Assessment of Specialist Studies for draft Oran Park Development Control Plan Amendment – 531 Cobbitty Road, Cobbitty

Open Space Analysis

An Open Space Analysis (Analysis) has been prepared by Urbis Pty Ltd (Urbis) on behalf of Mirvac Homes (NSW) Pty Limited (Mirvac) to support the proposed modifications to the Indicative Layout Plan (ILP) and Oran Park Precinct Development Control Plan 2007 for 531 Cobbitty Road, Cobbitty (the site).

The Analysis provides an indicative concept design for the proposed open spaces which will be delivered as part of the future development of the subject site. The proposed amendments relating to open space are:

- Removal of the northern linear park; and
- Refinement of open spaces adjacent to riparian corridors.

The Analysis assumes that development of the site and adjoining land (581 Cobbitty Road, Cobbitty) would yield an approximate amount of 978 dwellings and an expected population of 2,977. Council's Spaces and Places Strategy requires 2.83 ha of open space and recreation facilities per 1,000 people. The required amount of open space therefore is 8.4ha to meet the needs of the future community. The proposal provides 8.8ha of open space, excluding the riparian corridor and therefore meets the standards of the Spaces and Places Strategy.

The Analysis also notes the minimum size requirements for open space areas as being 5,000sqm. The proposed amendment to the ILP includes two unencumbered open space pocket parks that achieve a minimum of 5,000m² to be provided in the south-east and north-west of the subject site.

The Analysis summarises the qualitative aspects of the future open space network. It is intended that future development of the site will include open space and recreation facilities such as playing courts, an amenities building, interconnected pathways, active frontage to a proposed lake, multiple seating and pedestrian crossing opportunities, and the like.

Further information has also been prepared to support the Analysis, which provides a walkability assessment to ensure all dwellings are located within 400m of open space as required in the Oran Park DCP.

Officer Comment

The proposed provision of open space supports Council's vision for an integrated green and blue grid across the LGA, with the opportunity for future residents to explore, exercise, relax, and connect with nature.

The removal of the northern linear park has been supported by Council officers on the condition that the quantity of space being removed is redistributed to ensure the future community has access to functional unencumbered open space. The redistribution of this open space is provided in the north-west and south-west of the subject site, where gaps in the 400m walking catchment were identified as part of Council officers' assessment. The placement of these parks now addresses these concerns and ensures all future dwellings are within 400m walking distance of useable open space.

Council officers have raised concerns that the double playing sportsfield (and ancillary uses such as car park and amenities building) identified in the existing ILP, may not be able to be delivered due to size constraints. The proponent has agreed to look at the repurposing of the sportsfield to another form of open space. Council officers are supportive of this approach, subject to collection of contributions to support additional demand from the proposed development. A future VPA offer will provide further clarification as to proposed use of this land and the collection of contributions for off-site provision, to ensure Council has adequate funds for increased demand on nearby sportsfields.

The refinement of the open space network supports an integrated design approach which considers the wider riparian and passive open space network. Council officers acknowledge that a large proportion of the existing open space network is encumbered and is currently identified in the existing ILP and Contributions Plan as open space. Council officers are supportive of the integrated approach proposed by the proponent.

Integrated Water Management Plan

Orion Consulting have prepared an Integrated Water Cycle Management Study (IWCMS) and Plan in support of the proposed amendment of the Oran Park DCP. The current report has considered the following key studies provided by Camden Council for the site:

- Integrated Water Cycle Management Study, Ecological Engineering (2007);
- Stormwater Quantity Management and Flooding, Brown Consulting (2007); and
- Nepean River Tributaries Study, Cardo (2022).

The need to amend the existing supporting water cycle management documentation which supports the DCP, was materialised by the determination that post development flows could not be managed to existing levels without consideration of online storage. This is due to the existing large farm dam and the attenuation it provides in the existing case. In addition to contemplating online storage, this new plan needs to address continuity with the latest flood planning information available for the Greater Nepean River Catchment.

This study presents a water management strategy that focuses on the re-creation of the existing farm dam into a new man-made lake, on-line to the same creek the existing farm dam sits on. This facilitates the dual use of land and achieves both water management and open space objectives for the site.

The IWCMS illustrates information and extracts from both the Hydrologic and Hydraulic modelling undertaken in this study and demonstrates that calibration objectives to the Nepean

River Tributaries Study were achieved with consideration to the latest data available for the site.

For water quantity and floodplain management, the proposed Masterplan features active storage above the proposed lake and sportsfields that attenuates all combined post-developed flows back to pre-developed flows achieved by the existing farm dam. Two smaller on-site stormwater detention basins are proposed to treat other independent urban catchment flows, offline to the main creek lines. Combined, these water quantity facilities adequately ensure that the proposed Masterplan does not adversely impact adjoining properties.

All urban catchments will feature primary and secondary water quality controls in the form of gross pollutant traps and biofiltration systems that adequately address Camden Council's water quality management objectives.

Officer Comment

The IWCMS has identified that amendments are required to the existing supporting water cycle management documentation which currently supports the DCP, as post-development flows identified in the current controls cannot be managed without consideration of online storage within the Precinct. This is due to the existing large farm dam on site and the attenuation it provides in the existing development scenario.

Overall, the amended Masterplan recommends a water management strategy that focuses on the re-creation of the existing farm dam into a new man-made lake, which remains online to the same creek that the existing farm dam connects with.

The Integrated Water Cycle Management Report provides a TUFLOW Flood Assessment of the pre and post-developed scenarios for the site. The assessment demonstrates that the proposed concept design adequately meets the required performance objectives for water quantity management.

The following water quality control assets are proposed for implementation as part of the updated design:

- Gross pollutant traps (GPT) - for removal of coarse sediment and large debris, reducing maintenance obligations and pollutant load on the tertiary treatment controls.
- Bioretention systems - capture finer sediments and nutrients (proprietary solution nominated to maximise public amenity and long-term water quality control effectiveness).
- Rainwater tanks - generally required in order to meet BASIX requirements and provide a starting point for pollutant capture and removal, as well as reduction in runoff from the site.

In order to maximise recreational land use and promote more efficient use of materials for long duration maintenance cycles, the proposed WSUD design features the use of proprietary high-flow bioretention systems. Overall, the proposed refinements to WSUD on site allow for:

- Significantly increased treatment rates, thus significantly reducing required infrastructure to manage the site; and,
- Increased native vegetation to increase the overall resilience of the site to drought conditions and protection of riparian corridors from siltation and clogging.

Furthermore, Council officers and Council's Nepean River catchment consultant have reviewed the Integrated Water Management Plan.

A peer review of the Integrated Water Management Plan was undertaken by Council's Nepean River catchment consultant. The Council officers' and external consultants' assessment of the proposal have concluded that the hydrological and hydraulic modelling is fit for purpose, the residential areas of the subject site are not subject to overland flow, and flood velocity differences demonstrate compliance with Council's Floodplain Risk and Management Study for the critical 5-, 20- and 100-year flood events. In response to these comments, Council officers have identified a number of recommendations which can be completed at the more detailed Development Application stage. These include the following:

- The Flood Planning Levels for this development should be based on Council's Nepean River Floodplain Risk Management Study and Plan 2019 (now noted as 2022 and adopted by Council on 14 February 2023) for planning purposes, until such time that the Nepean River Flood Study is updated;
- Pre versus post flood velocity difference maps for the Probable Maximum Flood (PMF) Event and for 2-hour durations of all events are recommended to provided;
- The following noted increase in peak flows and flood depths are required to be addressed; and
- Further consideration is required to reduce the impacts of flooding to match with the criteria for urban land.

The consultant of the proponent has agreed for these amendments to be made at the Development Application stage.

Heritage Impact Study

Design 5 Architects have prepared a Heritage Impact Study (HIS) to support the proposed amendments to the Oran Park DCP.

The HIS summarises the importance of the Denbigh Homestead through its review of the Denbigh Conservation Management Plan and Curtilage Study. The HIS therefore responds to the draft DCP and ILP amendments proposed by the proponent.

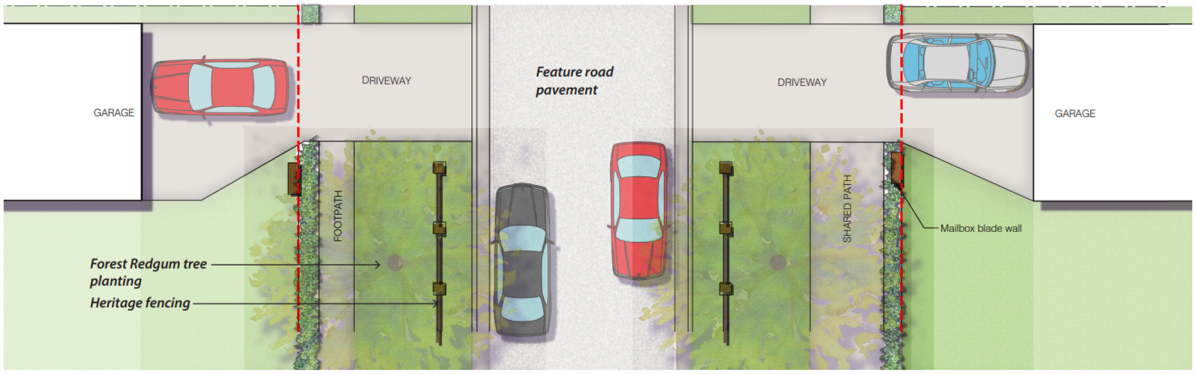
Design 5 Architects note that the proposal generally retains and respects the exceptional cultural significance of the Denbigh Homestead and associated grounds. The rural landscape, with its network of low and high ridges and hills surrounding the valley, is an important aspect of the exceptional setting and significance of the Denbigh Estate.

The study focuses on the proposed amendments to Part B3 of the DCP – Denbigh Transition Area, specifically for removing the maximum height requirement for the landscaped earth mound. The study also analyses the proposed removal of the northern triangular open space park and its reinterpretation as a heritage boulevard.

The proposed view mound is located within areas of exceptional to high aesthetic significance on the southern boundary of the Denbigh Estate. The study notes that modification of the existing low broad ridge, through the addition of a continuous raised mound, will have some impact on the visual integrity of the existing setting of the Denbigh Estate, particularly the homestead and outbuildings group (core curtilage). However, this proposed mound aims to protect this setting from proposed adjacent development. The mound on the low ridge will generally protect and preserve the rural landscape setting of the place. The height of the proposed mound reaches a maximum of approximately 8.92 metres above the natural ground level. The excavation to the south of the mound reaches more than 4.5 metres at its deepest point. These modifications should provide the required visual screening of future developments on the subject site. It is envisioned that no development will be visible from the selected viewpoints in the core curtilage. Any retaining walls or fences will also not be visible from the core curtilage. The HIS concludes that the proposed mound will be able to protect the significant rural setting and views from the core curtilage of the Denbigh Estate.

The HIS assesses the impact of the future development on Cluny Hill, which sits directly to the north of the subject site. Cluny Hill acts as a gatehouse to the Denbigh Estate. The Denbigh CMP states that the 'rural context, careful siting as entry maker and carefully articulated views and links that Cluny Hill has with its setting and Denbigh must be retained and respected'. The HIS concludes that the setting of Cluny Hill will be modified to its south and east and it will no longer be perceived as occupying the high point at the end of the ridge due to the proposed form of the mound.

The final potential impact the HIS assesses against is the reinterpretation of the currently identified open space park located in the north-west of the subject site. The open space park is approximately 10,000sqm in size and acts as an interpretation of the previous Hassall Driveway alignment. The proposal seeks to remove this park and reinterpret the historical driveway in the form of a tree-lined boulevard that respects the heritage qualities of its original setting. The details of this proposed boulevard are illustrated below:



The landscape interpretation of the Hassall Driveway, as illustrated in the 'in the above cross section' (prepared by Paterson Design Studio), will interpret this historic connection to the Denbigh Estate. The interpretation plan suggests appropriate species to be planted within the wide verges. The desired boulevard character for the corridor will interpret the existing rural character present on the subject site and beyond. It is important that this interpretation of the Hassall Driveway follows its original alignment. This alignment must be included as part of future development proposals.

The HIS concludes that the proposed amendments to the Oran Park DCP, specifically Part B3, are supportable and reflect the original objectives of the DCP and protect the significance and setting of the Denbigh Estate. The HIS recommends the following to ensure the heritage qualities and rural setting of the Denbigh Estate are preserved:

1. The mound design should be refined, such that the mound reinterprets the existing topographic variations and high points in any future DAs.
2. The mound should appear as natural as possible and not as a highly engineered landform when viewed from any adjacent areas including the subject site. This should be addressed as part of any future DAs.
3. The mound will conceal the alignment of the Hassall Driveway within the subject site. The presence of the mound should be interpreted in the design and configuration of plantings on the mound consistent with those proposed within the heritage boulevard.
4. Wherever possible, the retention of existing mature trees should be preferred over their removal, as already recommended in the existing DCP.
5. The built form and heights of future dwellings are to comply with the maximum height requirements. This is so the cultural significance of the Denbigh Estate is not compromised.
6. The amendments to the DCP are to be limited to the Southern Viewscape Precinct as identified in the DCP.

Officer Comment

The current DCP identifies a landscaped earth mound to avoid adverse visual impacts of future developments on the rural setting of the Denbigh Estate and on the views from the Denbigh Homestead and outbuildings group (core curtilage). The revised proposal maintains the integrity of Denbigh's heritage curtilage as it results in improvements to the heritage curtilage by providing a more responsive earth mound to reflect the topography of the site. The proposed design also reduces the amount of land required on the adjacent Denbigh Estate.

The proposed amendments remain consistent with the vision of the Oran Park DCP, in particular the specific controls set out in Part B of the DCP relating to the Denbigh Southern Viewscape Precinct. The proposed amendments will facilitate the future development of the earth mound which aims to balance the objectives of the DCP, Conservation Management Plan and the Curtilage Study for the 'Denbigh Transition Area' in anticipation of future development of the subject site. To ensure the future development of the earth mound meets the objectives of the DCP, deviations from the maximum height limit of 4.5m have been proposed. This also include updates to the extent of cut and fill within the ridgeline to reduce the extent of the earth mound required to be burdened on the adjoining landowner.

Despite the proposed modifications, the earth mound design remains consistent with the design features as required in the DCP (Figures 4a, b, c, and d). These include:

- A gradual integration of the batter with the adjoining rural pastures at the foot of the earth mound. A gradual slope of 1:6 to 1:5 is proposed for the ridgeline, and the slope at the foot of the batter ranges from 1:5 to 1:8.
- A landscaped mound with a combination of scale and type of native species planted to ameliorate potentially negative visual impacts of the height of the earth mound.

The extent of cut and fill proposed achieves a minimum screening height of 6 metres for the future development. The proposed design eliminates future possibility of roof lines, streetlights or car headlights being visible from the Denbigh core curtilage and reflects the broad aims and objectives of the DCP by providing visual screening and protecting Denbigh's rural heritage. The proposed DCP amendments also maintain the current controls for residential development within the Transition Area, to ensure that dwellings do not protrude above the ridgeline and are constructed to maintain the appearance of a single-storey dwelling when viewed from the rear.

Although the proposed mound significantly alters Cluny Hill's function as a gatehouse to the Denbigh Estate, the HIS concludes that the future landscaped mound will visually screen future development from the Cluny Hill collection of buildings.

The proposed removal of the open space linear park and reinterpretation of the Hassall Driveway is considered to interpret the existing rural character of the site and is supported from a heritage perspective. The interpretation plan suggests appropriate species to be planted within the wide verges. Further assessment of the boulevard will be undertaken as part of a future Development Application to align with the controls of Part B of the DCP.

In summary, Council officers are satisfied that the proposed DCP amendments support the original objectives of the DCP and protect the significance and setting of the Denbigh Estate.

Traffic Impact Assessment

SCT Consulting has prepared a Traffic Impact Assessment (TIA) to support the updates to the Oran Park DCP and ILP.

The Oran Park DCP prescribes Charles McIntosh Parkway as a two-lane sub-arterial, that connects between The Northern Road and Cobbitty Road. There are no proposed changes to the hierarchy and function of Charles McIntosh Parkway as a result of the draft amendments to the Oran Park DCP. In addition to Charles McIntosh Parkway, there are three collector roads identified for the site. The existing Street Network Plan is shown below:

The TIA summarises the proposed changes to the road hierarchy and layout which include:

- Downgrading of the collector road next to the local centre to a local street; and
- Reclassifying the collector road adjoining the riparian corridor as a collector road, instead of a road through the middle of the subdivision.

The TIA provides justification for the downgrading of the collector road next to the future local centre. The southern collector road next to the local centre was designated as a collector road despite there being very little catchment for it. The proposed amendments to the Oran Park ILP mean that most residents would be able to access Charles McIntosh Parkway directly via these north-south local streets, rather than using the collector road to the south of the subdivision to access Charles McIntosh Parkway. Therefore, the collector road is not required to collect the local traffic and would not actually function as a collector road. This is similar to Wainwright Drive through BHL's Oxley Ridge Estate, which ended up being delivered as a local road.

The TIA provides reasoning for a revised collector road alignment south of the riparian corridor. The revised collector road is a direct and convenient east-west connection. As it no longer includes intersections with unusual give way priorities (e.g. the north and east being the priority and south giving way), the safety of the road will be improved. By avoiding a collector function road that cuts through the centre of the subject site, higher traffic volumes will run around the periphery of the precinct, improving opportunities to cross for pedestrians and improving attractiveness for cycling. The revised collector road still connects with Charles McIntosh

Parkway at the same location – the roundabout just south of the riparian corridor. The proposed layout also avoids the collector road passing through a separately owned property (Lot 1 DP 1014583) meaning it can be delivered by one developer and provide access to potential future lots to the east of this subdivision, which would otherwise be reliant on local streets. This would improve road functioning during staged delivery of the precinct.

The potential traffic impacts on the surrounding critical road network have been considered as a result of the proposed master plan update. The proposed expected trip rates and generation as a result of the development are provided in the Table the below:

Land uses	Updated master plan yield	Trip rates		Trip generation	
		AM	PM	AM	PM
Residential	903	0.95 per dwelling	0.99 per dwelling	858	894
School	1,000	0.67 per student	N/A	670	N/A
Local centre	5,150m^2	5.9 per 100m^2	12.3 per 100m^2	304	633
Total				**1,832**	**1,527**

The Table summarises the trip generation rate of 0.99 and 0.95 (AM peak and PM peak) vehicle trips per low-density dwelling from the Technical Direction TDT 2013/04a. The updated Masterplan, with an additional 903 residential dwellings, would be expected to generate up to 894 vehicle trips during the peak hours.

In summary, the TIA acknowledges that the changes to the road network and hierarchy which are proposed, are justified. The proposed amendments provide more benefits than what is currently achievable in the existing ILP in terms of site accessibility and road network permeability. It also creates a pedestrian and cyclist-friendly environment for future residents.

Officer Comment

The potential traffic impacts associated with the proposed DCP amendments, on the surrounding critical road network, have been considered as a result of the proposed Masterplan update. It is noted that the proposed residential dwellings satisfy the minimum yield dwelling target of 414 as suggested in the ILP.

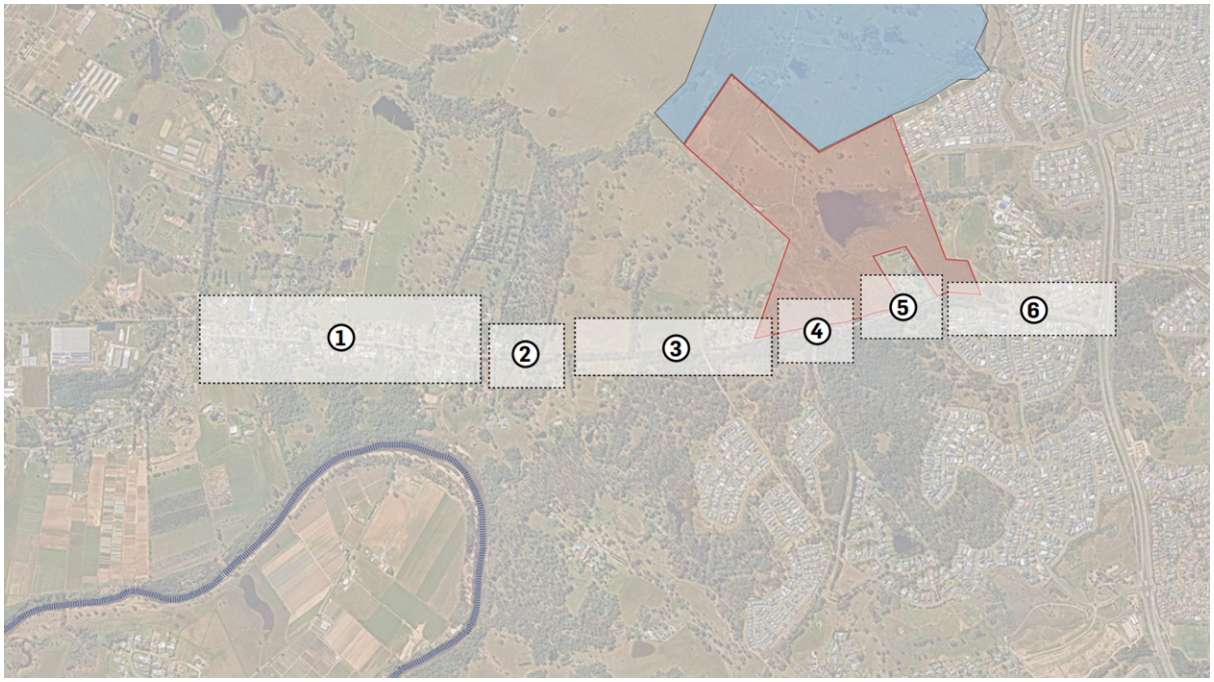
The proposed trip generation associated with the updated Masterplan is distributed to the surrounding road network.

Overall, the proposed updates to the road network aim to improve the overall traffic network for the Oran Park Precinct and result in positive benefits in relation to site accessibility and road network permeability. The proposed updates also aim to improve pedestrian and active transport connections by moving connector roads to the periphery of the site and creating improve connections to public facilities and riparian corridors.

Visual Impact Assessment

A Visual Impact Assessment (VIA) has been prepared to support the draft amendments to the Oran Park DCP.

The VIA has been structured to consider the potential for visual impacts as a result of the future development of the subject site. The VIA illustrates six different view insights as illustrated below:



The first key viewing insight is identified as the Cobbitty Village streetscape, which is located 1.5km to the west of the subject site. The VIA outlines the typical visual character of this area being of large lot residential living. The dwellings are typically set back from Cobbitty Road between 8 to 13 metres. The front setbacks opening to Cobbitty Road generally provide an open view when travelling along the road and allow for a high degree of visual accessibility. Long distance views are restricted except for the road corridor itself.

The second key viewing insight has been identified as the transition between Cobbitty Village and the rural character of Cobbitty Road. The VIA notes the setbacks of the dwellings in this zone from the road and each other are generally larger than that to the west, and vegetation begins to become more visually significant to either side of the road corridor compared to the Zone 1 (Cobbitty Village). The view east from this transition zone compared to the west is framed by mature vegetation and provides intermittent and isolated views to the north and south across the adjacent rural lands.

The third view zone identified in the VIA is directly between the subject site and zone 2 as described above. The visual character of this section of Cobbitty Road is heavily influenced by the height and maturity of street trees located in the road reserve. Highly filtered peripheral views through the vegetation, adjacent to either side of the road, are possible and create a partial sense of what is beyond. Isolated views north and south are present, typically as a result of driveways.

The fourth view zone identified in the VIA is Cobbitty Road fronting the western portion of the subject site and the intersection with Macquarie Grove Road and the future Charles McIntosh Parkway. This section of road corridor is characterised by juvenile screen planting and less mature canopy trees within and adjacent to the road corridor. This area represents one of the few public access roads that allow direct southern access to Cobbitty Road with potential frontal views north. The visual character of this zone is newly formed and emerging as a result of the establishment of growing screen planting.

The fifth view zone is the approach to the recently developed Harrington Grove Estate, which is abutting the subject site and Cobbitty Road to the south. Vegetation to the northern side of the carriageway is generally juvenile until reaching the driveway leading to Denbigh Farm, where a fleeting long-distance view over open rural land towards vegetated slopes in the distance is possible for road users.

The final view zone is the interface of Cobbitty Road with the Northern Road. The eastern entrance to Cobbitty Road marks a distinct change in streetscape in comparison to the rest of the road. Short and medium distance views are possible due to the decrease in surrounding vegetation, particularly to the north surrounding Macarthur Anglican School. Low shrub planting and street lighting to either side of the road as well as a public footpath to the northern side replace the more naturalistic and rural vegetated streetscape that characterises the road to the west.

The VIA has found that the viewscape of Cobbitty Road differs greatly between Cobbitty Village and the Northern Road and notes the importance of the rural and landscape character of the road corridor.

The VIA has a number of recommendations to ensure the rural and landscape character of Cobbitty Road is maintained. These are summarised below:

- Maintain existing planting within the Cobbitty Road corridor adjacent to the proposal where possible;
- Where peripheral views into the site are possible due to sparse vegetation, recommend targeted additional planting to boundary planting (up to a width of 7m);
- Increase boundary planting (up to a width of 7m) to filter views at select locations;
- Provide screening planting (up to a width of 7m) to south-eastern corner to conceal north-west views into site, past the Macarthur Anglican College roundabout;
- Proposed Cobbitty Road/Macquarie Grove Road roundabout entrance should consist of planting to match existing in the area to maintain visual character; and

- Proposed Cobbitty Road/Macquarie Grove Road entrance provides only direct views north into site. As such, entrance planting should be explored to filter views northwards as should suitable median planting.

Officer Comment

It is noted that the east and west of Cobbitty Road (zones 1 and 6 as highlighted in the VIA) differ greatly from one another. Zone 1 is categorised as Cobbitty Village which is a prominent rural town with large setbacks incorporating gardens and separation of built form from the road. Zone 6 which includes Macarthur Anglican School new urban development consistent with Camden LGAs rapid population growth.

The VIA states that views from Cobbitty Road into the development site are generally obstructed due to high levels of vegetation. The VIA provides illustrations of indicative massing for land zoned C4 Environmental Living and R1 General Residential (larger lots). This massing indicates that views from Cobbitty Road will be largely restricted.

Council officers support the recommendation to maintain existing planting within the Cobbitty Road corridor and for the proposed development to provide targeted additional planting of up to 7m within the boundary of the subject site. Greater detail of vegetation types and specific areas to target additional planting will be determined at the Development Application stage.

Council officers support the recommendation for the Cobbitty Road and Macquarie Grove Road entrance (main entrance into development site) to be of identical character with existing vegetation that's within the Cobbitty Road reserve. This is to ensure the rural character of Cobbitty Road remains intact. Furthermore, entrance and median planting should be explored to restrict northern views into the development site. This detail is to be determined at the Development Application stage.

Overall, Council officers support the recommendations of the VIA and consider that any views which may be present are to be mitigated by additional planting opportunities within the subject site.