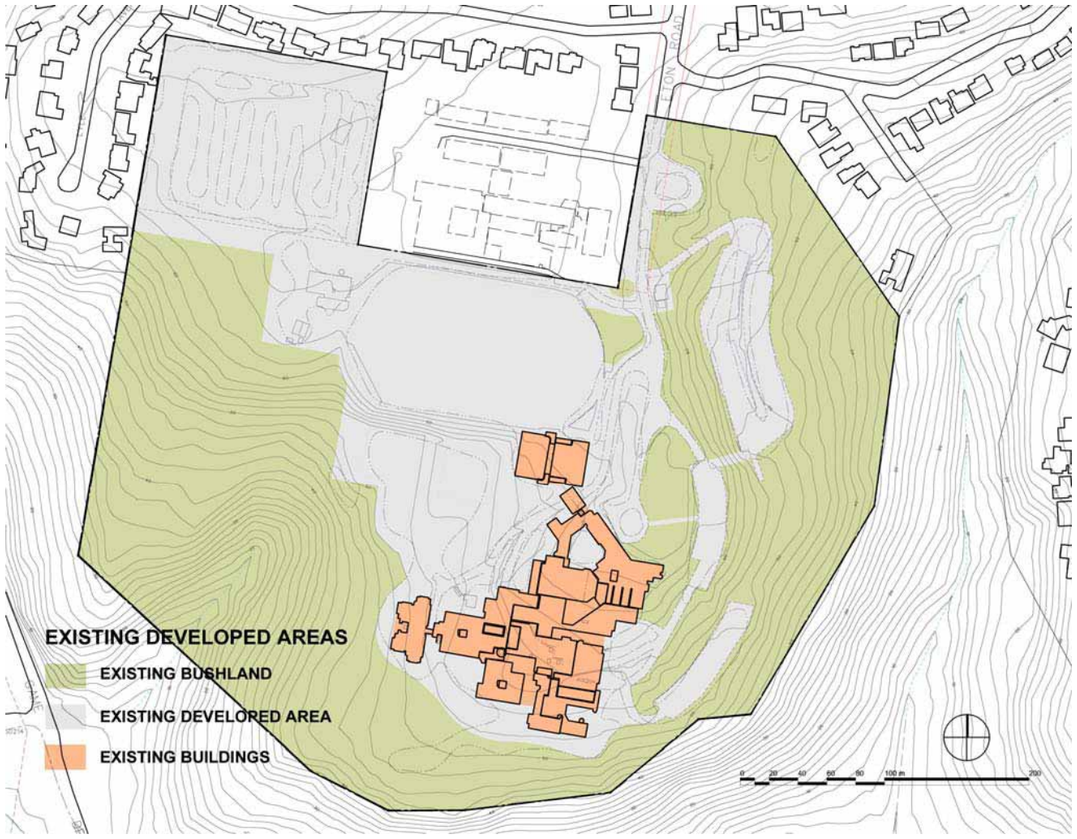
siting of new development

A substantial portion of the site has already been developed or undergone urban intervention, leaving the bushland in the south, south-west and eastern sections of the site. The diagrams below indicate the areas of the site already developed, and those areas identified for proposed future development. Future development is to primarily sit on the already developed areas of the site. The additional areas to be developed are a small section immediately south of the existing north-west carpark, adjacent to the child-minding centre and the cluster of individual residential lots in the north-east of the site where vegetation is degraded by heavy weed infestation.



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a bushland entry

The existing bushland character and sense of arrival to the site is maintained and would be enhanced through supplementary planting of endemic species.

A strong bushland buffer will be retained between the existing entry road and new buildings.

Entry to Ku-ring-gai Campus

Residential street, Castlecrag

Residential street, Lane Cove

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a community focus

The Concept Plan provides for a signature community focus in the form of a playing field. The open space provides a facility for organised sporting activity such as soccer and cricket and other forms of active and passive recreation such as ball games, running and walking etc.

The surrounding built forms and the existing rock cutting assist in emphasising the formal nature of the space.

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landscaping

The landscape approach for the development of the site builds upon the philosophy and work of Bruce Mackenzie. The open space is to retain the overall bushland character, reinforce the integration of the built form and landscape and to provide strong definition between the interface of buildings and bushland.

Key areas of bushland have been retained and incorporated into the proposed development. These are:

- the areas of natural bushland to the east, south and south-west of the main building complex;
- planting along the entry road from Eton Road and the current main entry courtyard; and
- the planted retaining wall between the existing oval and tennis courts.

In areas where the bushland is subject to fire management control (the asset protection zone), fuel reduction is required. This includes the creation of a minimum 2 metre separation between trees or small clumps of trees as well as between shrubs. It is noted that the existing tree canopy in many areas of the site already has this separation due to the sandstone ridge top nature of the vegetation.

Within the asset protection zone, a landscape design approach has been developed in line with the original landscape philosophy. The key features of the landscape treatment are:

- loosely spaced trees singly or in small stands to create an open woodland;
- predominant use of the species *Eucalyptus haemastoma* (Scribbly Gum) and *Angophora costata* (Smooth-Barked Apple) to create a strong visual impact;
- use of supplementary endemic tree species such as *Casuarina littoralis* (Black She-Oak) and *Eucalyptus gummifera* (Bloodwood); and
- an understorey of rough grass, mown grass or native grass.

existing bushland and open space adjacent to existing campus buildings

indicative vegetation within an asset protection zone

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The resultant landscape character is of an open woodland with a strongly defined built form edge. Here there is a direct visual connection to the bushland but not a physical connection.

The simple landscape treatment described above has also been adopted for the internal courtyard areas between apartment buildings. However, the introduction of contained areas of shrub and groundcover planting produces a slightly more complex outdoor environment. The degree of complexity increases further at building entries and within private open spaces.

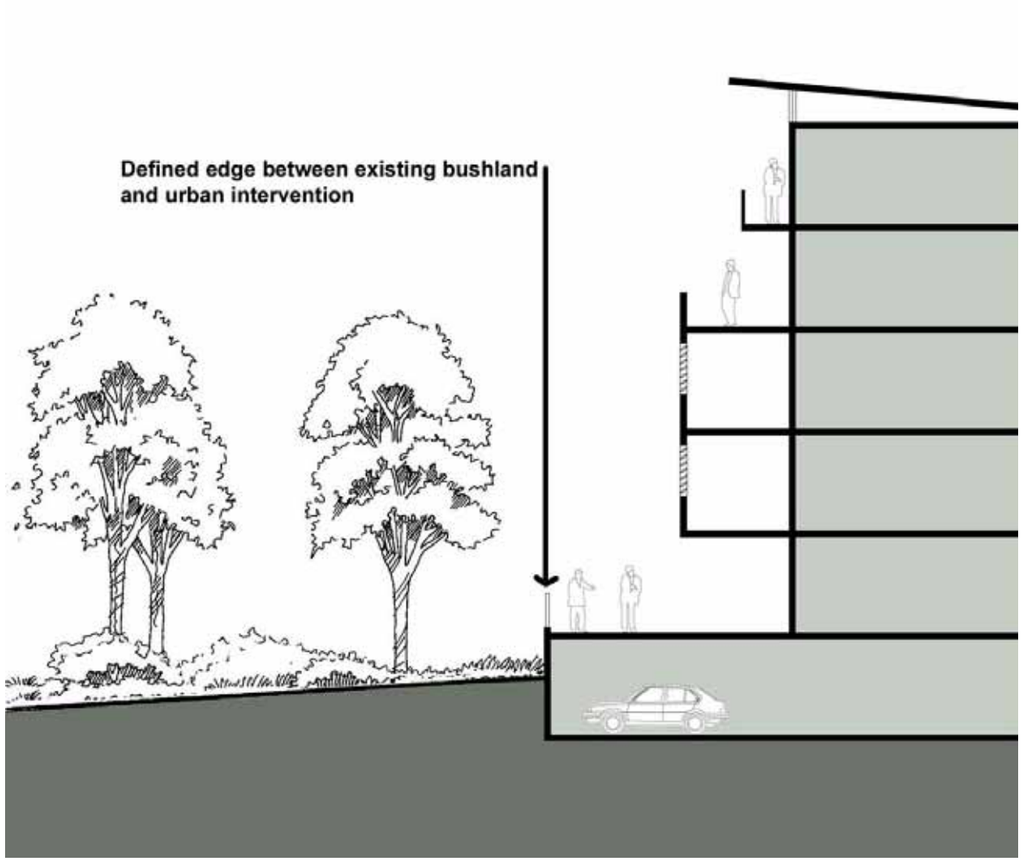
Plants selected for use in the open spaces are to include native species that are more resistant to fire than other species. These would include:

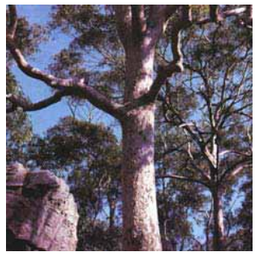
Acacia terminalis	Cedar Wattle
Acmena smithii	Lilly Pilly
Angophora costata	Smooth-Barked Apple
Hakea salicifolia	Willow Heath
Kennedia spp.	Coral Peas
Myoporum parvifolium	Creeping Myoporum
Pittosporum undulatum	Sweet Pittosporum

The landscaped areas of the site also feature:

- streets incorporating existing and supplementary native tree species;
- a structured formal active recreation area;
- seating areas;
- drainage swales and bio-retention basins as part of the stormwater management for the site; and
- areas of native vegetation incorporating *Darwinia biflora.*

The treatment of the open spaces of the proposed development ensures retention of the strong bushland character of the site whilst creating a robust treed landscape. The woodland environment will possess a strong visual character and integrate the development with the natural bushland.





Source: *The Australian Gardener's Wildflower Catalogue* by Denise Greig

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a defined edge to the residential community

The buildings adjacent to bushland are arranged in a manner which provide an edge between the residential communities and their natural landscaped setting.

In response to Bruce Mackenzie's principle of contrast between the urban form and natural setting, these buildings are arranged with limited physical connections between the private open spaces and the surrounding natural bushland. This is achieved through grade separation of the private terrace spaces and the levels of the natural bushland.

Physical access between the residential community and the bushland is only achieved through defined access points and pathways between and not directly from buildings.

A strong built form buffer is instrumental in supporting an enhancing the design vision of the hilltop town within the bushland setting.

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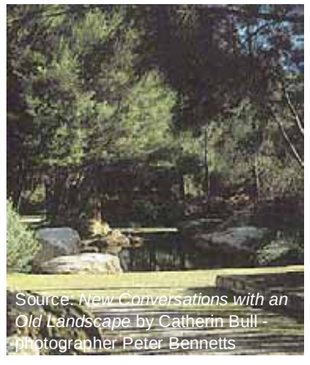
garden courtyards

Spaces within the residential community are designed to strongly define areas of communal and private spaces. The bushland character is drawn into these spaces through the use of native plant species.

An urban bushland park character is achieved through a more structured landscape design of bushland species.

Source: *Oasis* Issue 1 - photographer Sue Stubbs

Source: *New Conversations with an Old Landscape* by Catherin Bull - photographer Peter Bennetts



Source: *New Conversations with an Old Landscape* by Catherin Bull - photographer Peter Bennetts

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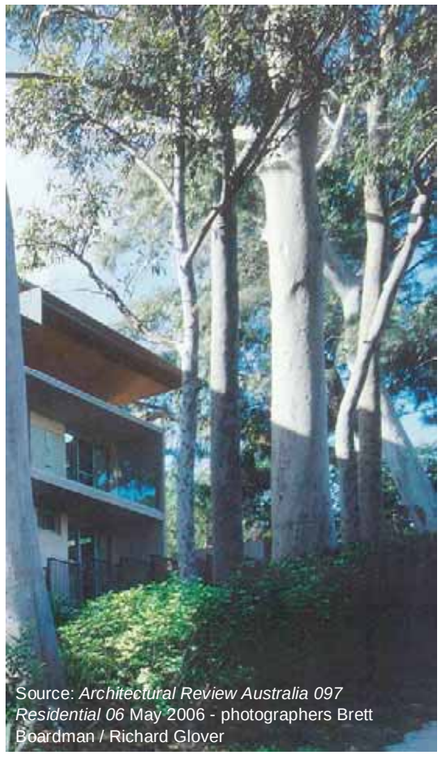
medium density housing

Building forms and footprints have been carefully arranged to consider topography, maximising solar access to apartments and cross ventilation, and minimising overshadowing to open spaces. The design of the apartment blocks should use the visual interface with the bushland at the lower floors and the use of roof gardens on the top storeys to provide for a variety of apartment types.

The siting and internal plans of buildings should optimise north-facing units for solar access, and cross ventilation. It is encouraged that units requiring balconies should be designed such that the balconies should be an extension of the living spaces. These balconies should have the ability to be used as outdoor rooms through the use of shutters.

The aesthetic of these buildings should borrow from the robust form of the existing educational buildings through the use of rhythm and defined shadow lines. The buildings should be articulated using defined geometrical forms and contrast of light and shade. It is not envisaged however, that this new development adopts the same materials or construction technique of the existing building. A careful selection of contemporary materials needs to be adopted that complement and the existing building and landscape setting.

The facades to these buildings require defined articulation and modulation to break down the overall large forms of the individual apartment blocks into a smaller domestic scale.



Source: *Architectural Review Australia 097 Residential 06* May 2006 - photographers Brett Boardman / Richard Glover

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small lot integrated housing

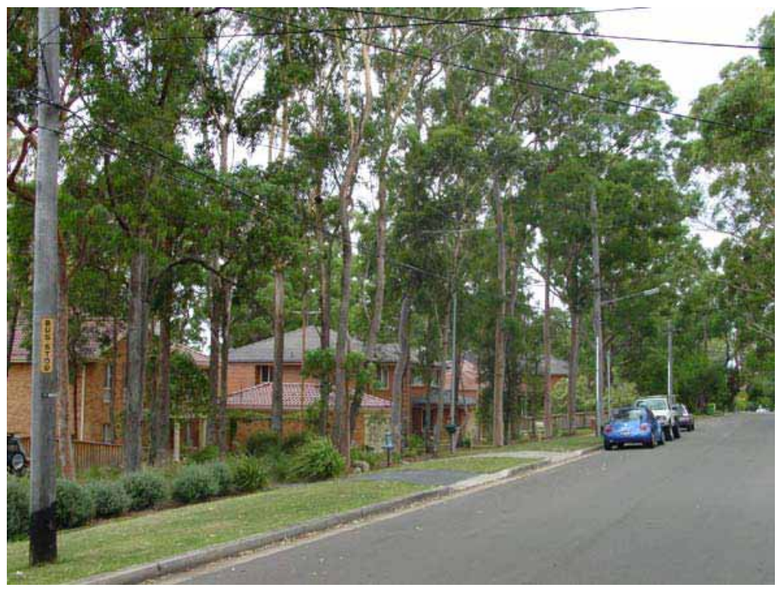
The small lot integrated housing provides smaller, easily managed housing lots where the residents have a reduced area of private open space. It is envisaged that they will use the public open spaces for recreation.

Small lot integrated housing is particularly effective in addressing physical site considerations such as topography and existing vegetation.

Housing size should be carefully controlled on these sites to ensure sufficient private open space as well as solar access to all living areas and the private open space.

In keeping with the surrounding residential area, it is proposed that the new small lot integrated housing be 1 – 2 storeys.

Architectural design guidelines with a palette of materials and finishes should be established to provide consistency for the small lots and to ensure compatibility with the other medium density components.



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individual lots

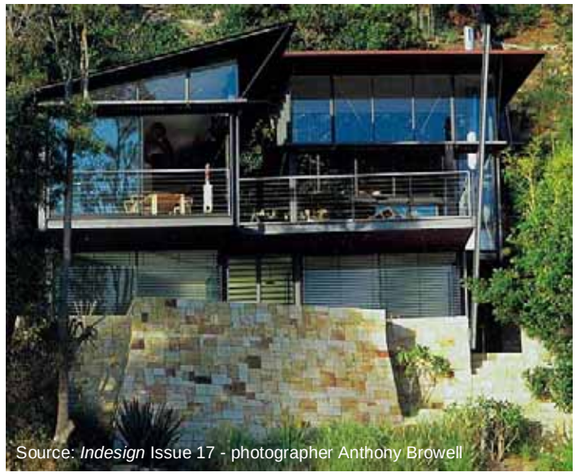
Larger individual lots with an area of approximately 750m2 are located along the western and northern boundaries. They are adjacent to existing similar residential lots on Winchester Avenue and Lyle Avenue.

The houses are to be sited to retain significant trees and bush outcrops where possible. Buildings would be sited to ensure minimal overshadowing impact and to ensure privacy of adjoining lots.

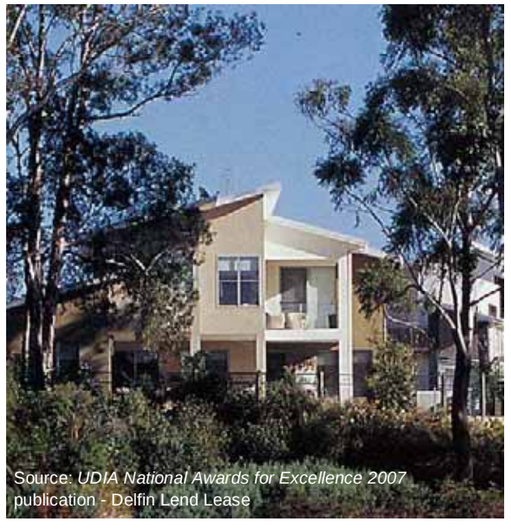
In keeping with the surrounding residential area, it is proposed that new individual lot housing be 1 – 2 storeys.

Architectural design guidelines with a palette of materials and finishes would be established to provide consistency for the individual lots and to ensure compatibility with the other small lots and medium density components.

Source: *Houses* Issue 39 2004 - photographer Paul Gosney



Source: *Indesign* Issue 17 - photographer Anthony Browell



Source: *UDIA National Awards for Excellence 2007* publication - Delfin Lend Lease

Source: *Monument* Issue 9 - photographer Anthony Browell

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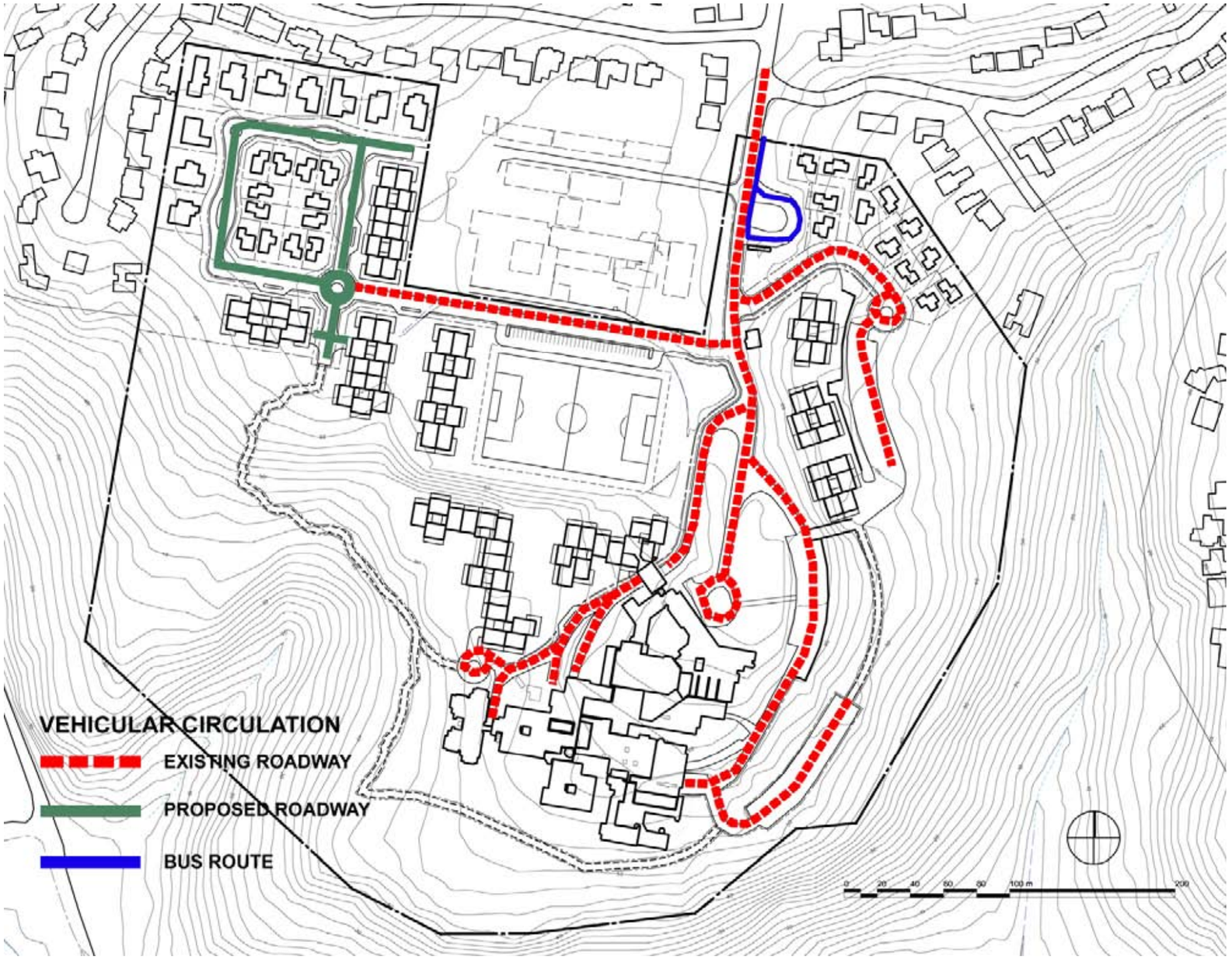
vehicle circulation

The concept plan has been arranged to provide access to all individual lots, medium density housing and potential reuse of the existing buildings' accommodation with minimal introduction of new roads.

Additional new roads in the north-west sections of the site allow for emergency bushfire truck access. Existing roads are maintained where possible, retaining their bushland character and natural edges. The only new roads in the existing north-west carpark are constructed in a similar manner with natural rock cuttings used to define kerbing and street planting selected to enhance the bushland setting.

It is important to note that the new roads in the north-west part of the site would be located on the existing carpark.

The existing road network allows for emergency vehicle access. A fire trail is located to provide emergency access to the perimeter of the developed area in accordance with current regulations. Where possible, existing roads and carpark areas are used to provide this access.



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pedestrian network

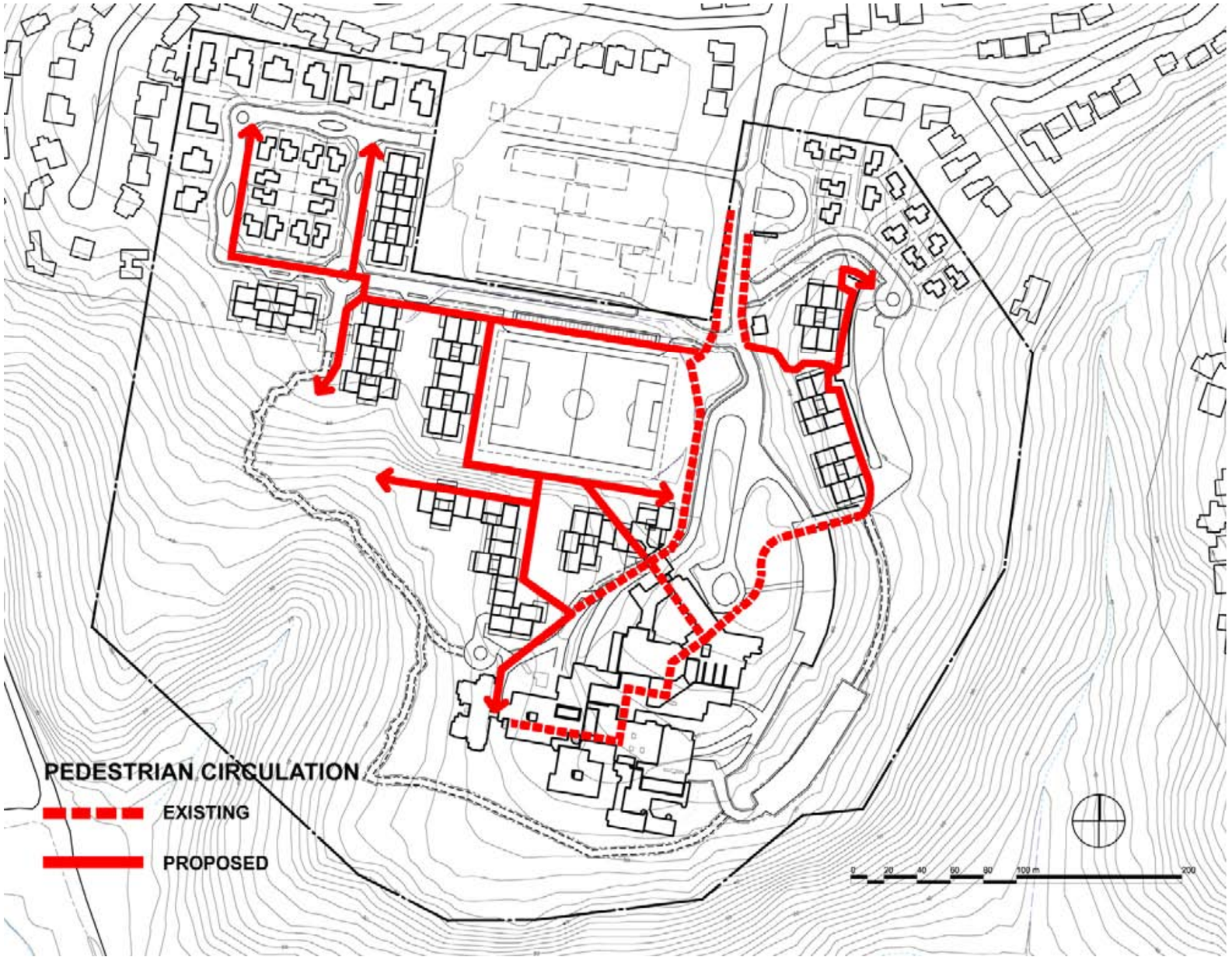
The concept for pedestrian circulation has been derived from the original concept of the internal street for the educational facility. This internal street is extended into the courtyard spaces of the medium density housing where the internal street becomes an external garden walk.

All access to medium density dwellings is via this courtyard garden walk which helps to activate and provide surveillance of the communal open spaces.

Convenient pedestrian access is provided for the community to interconnect the residential areas with the transport (bus stop), recreation areas (both active and passive) and community facilities and alternate use opportunities (within the existing buildings).

The main principles for pedestrian circulation are:

- Permeability – permeability for pedestrians' movement networks requires a different response to permeability for vehicular movement. Typically, pedestrians will only comfortably walk 400 metres before they decide to drive. To discourage excessive vehicular movement and promote pedestrian activity pedestrians are provided with alternative routes wherever possible. The pedestrian network forms a lattice with as few barriers to movement as possible.
- Legibility – legibility is provided for the pedestrian network with clear direction as well as clear choice of travel routes.
- Lighting – lighting is to be provided to illuminate pathways.
- Safety – Safety and security for the pedestrian is achieved by way of passive surveillance between the motorist and pedestrian. This means integration rather than separation with the road network wherever this is appropriate.



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drop off/pick up points and carparking

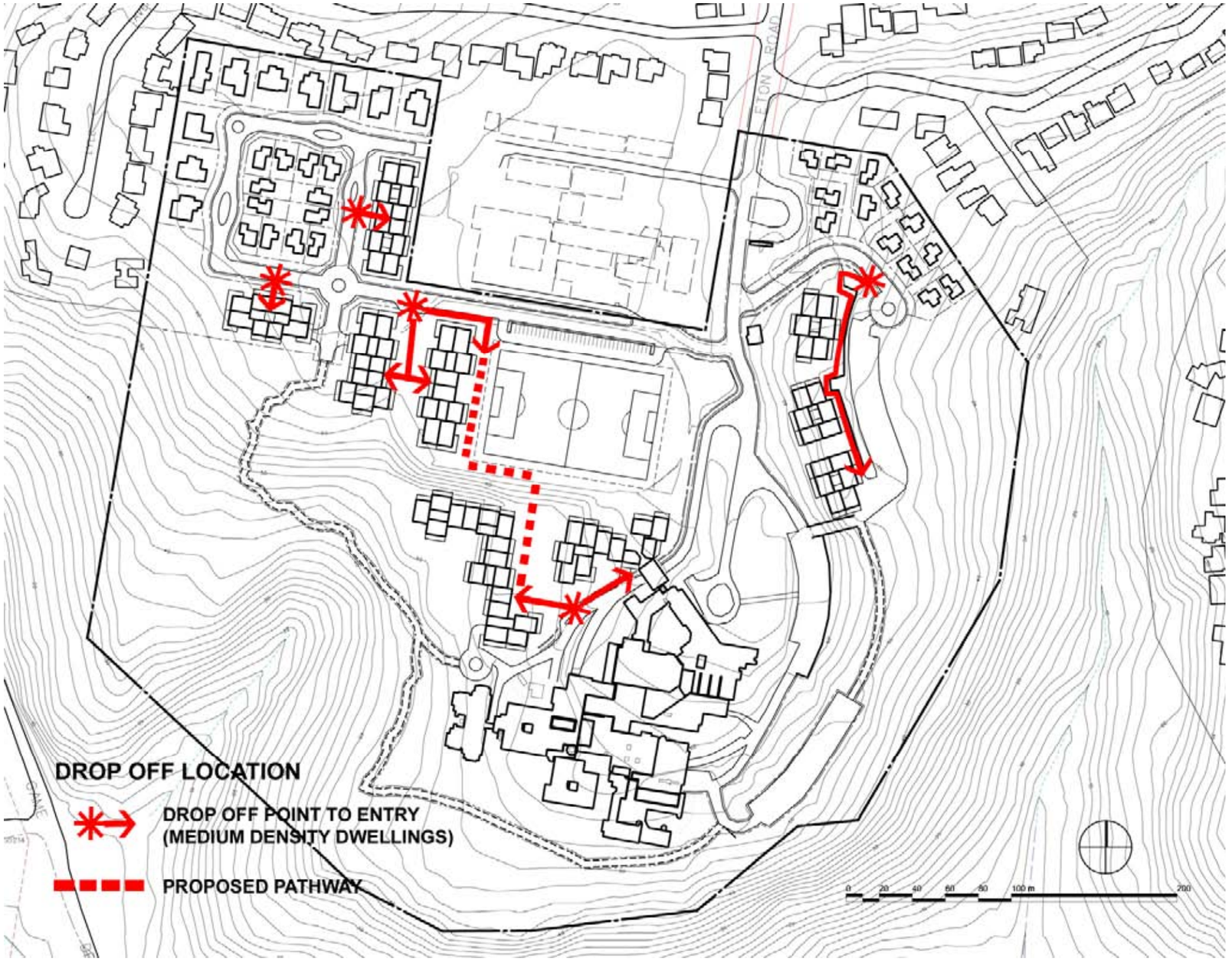
Drop off and pick up points for the medium density dwellings are located along the road network. These points provide access for pedestrians into the garden courtyards.

The drop off and access points for the existing buildings are maintained at the current location. There is potential to reinstate the original entry depending on the future reuse of the existing buildings.

Basement carparking is provided for medium density dwellings whilst all integrated small lot housing and individual housing are to have car spaces within their allotments.

Carparking would be provided for the existing buildings both in the current basement, and the two existing on-grade carparks to the east.

Service access would be provided for the residential dwellings either via the basement areas or in lay-bys and paved entry areas. Service access to the existing buildings would be retained in its current location.



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open space

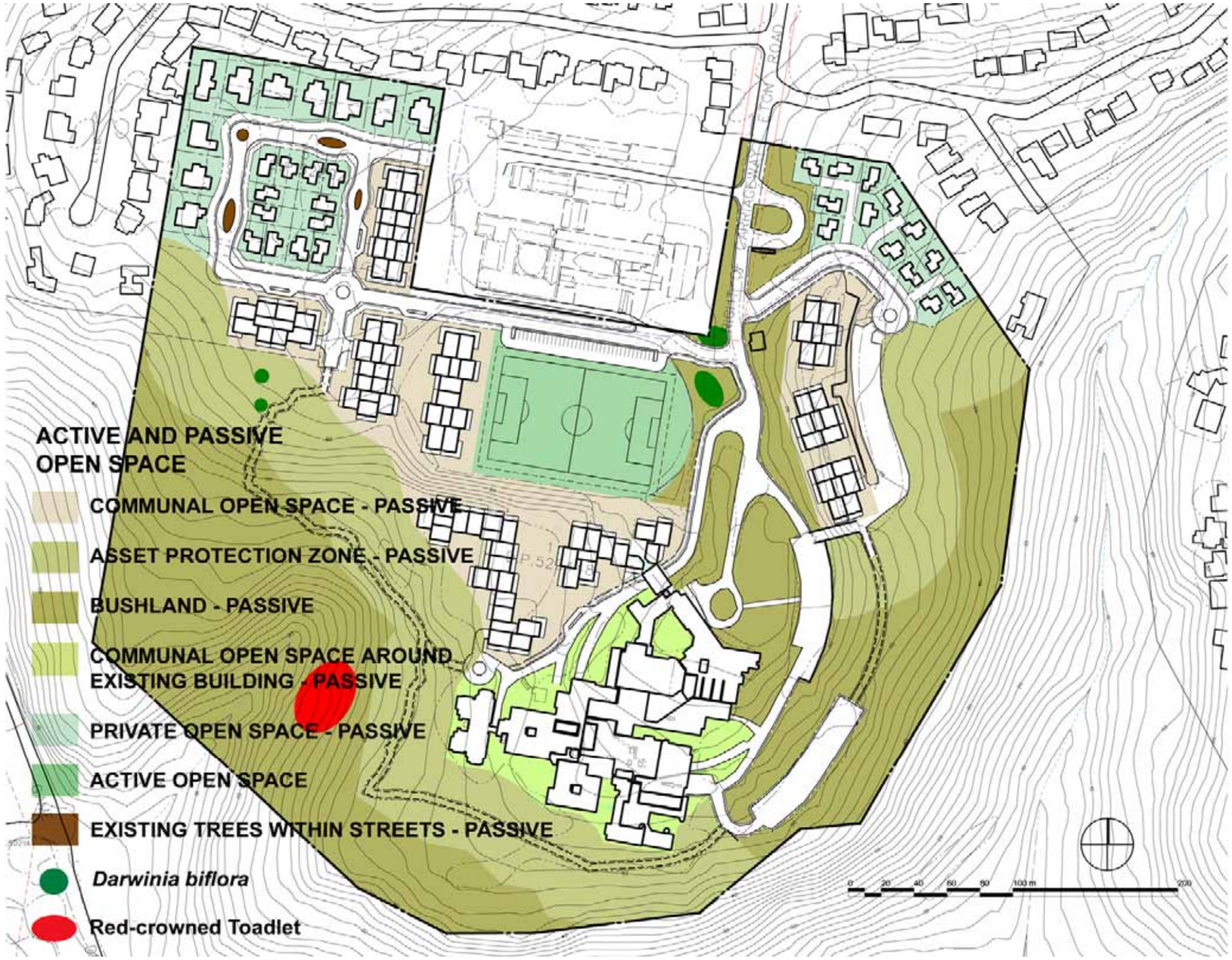
The concept plan provides for a variety of different spaces ranging from a playing field for organised sporting activity to communal open spaces to private open spaces within the individual allotments.

The design of the open space aims to facilitate pedestrian circulation and best maximise site opportunities for recreational uses thereby enhancing the amenity of the development for residents and the community.

The public open spaces provide for active and passive recreation whilst the communal open spaces are for passive recreation uses.

Different planting hierarchies will define the public and private spaces. Public areas will comprise a broader, less detailed planting approach sympathetic to the natural environment.

Communal and private spaces will incorporate a greater variety and mix of native species while still reflecting the essential bushland character of the site.



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design principles / controls

Setbacks

- Building setbacks are to reflect the scale and character of the street.
- Setbacks are to incorporate landscaping that contributes to the landscape character of the street and complements building form.
- Adverse impacts on solar access and privacy of adjacent lots are to be minimised by providing adequate side and rear setbacks.
- Building setbacks are to incorporate adequate landscaping to reduce the visual impacts of apartment buildings.

Building Form and Scale

- Buildings are to be articulated with such elements as verandahs, balconies, screens, projecting windows and wall offsets to provide visual interest and avoid bulky or uniform appearance.
- Buildings are to provide access and facilities for all people including those with limited mobility.
- Buildings are to incorporate a roof type that actively contributes to the streetscape and general character of development.
- Building facades are to incorporate high quality durable finishes.
- Buildings on corner lots are to establish an address to both streets.

Streetscape

- Ensure fencing contributes to the character of the street and is located in an appropriate position.
- The front facades of buildings are to contain windows of livable rooms, which allow for surveillance of the street.
- Entry doors are to be clearly visible from the street and covered to provide weather protection.

Open Space

- Enhance the amenity of the built environment through the provision of high quality private, communal and public open space.
- Retain existing significant trees and features that contribute to the amenity of the site.
- Maintain and enhance the bushland environment throughout the streets, parks and gardens using endemic species where appropriate.
- Incorporate plant species within open space areas that will provide shade in summer, sunlight in winter and privacy.
- Use plants appropriate to the site's climate and soil and which place minimal demand upon resources such as water.
- Provide private outdoor living space directly associated with the main internal living area and which receives good solar access throughout the year.
- Minimise the use of hard, impermeable surfaces that promote stormwater runoff.
- Ensure landscaped areas can be efficiently maintained.
- Ensure pathways within open space areas are safe and secure.
- Define public, communal and private space by different planting hierarchies. Private areas to constitute a greater variety and mix of plant species to achieve personalisation of space. Public and communal areas are to comprise a broader, less detailed planting approach other than at entries and nodal points.
- Ensure that dwellings on the ground floor are appropriately screened from the communal open spaces to ensure that the privacy of these dwellings is not compromised.


Concept Plan – Village Green


Concept Plan – Bush Walk


Concept Plan – Garden Courtyard

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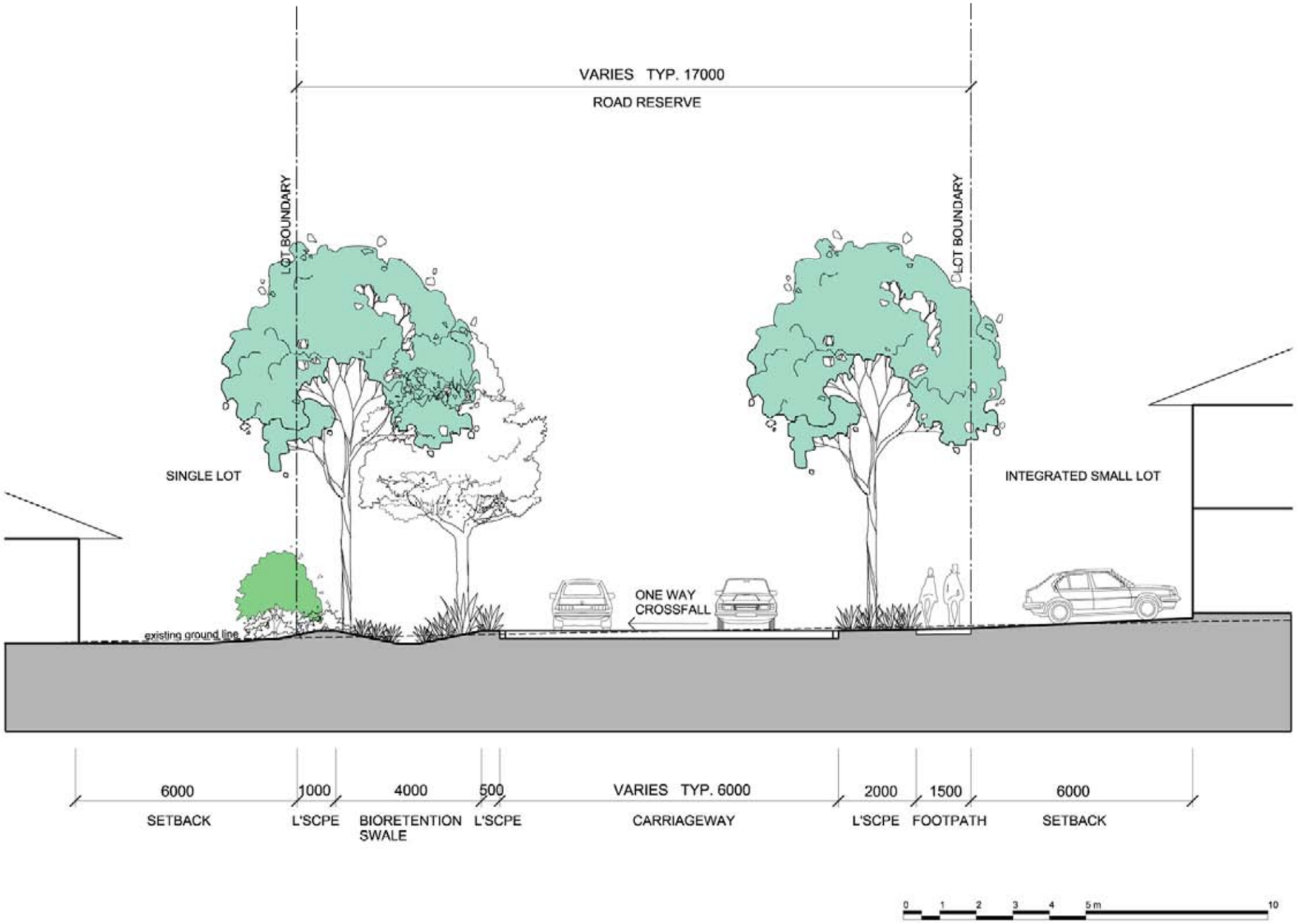

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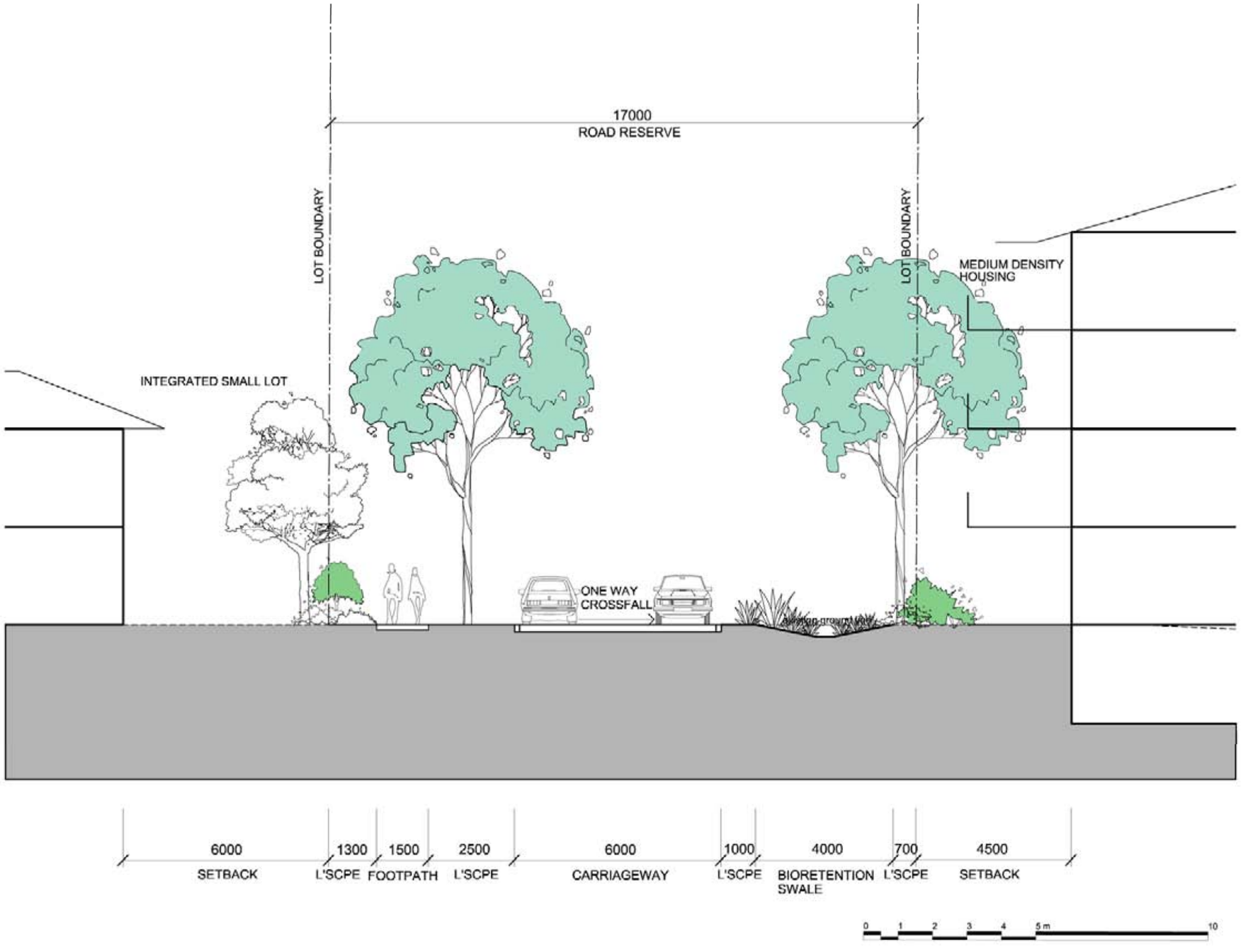

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asset protection zone

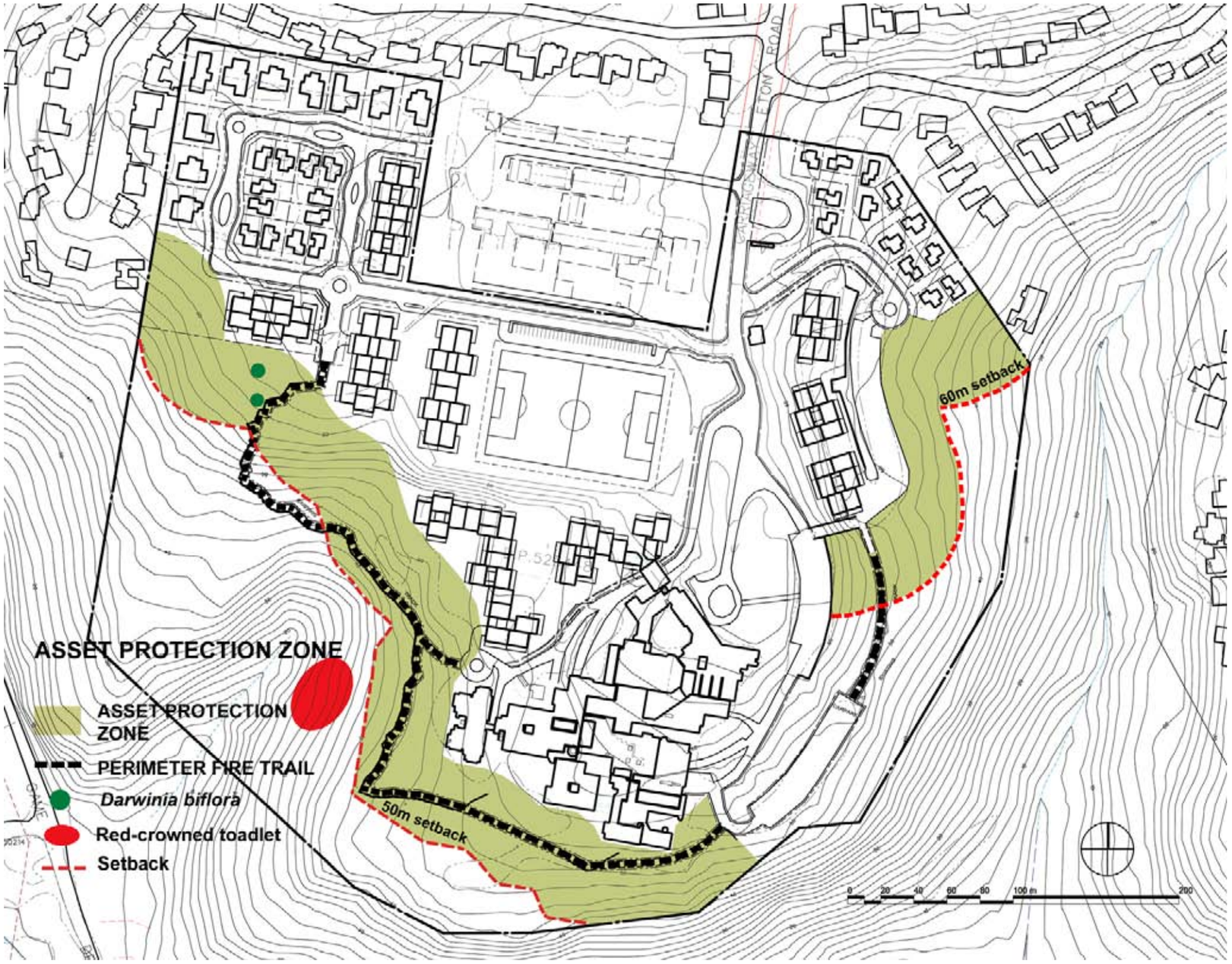
The asset protection zone is required as a buffer zone between the development and the hazard resulting from a bushfire. The primary purpose of the asset protection zone is to ensure that there is a progressive reduction of bushfire fuels between the bushfire hazard and the habitable areas of the development. This asset protection zone is to be a managed and regularly maintained area. The Bushfire Hazard Assessment by Barry Eadie Consulting Pty Ltd outlines the Inner and Outer Protection Areas and recommendations for its maintenance.

It is anticipated that the asset protection zone will become an important aspect of the community life. It would provide opportunities for organised community activity groups involved with its care on a micro scale with the establishment of new bushcare groups and the involvement of existing groups, as well as the establishment of a local community fire unit. The micro-management of the asset protection zone may change dependant on the various particular situations.

It is relevant to note the APZs were determined in a two step process by firstly, examining the maximum potential extent of the site that could be developed based on the slope of the land. Then secondly, the identified developable area was reviewed to facilitate the establishment of APZ's contained within the site and situated on land of an appropriate slope to ensure that it could be effectively maintained on an ongoing basis.

In the eastern sector of the site, a significant portion of the APZ is located over existing cleared areas such as the car park. The area of bushland requiring modification to accommodate the APZ would be minimal.

The incorporation of APZs not located over cleared areas will result in the modification of a relatively small area of bushland in which much native vegetation will be retained within the APZ. The existing bushland has experienced some disturbance and the existing tree canopy is already widely spaced in many areas, particularly close to the existing developed areas, and this would largely be maintained. Much of the area within the Inner Protection Area (IPA) comprises a natural rocky substrate that would restrict and slow the rate of spread of fire. Understorey vegetation in these areas is sparse and accordingly the requirement to manage the APZ and minimise understorey fuel load is readily achievable. A higher fuel level would be maintained in the Outer Protection Area (OPA), which would maintain resources for native birds, mammals and reptiles.



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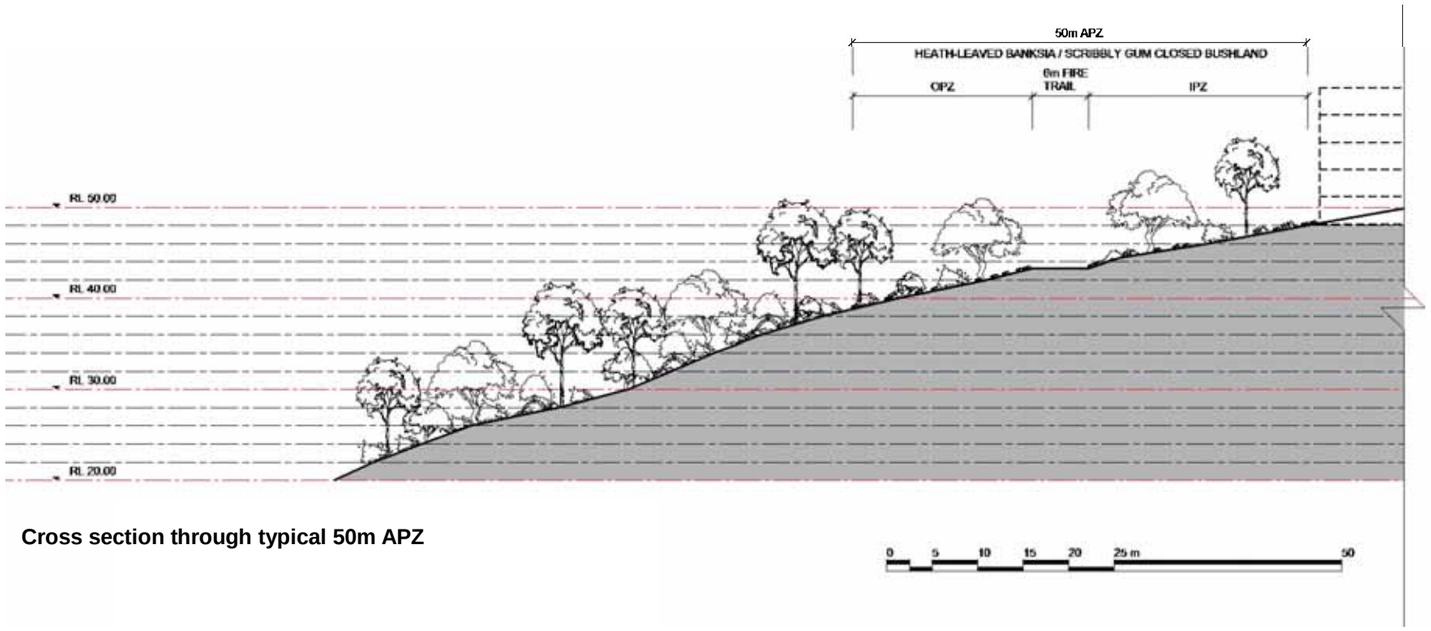
The cross section through the APZ on the right shows the relationship between the building and the APZ. The perimeter fire trail is as recommended in 'Planning for Bushfire Protection'.

This perimeter fire trail that links back to the existing road and carpark network has the added advantage of making the bushland accessible in defined areas for passive recreation.



Cross section through typical 50m APZ




indicative vegetation within an asset protection zone

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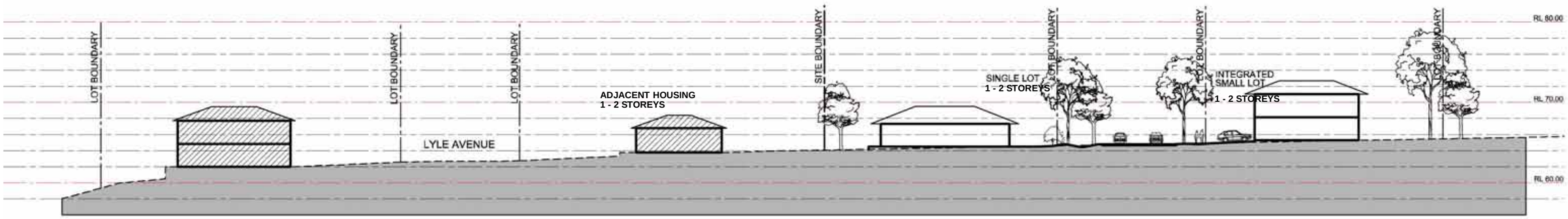
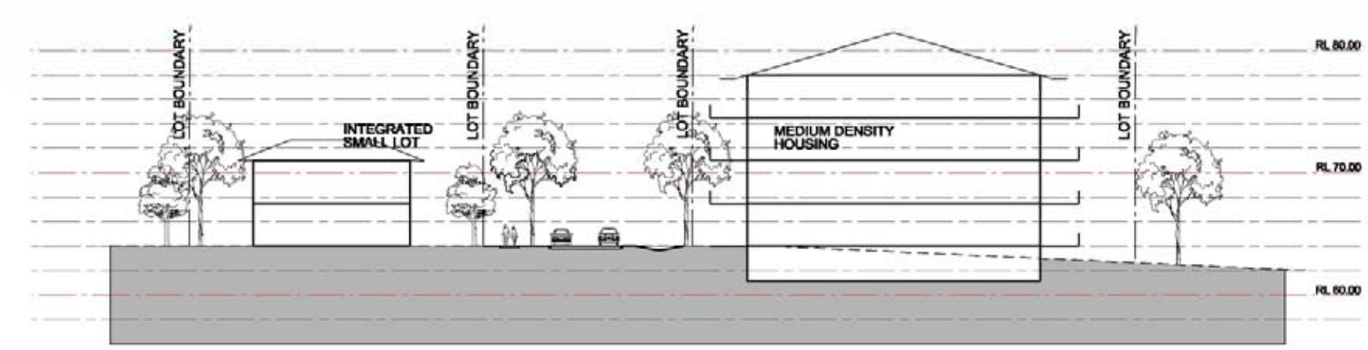
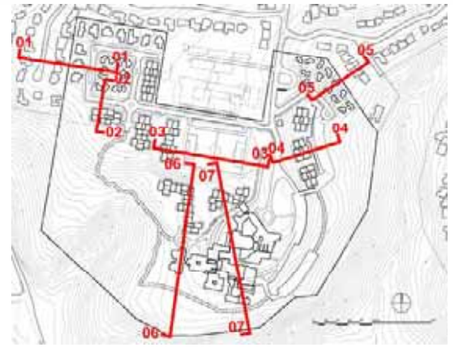
site sections

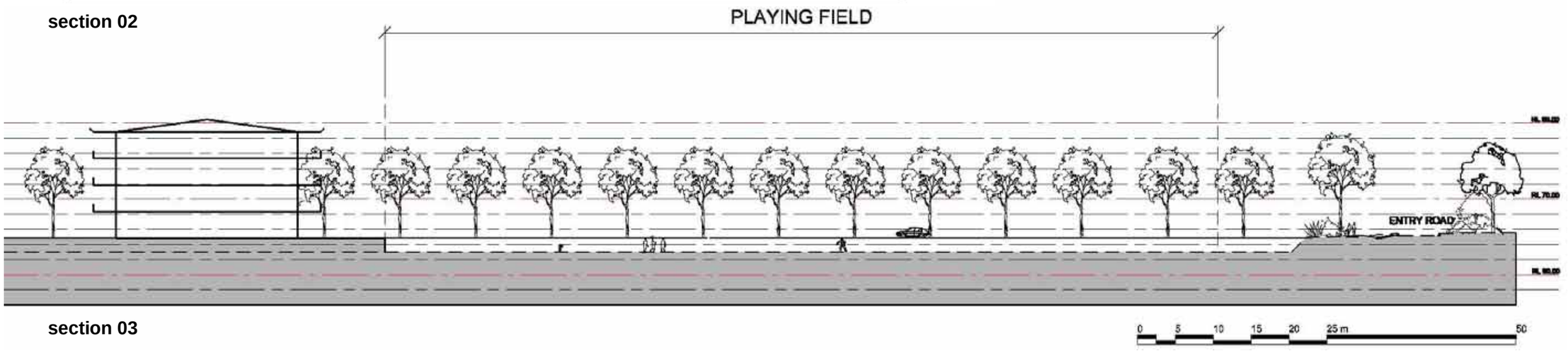


section 01



section 02





section 03

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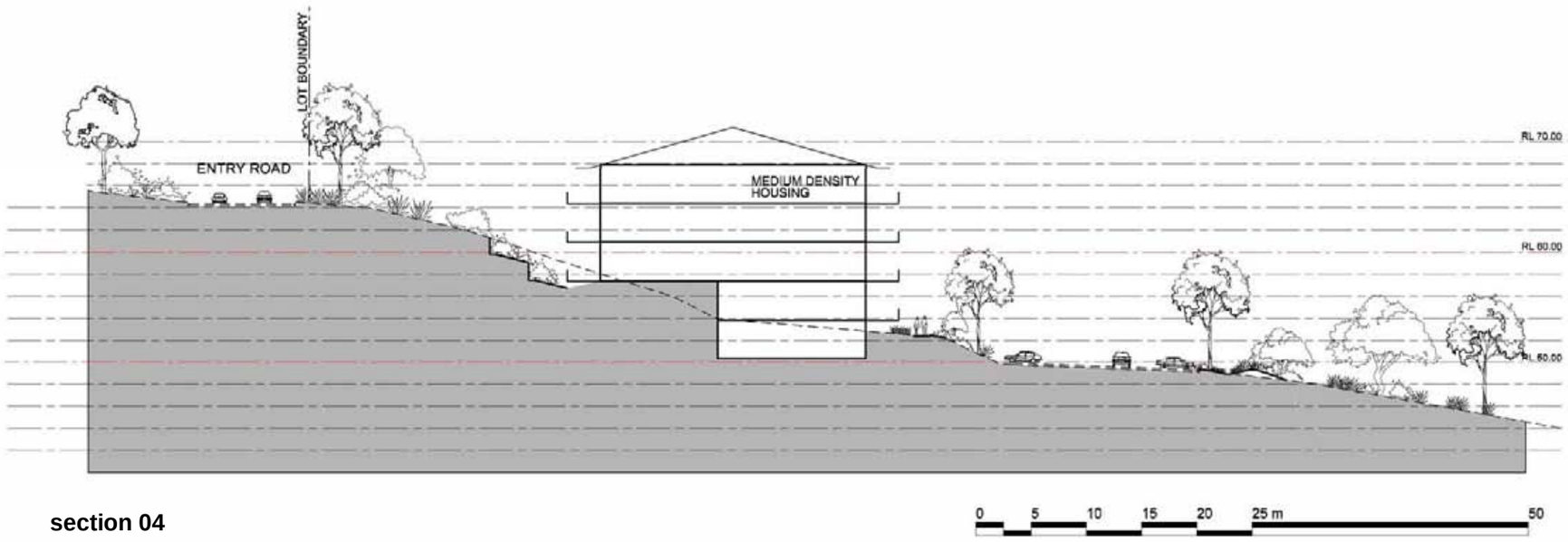
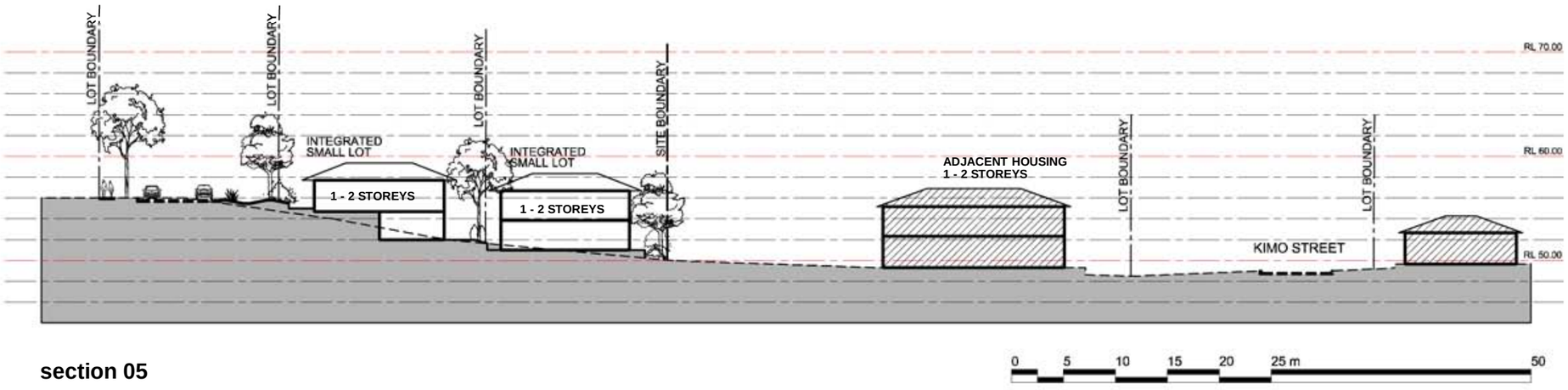
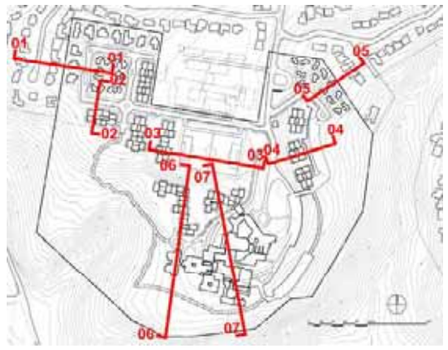


section 04



section 05



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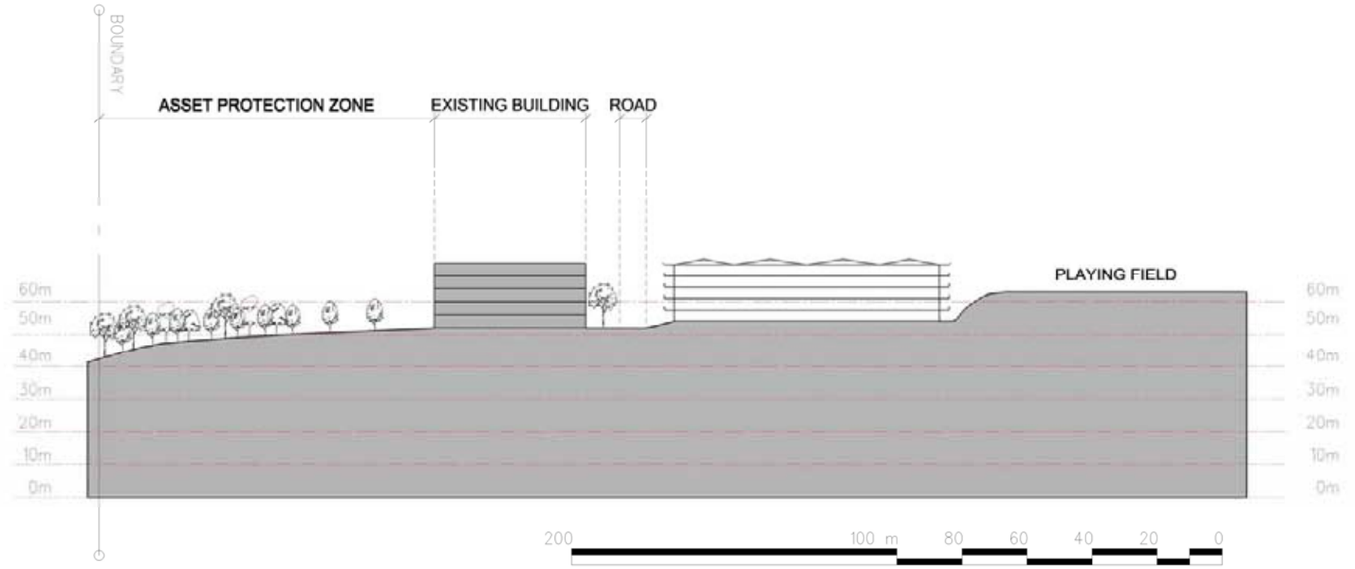
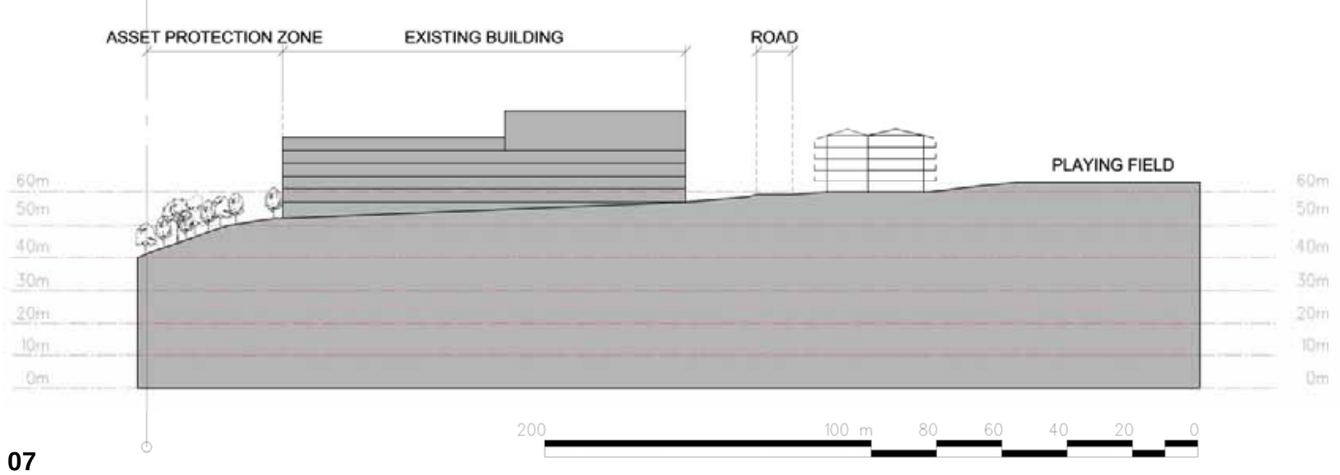
 date : February 2008 project no. 3528.03



section 06



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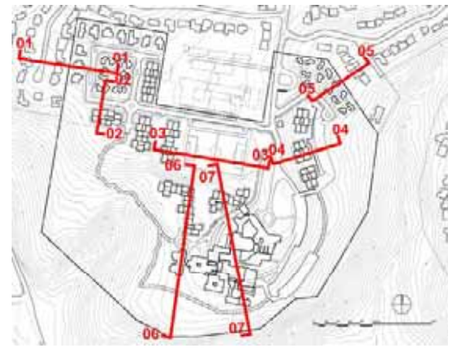

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view line analysis

As part of the view line analysis, a number of cross sections and views were taken from selected streets around the site. The view lines have been selected in the areas considered most critical, either from existing residential areas or important vistas. The objective of the analysis is to assess the visual impact of future development on surrounding areas.

The analysis shows that the impact is either negligible or minimal from all view lines. Further visual impact assessment would be required to ensure that the visual impact of the final built development is minimal or negligible on surrounding areas and maintains the character of the site and general local area.

view from valley view close, roseville west

Section AA is taken across the site, in an east-west direction, looking north. The section extends across to Valley View Close / Roseville to the east, from which Views 1 and 2 are taken.

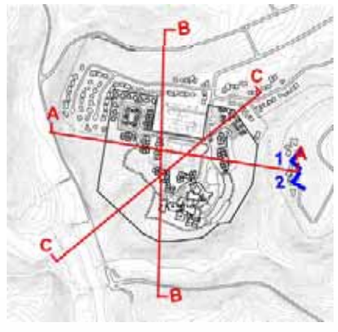
Separating the site and Valley View Close is a deep and heavily vegetated gully and Views 1 and 2 demonstrate that this vegetation creates a natural screen of the existing site.

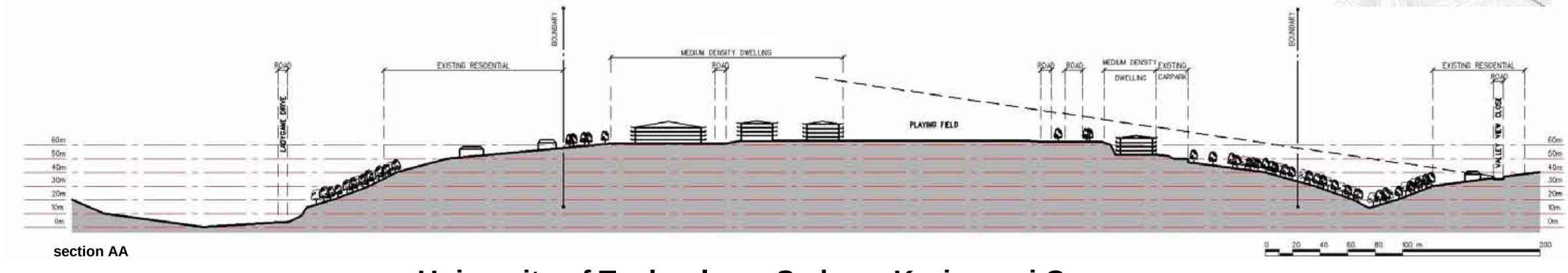
Section AA also demonstrates that the vegetated buffer screens the site from the houses on Valley View Close.

Therefore, the view line analysis shows the proposed development will have a negligible effect upon the views from Valley View Close.

view 1 – Valley View Close

view 2 – Valley View Close





section AA

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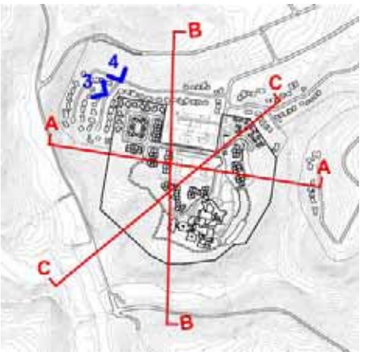
view from lyle avenue, chatswood west

Section AA shown on the previous page, is taken across the site, in an east-west direction, looking north. The section extends across to Lyle Avenue in the west, from which Views 3 and 4 are taken.

view 3 – Lyle Avenue

view 4 – corner of Winchester Avenue/Lyle Avenue



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view from millwood avenue, chatswood west

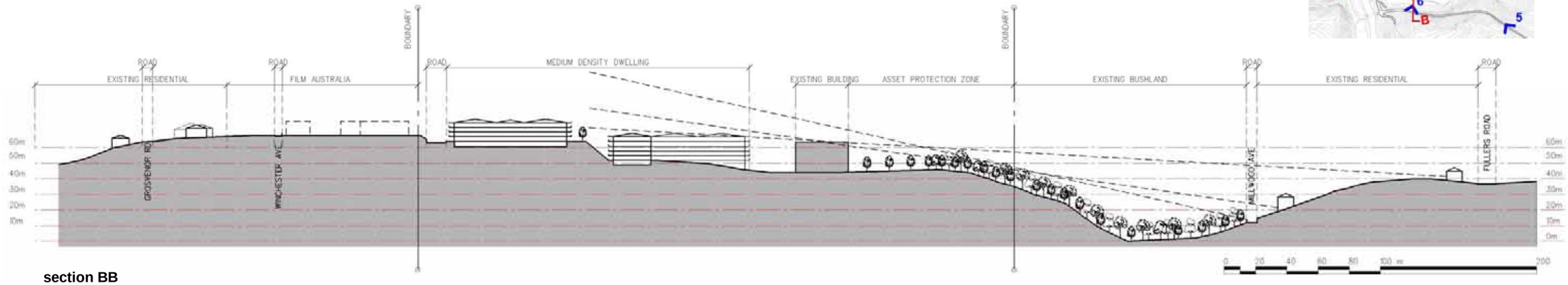
Section BB is taken across the site, in a north-south direction, looking east. The section extends across to Fullers Road to the south and Grosvenor Road to the north. Views 5 & 6 are taken from Millwood Avenue.

The existing Campus buildings to the south and south-east of the site are visible in some areas along Millwood Avenue. The existing vegetation provides a screen in certain areas, exposing the existing buildings to view as one moves eastward on Millwood Avenue. Section BB demonstrates how the existing vegetation and Campus buildings screen any new buildings from view from Millwood Avenue.

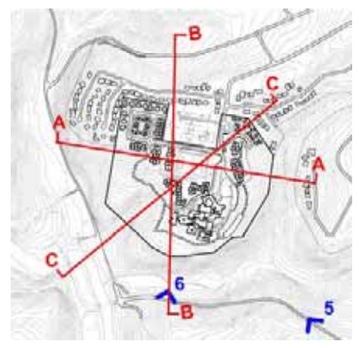
View 5 reinforces this and shows that the heavy vegetation in the immediate foreground and existing Campus buildings screen any new structures of the proposed development from view from Millwood Avenue. Hence the view line analysis shows there is negligible effect upon the views to the site from Millwood Avenue.

view 5 – Millwood Avenue

view 6 – Millwood Avenue



section BB



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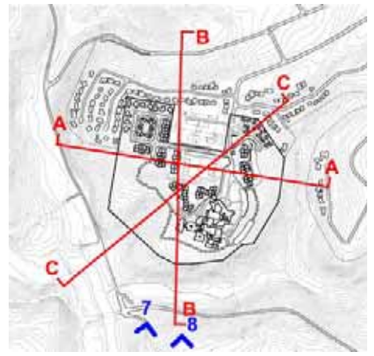
view from fullers road, chatswood west

Fullers Road sits on a ridge that runs in an east-west direction and the houses here overlook Millwood Avenue, and straight onto the existing Campus buildings.

Section BB demonstrates that the existing Campus buildings would block any new structures from view from Fullers Road. This is reinforced by views 7 and 8.

view 7 – corner of Fullers Road/The Fairway

view 8 – Fullers Road



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view from winchester avenue, chatswood west

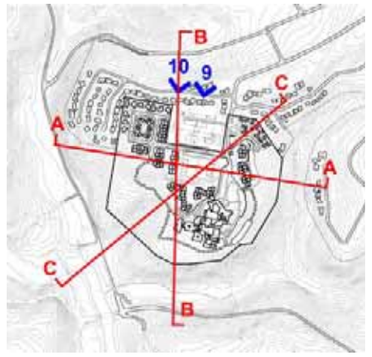
The Film Australia site separates the eastern half of Winchester Avenue from the site. Winchester Avenue dips down as it approaches the intersection with Lyle Avenue and the houses in this area are on elevated lots.

Views 9 and 10 are taken along the flatter portion of Winchester Avenue and as the photographs show, the view from the street towards the site is screened by the Film Australia buildings and mature tall trees along the northern boundary.

Section BB demonstrates that the proposed development will have a negligible effect upon the view from Winchester Avenue because of the screening created by the Film Australia buildings and the existing vegetation.

view 9 – Winchester Avenue

view 10 – Winchester Avenue



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view from delhi road, north ryde

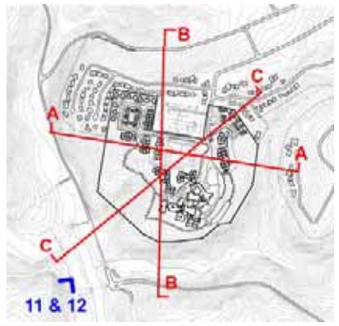
As one comes around the bend, eastward on Delhi Road the existing Campus buildings present themselves between the canopy of the existing vegetation of the Lane Cove National Park and College Creek. View 11 is taken from this bend on Delhi Road just before the intersection of Delhi Road and River Avenue. View 12 is taken from the corner of Delhi Road / River Avenue.

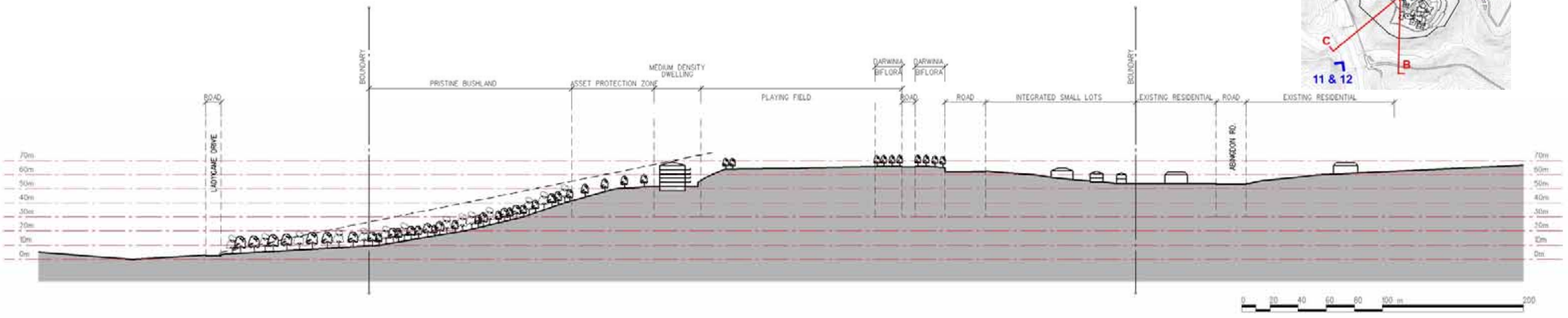
The steep rise of the site from Lady Game Drive exposes the western part of the site, as shown in View 11 whereby the existing Building 5 can be seen just above the canopy of the trees at the top of College Creek.

A more detailed visual impact assessment is recommended at the development application stage for the development area north of Building 5.

view 11 – Delhi Road

view 12 – River Avenue





section CC

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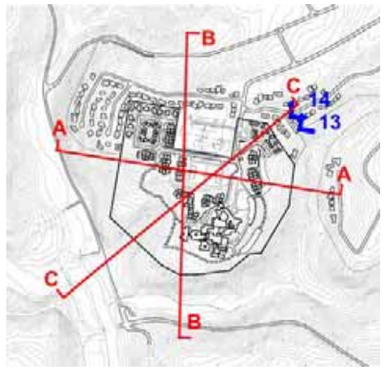
view from kimo street, chatswood west

Kimo Street is to the north-east of the site and is a short residential cul-de-sac street. The existing dwellings step down the street, following the existing topography.

It is anticipated that the proposed development would not be visible from Kimo Street however a more detail visual impact assessment would be required at the development application stage.

view 13 – Kimo Street

view 14 – top of Kimo Street



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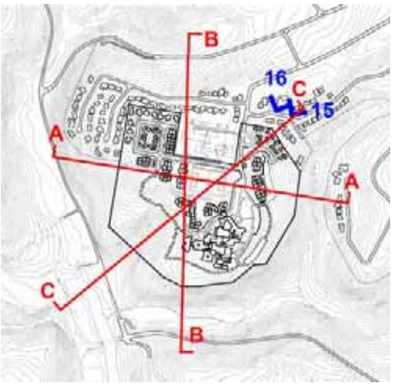
view from abingdon road, chatswood west

Abingdon Road is the residential street immediately north-east of the site. Views 15 and 16 demonstrate that whilst the street is higher in topography, the mature and thick vegetation between this residential street and the site creates a landscape and visual screen whereby the existing Campus buildings, which are on a higher topography are not visible.

It is anticipated that the proposed development would not be visible from Abingdon Road however a more detail visual impact assessment would be required at the development application stage.

view 15 – corner of Abingdon Road/Kimo Street

view 16 – Abingdon Road



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esd considerations

The proposed concept plan is based on sound Environmental Sustainable Design (ESD) principles that promote responsible planning.

The Concept Plan structure has taken into consideration the existing topography, drainage patterns, site orientation and existing urban street patterns of the surrounding area. The proposed new roads are only a minor addition to the existing road network on the site on areas already developed as carpark and integrate with the local road network of the surrounding area.

The siting and orientation of the medium density residential blocks have considered SEPP65 objectives to achieve good cross ventilation, maximise solar access to habitable rooms and open spaces, encourage deep soil planting and introduce endemic species in the landscape concept design.

The Concept Plan also encourages use of public transport as the existing bus stop at the site entry is retained and is connected by legible pedestrian linkages throughout the new community with distances of no more than 400-500m.

Water sensitive urban design principles have been incorporated into the concept plan by way of bio-retention basins and swales that capture and retain stormwater runoff to minimise the impact of uncontrolled and unmanaged stormwater from entering the existing natural creek systems on and around the site.

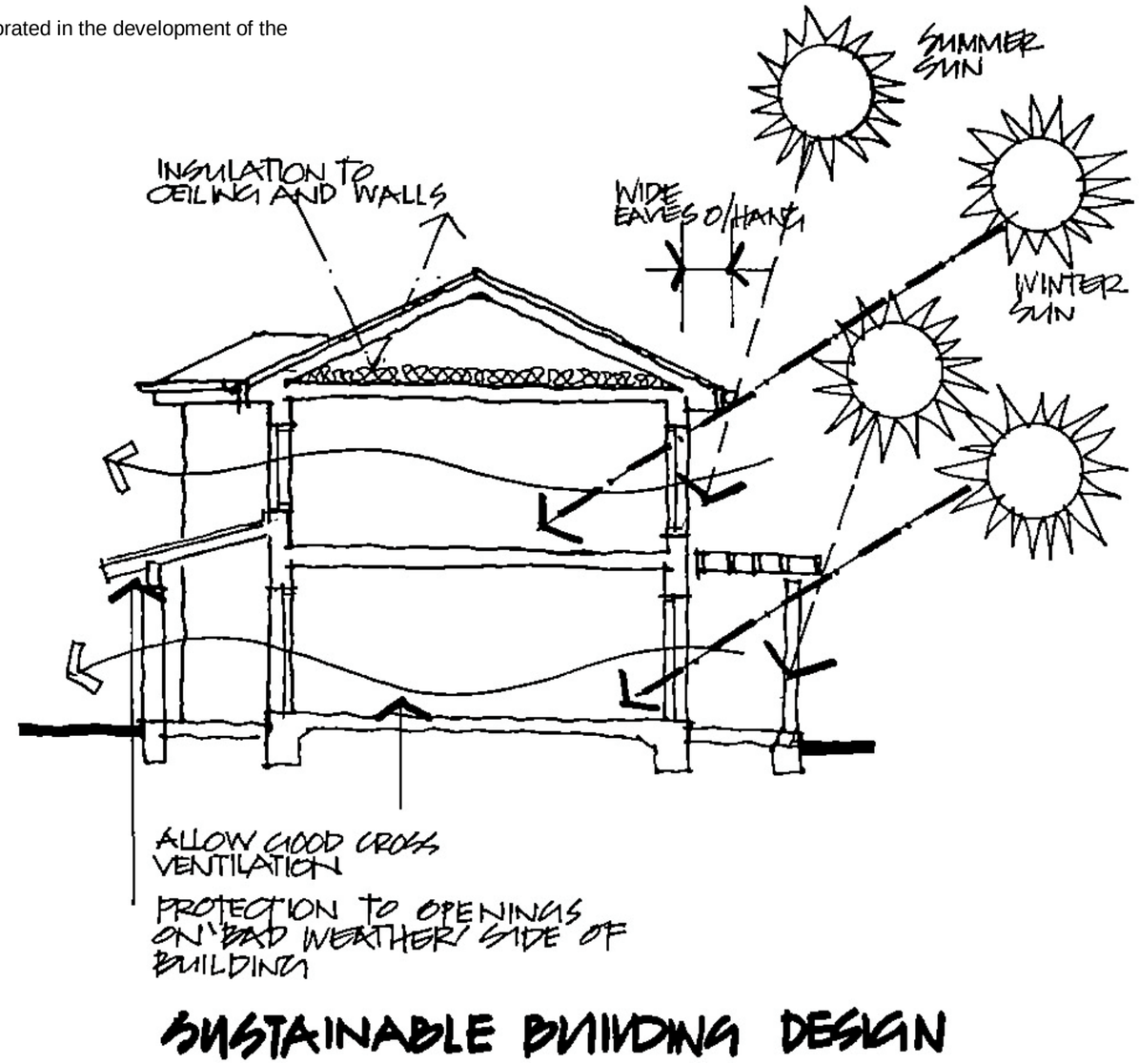
All dwellings in the development will require a BASIX assessment for water conservation and thermal and energy efficiency compliance.

objectives

- To incorporate energy efficiency in the design, construction and use of buildings.
- To ensure the benefits of passive solar design and natural ventilation are maximised.
- To provide housing that is energy efficient, using passive solar design while still maintaining year round comfort.
- To ensure the degree of overshadowing on neighbouring properties is minimised.
- To incorporate water sensitive urban design in the master plan and development of the developable sites.

To encourage recycling of stormwater for irrigation and other appropriate recycled water usage.

These objectives have been incorporated in the development of the Concept Plan.



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land use zones and concept plan

Development is proposed within two residential zones as shown on the Proposed Zones plan. In addition, Environmental Conservation and Public Recreation zones are also included within the site.

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conclusion

Future development of the UTS Kuring-gai site is to build upon the 'hilltop town' vision of the original authors of the Campus design, sensitively siting developed areas within the Australian bushland setting. An expanded built environment is to continue to co-exist with the natural environment and provide a vibrant community for future occupants with easy and safe accessibility to existing and new facilities both on the site and within the broader community.

Community focus and participation will be promoted with continued public access to the bushland and a playing field for organised sport within the site. The continued and adaptive reuse of the existing buildings for community focused uses will also ensure that the broader community is able to enjoy the new development.

A choice of housing types, communal activities and facilities will promote a culture that already exists in the neighbourhood through mutual respect for the built and natural environment. This will be emphasised through the preservation and enhancement of the natural environment and active and passive recreation areas.

Development is to respect and respond to the range of opportunities presented by the site and its existing context.

Principles for future development have been established through an extensive analysis of site factors and the issues enunciated by a broad range of stakeholders including the local community groups and neighbours, Council, authorities and government entities. The inputs of the local Community Reference Group, NPWS, Rural Fire Brigade and the site's original architect and landscape designer have been incorporated in the Concept Plan.

Redevelopment of the UTS Kuring-gai site is to ensure that:

- Important areas of existing bushland are preserved, as well as the current road, car parking and significant educational buildings.
- Sensitive species, both flora and fauna, that have been identified are provided for within existing habitats.
- New built form is located almost wholly on areas already developed, reflecting and complementing the design philosophies of the original designers, with a transition to the surrounding single dwelling residential areas.
- Bushfire protection zones and fire fighting access are provided in accordance with current codes and requirements.
- The expected site population will be less than current levels and local traffic generation will be reduced. The traffic assessment has concluded that there will be minimal traffic changes to the surrounding road network.
- Public transport access and accessibility is maintained.
- Stormwater quantity and quality flowing into areas of National Park will be significantly improved by the provision of biosensitive controls within the developed areas.
- Community facilities will continue to be provided in current or relocated areas within the existing buildings.
- ESD principles and Council Guidelines have been incorporated in building siting, orientation and form.
- Existing services including power, water and sewer are currently provided, and where necessary, can be augmented.

The Concept Plan delivers a development that is well integrated with its context and offers an opportunity to meet the community preference for contemporary lifestyle and housing choices within environmentally sustainable communities.

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