to service the initial staging of the CUDP. Provisions have been allowed for the SPS to be upgraded in the future to cater for the full CUDP development, including the 2,900 lots located outside the CUDP that will eventually drain to this SPS.

SPS1193 has commenced the detailed planning phase and Sydney Water have advised the increased lot yield of 6,500 lots will be used to determine the sizing and staging of the SPS and associated infrastructure. The detailed planning currently being completed by Sydney Water will cater for the proposed 6,500 lots and outline the proposed staging and delivery timeframes of the required infrastructure.

The potable water services will also be reviewed during the same detailed planning period. This will allow Sydney Water to project when future trunk mains and reservoirs will be required to be delivered to meet demand. It is not expected upsizing of existing infrastructure will be required to service the lots currently being serviced in Stage 1 and 2.

Electricity

The approved Concept Plan required the provision of a new substation to service the CUDP. Cardno have been advised by Endeavour Energy that the new zone substation is expected to be completed to align with anticipated demand. Endeavour Energy has confirmed that the future zone substation can be designed to meet the capacity increase resulting from the proposed modification to the Approved Concept Plan. This is based on the standard transformer sizes available for a 33kV substation.

Endeavour Energy has noted that there will be no need to change the size of land which has been dedicated for the substation. Endeavour Energy has noted that approximately two additional 11kV feeders will require to be established for the increased dwelling yield proposed as part of the modification to the Approved Concept Plan.

Telecommunications

The approved Concept Plan allows the CUDP to be serviced by a network of underground fibre cables located within designated telecommunication conduits that are supplied by a telecommunications satellite compound located within Stage 1A of the CUDP which has been backhauled from a connection point on Broughton Avenue located south east of the CUDP.

OptiComm has noted that there is no issue in supporting the proposed modification to the Approved Concept Plan for the CUDP and have advised that they can easily cope with the increased density. No specific requirements for telecommunications utility services were noted to meet the yield increase as proposed.

Natural Gas

Jemena has investigated the provision of providing natural gas to the CUDP progressively in stages, as supply is required to development areas. As part of their investigations, Jemena identified the need for a secondary steel gas main to ensure sufficient natural gas capacity for later stages of the CUDP. Stages of the development which have currently been sold and settled (including land from Stages 1, 2 and 3) are currently being serviced by gas supplied from the existing Albion Park 'black box' located at the intersection of Taylor Road and the Illawarra Highway (approximately 1.7km east of the CUDP site). A gas main has been provided along the Illawarra Highway which supplies the CUDP with natural gas from Jemena at Albion Park.

The proposed modification to the Approved Concept Plan for the CUDP which includes an anticipated increase in the number of dwellings may require the secondary steel gas main to be delivered sooner than originally expected. Jemena has advised that once the secondary steel gas main has been provided there would be no issues associated with supplying the CUDP with natural gas, considering the proposed increase in loads associated with the proposed yield increase.

Mitigation Measures

No additional mitigation measures required. Utility delivery will continue to be planned and delivered in consultation with the relevant provider.

6.23 Environmental Assessment Conclusion

Having assessed the environmental impact of the proposed modification in this section, together with the mitigation measures at section 7.0, it is concluded that the proposed modification does not give rise to any unacceptable environmental impacts that would warrant refusal of the application. The modification will allow for the rollout of the continued pattern of development across the whole of the CUDP and respond to market demand.

The most significant changes proposed in the modification are the upgrade of Calderwood Road, the deletion of Stream Reach 15, increased size of water quality treatment measures and changes to cut and fill for flood management. These are discussed below.

Calderwood Road was already required to be upgraded under the Concept Plan Approval and the increase from two lanes to four lanes is not considered to be a significant change and would ensure that this environmental impact is mitigated.

In respect of Stream Reach 15, Eco Logical has advised that this section of the riparian corridor is a first order stream, located in a highly modified context. There is little to no remnant native vegetation fringing the section of the reach to be removed and its removal is not likely to significantly affect overall riparian function in this part of the study area, or in Marshall Mount Creek, into which it flows. Condition in Marshall Mount Creek where stream reach 15 enters was considered poor and areas of ESL downstream from this segment have been avoided.

With regard to water management, the treatment train approach remains the same as that approved and many of the changes to the sizes of the water quality measures result from updated data and as such are not wholly the result of the proposed increase in density or site coverage. The modifications proposed ensure that the development will achieve a higher standard of water quality discharged from the site than that which was originally approved.

In respect of flood management in the 1% AEP event, JWP has found that the proposed urban development is effectively flood free, and there are no impacts upstream of the site. There are also no measurable impacts downstream of the site. During the PMF event, there are no impacts greater than 300 mm external to the site which is consistent impacts to what was accepted by the Land and Environment Court

Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated.

7.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed modifications are detailed in **Table 10** below. These measures have been derived from the previous assessment in Section 6.0 and those detailed in appended consultants' reports.

Table 10 Mitigation Measures

Mitigation Measures
Transport and Accessibility <p>The following intersections will require the following upgrades:</p> <ul style="list-style-type: none"> Upgrade of Illawarra Highway/Broughton Avenue and Calderwood Road/Tripoli Way intersections from roundabouts to signalised intersections; and Priority control T intersections have been proposed at the Marshall Mount Road/Escarpment Drive and North Marshall Mount Road/Marshall Mount Road intersections to give priority to the traffic driving along Escarpment Drive which is expected to have the higher Average Daily Traffic Volume. Upgrade of Calderwood Road from Tripoli Way to the eastern boundary of the CUDP from a two lane road to a four lane road.
Community Facilities and Open Space <p>In order to provide sufficient community facilities and open space for the increased population, the following additional facilities and open space are proposed:</p> <ul style="list-style-type: none"> 300m² of additional community centre floor space (total 1,200m²) 220m² of additional library floor space (total 845m²) (to be provided as a monetary contribution) Additional 14.2 hectares of open space
Public Domain <p>Commitment 21 to be updated to refer to the 2018 Public Domain Plan prepared by Taylor Brammer.</p>
Biodiversity <p>The following mitigation measures are recommended in respect Biodiversity:</p> <ul style="list-style-type: none"> New commitment to be inserted which requires the preparation of a Construction and Environmental Management Plan to be submitted with each application to address issues of sediment run-off, dust, noise and vibration impacts. Future development applications are required to be accompanied by a Biodiversity Assessment carried out in accordance with the BC Act.

Mitigation Measures**Contributions/Voluntary Planning Agreement**

In order to reflect the revised State and Local Contributions, amendments are proposed to the Voluntary Planning Agreements executed between Lendlease and the Minister for Planning and Shellharbour City Council. No amendment is required to the agreement executed with Wollongong City Council.

Heritage

Design Criteria to be inserted in the town centre section of the DCS in respect of development with an interface with the Cemetery.

Noise & Vibration

The following acoustic mitigation measures are proposed:

- Aircraft Noise – none required.
- Traffic Noise – new acoustic deemed to satisfy design measures for dwellings fronting Escarpment Drive and Calderwood Road in the DCS.
- Construction Noise – Acoustic and vibration management measures to be implemented through Construction and Environmental Management Plans (new commitment)
- Mixed Use Zones – New acoustic amenity criteria included in the Town Centre Section of the DCS.

Air Quality

The following mitigation measures are proposed:

- Construction impacts: New commitment proposed requiring a Construction Environmental Management Plan (CEMP) for each stage of the Project is to include measures to minimise construction dust impacts.
- Household emissions: Detailed assessment of any proposed installation of wood heaters in accordance with current advice from NSW EPA (and as updated in the future) in any future DA for housing including wood heaters.

Ecologically Sustainable Development

Commitment 24 to be updated to reflect revised sustainability commitments proposed as part of the application for a Six Star Communities Green Star Rating.

8.0 Justification

The proposed modification both reflects and will allow for Lendlease to continue to deliver a similar range of housing types and lot sizes as has been delivered through the subdivision applications that have been lodged with / approved by the NSW Land & Environment Court and SCC to date. This includes the Stage 1 Project Application, and the development applications for subsequent stages.

Currently, SCC is approving a range of residential lot sizes within the residential zones at Calderwood that are suitable for the provision of a diverse mix of detached homes, villas, dual occupancy and courtyard dwellings. The range and mix of housing / lot sizes that is being delivered to market by Lendlease includes a higher proportion of smaller housing product than originally anticipated in 2010 providing ongoing opportunities for a more efficient use of the developable land than was expected at the time the Concept Plan was approved when average lot sizes were larger, and the housing product types accepted and demanded by the residential market less varied than is the case in 2018. In 2010, having regard to the then characteristics of the residential market in the Illawarra region it was expected that the mix of housing types and lot sizes likely to be demanded by the incoming residential population would result in the delivery of approximately 4,800 dwellings across the area of land identified as being suitable for urban development.

The evolution in the mix of housing and lot sizes within the residential and mixed use zones has and will continue to result in the capacity for more dwellings across the Calderwood project, and will mean more efficient use of greenfield land for new housing. It will also mean that the types of housing available at Calderwood are better suited to the affordability and liveability drivers that are influencing consumer preferences for new housing in the Illawarra. The opportunity to provide an increased proportion of integrated housing product such as terraces, low-rise apartments and shop top housing within the town and village centres will also increase the housing choices available to residents, suitably located on land near open space and with good access to shops and services.

The proposed increase in dwelling yield from approximately 4,800 to approximately 6,500 dwellings will result in the more orderly and efficient use of land within the context of the changed housing market, without any required increase to the footprint of land zoned for urban (i.e. residential and mixed use) purposes. Conservation areas and public open space will be maintained in accordance with the Approved Concept Plan, with additional areas of public recreation land (that will in some cases also enable protection of significant vegetation) also identified in the modified concept plan. No amendments to the minimum lot sizes in the SEPP are proposed. The additional yield will be achieved by including additional locational criteria in Condition B6 which will ensure that the additional density is located in areas with good access to services and high amenity.

The proposed increased yield is commensurate with the increased residential densities that are now a feature of new greenfield development across Metropolitan Sydney and the Illawarra Region. Increases in residential densities are a response by developers, the State government and local councils to rapidly changing market preferences for smaller lot sizes and an increased demand for access to a greater range of dwelling types. The changes are fundamentally driven by changing customer preferences which are a product of housing affordability pressures and changing lifestyles.

Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated.

8.1 Environmental Impacts

Section 6.0 of this EAR provides a detailed assessment of potential environmental impacts of the proposed modification to the Approved Concept Plan. This section provides that the environmental impacts of the proposed modifications are acceptable, subject to the implementation of the mitigation measures set out at **Section 7.0**.

Additionally, the four principles of ecologically sustainable development have been considered in this project, namely:

- The precautionary principle;
- Intergenerational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

An analysis of these principles follows.

Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

Section 6.0 above sets out the evaluation of environmental impacts of the proposal, providing an assessment based on scientific data and accepted standards and assessment criteria. This EAR has not identified any serious threat of irreversible damage to the environment due to a lack of scientific certainty and therefore the precautionary principle is not relevant to the proposal.

Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations by:

- Increasing housing supply and the diversity of this housing supply in order to meet the housing needs of both the current population but also to allow for flexible housing options to enable aging in place and maintaining a sense of community whilst residents age and their needs change.

- Designing an integrated and coordinated planned residential community that enables the coordinated delivery of infrastructure that can cater for the needs of the local and regional population as that population increases over time.

The proposal has integrated short and long-term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future generations.

Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration. As demonstrated in **Section 6.10** above and **Appendix N** the proposed modifications will ensure the conservation of flora and fauna communities. The preservation of the major riparian corridors assists in the protection and long term viability of biological diversity within the CUDP.

Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation would be implemented to ensure resources are used responsibly in the first instance.

Additional measures will be implemented to ensure no environmental resources in the locality are adversely impacted during the construction or operational phases.

8.2 Suitability of the Site

The original assessment and determination of MP09_00082 found that the site was suitable for the development envisaged under the Concept Plan. The proposed modifications to the Approved Concept Plan are also considered suitable for the site in that:

- The proposed increase in dwelling yield is in response to market demand for diverse housing types through the delivered stages of the project and will not result in any additional land for urban development;
- The proposed development, with a high level of services and infrastructure implemented, can address housing supply issues in the Illawarra region;
- The modifications to the Approved Concept Plan include increased infrastructure provision where appropriate to ensure that the current and future needs of the local and regional community can be met; and
- Environmental impacts both short and long term can be effectively managed to minimise risk to the community and ensure the protection of the physical environment.

8.3 The Public Interest

The proposed modification to the Approved Concept Plan is considered to be in the public interest as it will:

- Facilitate increased housing supply within the Wollongong and Shellharbour LGAs;
- Enable a greater range of housing types to be delivered within the CUDP;
- Provide additional retail floor space to cater for the future population needs;
- Directly respond to the market demand for new dwellings within the CUDP;
- Ensure that infrastructure will be delivered to ensure that the requirements of the new population can be met;
- Ensure that all environmental impacts can be adequately managed and/or mitigated;

9.0 Conclusion

This application relates to a Section 75W modification to MP09_0082, being the Approved Concept Plan. The proposed modification seeks to allow for increased and more diverse housing supply at the CUDP. Specifically, approval is sought to increase the maximum dwellings permitted from approximately 4,800 dwellings to approximately 6,500 dwellings. The increase in housing supply is proposed to ensure that the existing area of urban zoned land in the CUDP is efficiently used for the continued supply of a range of housing types and sizes that both meet market demand and will assist address housing affordability pressures in the Illawarra region.

Allowing for increased housing supply will support the delivery of more integrated and small lot housing product in appropriate locations within the CUDP, including greater diversity in housing product. The increase in housing supply for the CUDP is proposed without any expansion of the footprint of urban zoned land (residential and mixed use zoned land) and without any change to the minimum lot sizes permitted under State Environmental Planning Policy (State Significant Precincts) 2005 (State Significant Precincts SEPP). It is also proposed without any change to the areas of land already approved for residential and other urban development under the existing Concept Plan Approval.

This Environmental Assessment Report has demonstrated that the impacts as a result of this modification, will generally remain consistent with the approved development and mitigation measures are recommended where required. In light of these planning merits, it is recommended that the modification to the Approved Concept Plan be approved.

Overall, it is considered that the proposed modifications of the Concept Plan have limited environmental consequences beyond those which have been the subject of assessment under the Approved Concept Plan. Importantly, any limited environmental consequences or impacts associated with the proposed modifications can be appropriately managed and mitigated.