



Newleaf Bonnyrigg: Crime Prevention Through Environmental Design Assessment

Prepared for Newleaf Communities

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1 Introduction

Newleaf Communities (formerly Newleaf Communities) has proposed a number of amendments to the approved Concept Plan for the redevelopment of Newleaf Bonnyrigg in Fairfield. Urbis has been engaged by Newleaf Communities to undertake a number of social planning studies in relation to these amendments.

This report details the Crime Prevention Through Environmental Design (CPTED) assessment completed by Urbis in October 2011. Separate reports have been prepared to document a social infrastructure and open space needs assessment and a Social Impact Assessment.

1.1 THE AIM OF THIS STUDY

The Crime Prevention Through Environmental Design (CPTED) aims to influence the design of buildings and places by:

- Increasing the perception of risk to criminals by increasing the possibility of detection, challenge and capture.
- Increasing the effort required to commit crime by increasing the time, energy or resources which need to be expended.
- Reducing the potential rewards of crime by minimising, removing or concealing 'crime benefits'.
- Removing conditions that create confusion about required norms of behaviour (NSW Department of Urban Affairs and Planning, 2001).

Situational crime prevention involves changing various aspects of the environment so that the efforts and risks required to commit crime are increased, and offender's perceived rewards are reduced. CPTED applies knowledge about situational crime prevention to the planning and design stages of buildings and public spaces. Key CPTED principles include:

- **Natural surveillance** – maximising opportunities for passers-by or residents to observe what happens in an area (the 'safety in numbers' concept). This may be achieved through, for instance, the placement of physical features, activities and people.
- **Access control** – control of who enters an area so that unauthorised people are excluded, for instance, via physical barriers such as fences and grills.
- **Territorial reinforcement/ownership** – people are more likely to protect territory they feel they own and have a certain respect for the territory of others. This can be expressed through installation of fences, paving, signs, good maintenance and landscaping.
- **Space management** – ensures that space is appropriately utilised and cared for. Space management strategies include; activity coordination, site cleanliness, rapid repair of vandalism and graffiti, the replacement of burned out lighting and the removal or refurbishment of decayed physical elements.

Guided by these principles, this assessment will identify and report on impacts associated with the amendments to Newleaf Bonnyrigg Concept Plan. This report will consider the above CPTED principles as well as issues such as accessibility, lighting and pedestrian safety, and where negative impacts are identified, prospective mitigation measures and recommendations will be provided.

2 Methodology

The CPTED process requires a review of the development design plans, identification of current crime levels, and an assessment of the performance of the proposed design against CPTED principles.

Urbis Social Planning has undertaken a review of the proposed amendments to Newleaf Bonnyrigg Concept Plan. The following tasks were undertaken in completing this assessment:

- Progressive review of and input into the proposed amendments.
- Consideration of local demographic characteristics and high level analysis of likely incoming populations.
- Collection and analysis of local and NSW crime statistics from the Bureau of Crime Statistics and Research.
- Review of all plans and studies prepared to accompany the currently proposed amendments.
- Review of past project documentation, including previously undertaken social planning and CPTED studies.
- Critical analysis and assessment of the proposed amendments to identify potential security and safety impacts.
- Preparation of Draft CPTED Assessment report, addressing identified safety concerns and suggesting appropriate mitigation measures where necessary.
- Preparation of final CPTED Assessment report.

3 Background

The following provides an overview of Newleaf Bonnyrigg and the existing Concept Plan approved for the site. The currently proposed amendments to the Concept Plan are also outlined.

3.1 NEWLEAF BONNYRIGG

Newleaf Bonnyrigg is an 81 hectare area located within the suburb of Bonnyrigg in the Fairfield Local Government Area in Western Sydney. It is bounded by Humphries Road, Cabramatta Road, Elizabeth Drive, Bonnyrigg Avenue and Edensor Road.

The renewal area is strategically located immediately east of the Bonnyrigg Town Centre and within 6 km of the Liverpool, Cabramatta and Fairfield centres. Predominantly residential uses surround the renewal area, however industrial and commercial uses are situated to the west. The renewal area is well located with respect to services, open space and public transport, with access to retail centres, places of worship, recreational opportunities, education facilities and T-way bus lanes.

3.2 APPROVED CONCEPT PLAN

Bonnyrigg Partnerships (now Newleaf Communities) was appointed by the NSW Government to redevelop the existing Bonnyrigg Estate. The redevelopment sought to revitalise the renewal area and address issues such as ageing housing stock, increasing maintenance costs, safety concerns and poor connectivity and amenity. Many of these issues were attributed to the Radburn design of the renewal area at that time.

In 2007, Bonnyrigg Partnerships (now Newleaf Communities) received approval for a Concept Plan encompassing the following works:

- Staged construction of approximately 2,332 dwellings in 18 stages over approximately 13 years, including lifted apartments, attached homes (in 2, 3, 4, 6 and 8-plex configurations) and detached homes.
- Staged construction of a multi-purpose centre comprising community and commercial uses (including ancillary retail servicing the needs of the immediate community).
- Retention and upgrade of existing roads, construction of new roads and provision of a pedestrian and bicycle movement network.
- Reconfiguration and upgrade of existing public open space, including extensive landscaping and infrastructure to cater for a wide range of different users and enhance safety and security.
- Stormwater infrastructure works, including water sensitive urban design measures to control the quantity and quality of stormwater that will also enhance the appearance of the site and provide passive recreation opportunities.
- Retention, extension and upgrades of existing services infrastructure to maintain supply through construction to cater for the increased population.
- Demolition of existing dwellings in stages.

Staged development of the renewal area commenced in 2009, with Stages 1 and 2 now complete. All stages are anticipated to be completed by 2021.

3.3 PREVIOUS AMENDMENTS

The following amendments have previously been made to the original Concept Plan:

- Correction of minor errors and technical issues associated with the overall Concept Plan and Stage 1.
- Reduction in allotment widths for detached dwellings.
- Introduction of three-storey walk-up apartments in areas of high amenity (e.g. adjacent to open space), amendments to minimum requirements for detached dwellings and two-attached dwellings, amending zero side setback guidelines and amending front boundary fence types.

These amendments have been approved by the respective authority. It is noted that some reference has been made in this report to the potential benefits or impacts of alterations to dwelling types, however it is emphasised that these alterations have already been approved.

3.4 PROPOSED AMENDMENTS TO THE CONCEPT PLAN

Newleaf Communities have proposed a number of amendments to the approved Concept Plan for Newleaf Bonnyrigg. The proposed amendments are as follows:

- Increase the yield of the renewal area by 7.2%, resulting in an additional 168 dwellings. It is understood that the additional 168 dwellings will consist of (approximately 60%) 2-bedroom walk-up apartments, with the remainder provided as 3-bedroom terraces and duplexes.
- Changes to the future site layout as a result of the increased dwelling density.
- Amend the boundaries, dimensions and quantum of open space as necessitated by changes to the composition and density of adjacent dwellings. Improved linkages between a number of open space areas are also proposed.

This report assesses the impact of these amendments on the overall safety of the renewal area for residents and visitors.

4 Socio-demographic characteristics of the renewal area

Urbis undertook a detailed socio-demographic analysis of Newleaf Bonnyrigg in 2008, considering the demographic characteristics of both existing residents and likely incoming populations. This analysis referred to 2001 and 2006 ABS Census Data, as well as demographic analysis undertaken by Judith Stubbs and Associates (JSA).

This following provides an overview of demographic characteristics of the existing and future Bonnyrigg populations, updated where more recent demographic data is available. Consistent with the methodology of previous demographic analyses by JSA and Urbis, Newleaf Bonnyrigg has been defined as the four Census collection districts that make up the renewal area (collection districts 1321608, 1321609, 1321610 and 1321611).

4.1 CURRENT RESIDENTS

In 2006, the population of Newleaf Bonnyrigg was approximately 2,899 persons.

4.1.1 NATIONALITY

The population of Newleaf Bonnyrigg is fairly culturally diverse, with 47.3% of residents born overseas. Reflecting this, in 2006, the four main languages spoken within the renewal area (other than English) were:

- Vietnamese (29.1%)
- Khmer (7.3%)
- Arabic (6.5%)
- Chinese languages (5.2%).

In 2006, Indigenous people made up 5.3% of the renewal area's population, a slight increase since 2001 when this figure was 4.96%.

4.1.2 AGE COHORTS

The 2006 Census provides the following information in relation to the age profile of the renewal area. Age cohort data is provided as a percentage of the total population of the renewal area.

- | | |
|---------------|-------|
| ▪ 0-9 years | 14.6% |
| ▪ 10-19 years | 22.8% |
| ▪ 20-39 years | 22.2% |
| ▪ 40-54 years | 20.8% |
| ▪ 55+ years | 19.6% |
| ▪ 75+ years | 3.9%. |

In 2006, the renewal area had a fairly young population when compared to the Sydney Statistical District, with the 0-9 years and 10-19 years age group above the Sydney average. Conversely, the percentage of the population aged between 20-39 years was lower than that of the Sydney Statistical District.

4.1.3 INCOME, HOUSING EXPENDITURE AND TENURE

The suburb of Bonnyrigg is one of the most disadvantaged in Sydney based upon analysis of income and employment levels.

In 2006, the average weekly household income within the renewal area was \$590, with rent representing 22.5% of household income. The average weekly household income for the Sydney Statistical District was \$1, 417.

In 2006, most homes within the renewal area were rented (85.5%) and residents of the renewal area were paying the highest proportion of income on rent of all the surrounding areas.

4.2 INCOMING COMMUNITY

4.2.1 QUANTUM OF RESIDENTS

In 2007, JSA estimated that the approved Concept Plan would increase the population of the renewal area from 2,899 in 2006, to 6,032 following the completion of Stage 18.

Considering the current proposed amendments, Urbis have since estimated that the post-development population will reach 6,881. This increase in the total population of the renewal area will occur as a result of the additional 168 dwellings and changes in the dwelling typology.

Further details about the calculations are contained in the separate Social Impact Assessment and Infrastructure Needs Analysis report prepared by Urbis in 2011.

4.2.2 LIKELY CHARACTERISTICS OF THE INCOMING COMMUNITY

In 2008, JSA forecasts identified the following population trends:

- The most significant population increase is projected to occur between 2016 and 2021, as development reaches its final stages, and those who have occupied new homes have families.
- The renewal area is likely to have a major increase in people aged 55 and over between 2006 and 2021 (an extra 1,319 or a 240% increase).
- There are also projected significant increases in the number of children aged 0-9 years (265 extra children or a 68% increase). There will be a relative normalisation of the population in relation to the proportion aged 10-19 years this is expected to reduce to around 12% by 2021.

A preliminary analysis of dwelling sales in Stages 1, 2 and 3 indicated that purchasers are likely to be primarily aged 30 – 39 years, of Asian and Australian backgrounds.

5 Crime profile

The following details trends in the incidence and nature of recorded crime in Newleaf Bonnyrigg, as compared with the Fairfield Local Government Area (LGA). The analysis is based on recorded crime statistics from 2006 to 2010, provided by the NSW Bureau of Crime Statistics and Research (BOCSAR).

5.1 FAIRFIELD LOCAL GOVERNMENT AREA

Fairfield LGA has a high rate of crime, with the incidence of many crimes exceeding the NSW average. In 2010, the most commonly report offences within the Fairfield LGA were:

- malicious damage to property (1,549 offences)
- break and enter into a dwelling (1,265 offences)
- fraud (1,010 offences)
- steal from a motor vehicle (972 offences).

Trends in criminal offences generally indicate a reduction in crime in the LGA since 2006. In particular:

- The number of reported incidences of 'malicious damage to property' decreased by 5.8% between 2006 and 2010.
- The incidence of 'steal from a motor vehicle' decreased by 8.7% over the same period, which is significant consider 'steal from a motor vehicle' was the second most commonly reported crime in 2006.
- The incidence of 'fraud' and 'break and enter' remained stable between 2006 and 2010, however the incidence of 'break and enter' has increased significantly by 18% over the last 12 months.

5.2 NEWLEAF BONNYRIGG

In 2008, Urbis reported that the Bonnyrigg suburb had a lower rate of crime than the Fairfield LGA. Crime rates were generally consistent with the NSW average, only exceeding the rate for a small number of offences. In particular, the incidence of robbery, retail theft and fraud were significantly higher than the state average, while break and enter, steal from person and sexual offences were only slightly higher. Urbis' 2008 report noted that the incidence of these crimes was quite likely exacerbated by the Radburn design of the renewal area and the associated poor layout and amenity. No interview has been conducted with the Local Area Command since this date.

Data provided by Newleaf Communities indicates that between 2007 and 2011, a total of 289 crimes were committed at Newleaf Bonnyrigg, 132 of which occurred in the 2011-2012 financial year. Broadly consistent with the BOCSAR figures presented above, between 2007 and 2011, the most commonly report offences within the renewal area were:

- vandalism (including graffiti) (210 offences)
- break and enter (148 offences)
- anti-social behaviour (39 offences)
- property theft (24 offences).

6 Assessment of proposed amendments

The following provides an assessment of the potential impacts of the proposed amendments to the Concept Plan on the safety and security of Newleaf Bonnyrigg. This assessment has applied widely recognised CPTED principles, in accordance with the methodology of previously prepared studies. The CPTED principles are:

- Territorial Reinforcement
- Passive Surveillance
- Access control
- Ownership and Space Management.

While general reference is made to previous CPTED Assessments, this section assesses only amendments to the Concept Plan. This is considered appropriate given that the proposed amendments are relatively minor and do not significantly alter the previously approved Concept Plan and CPTED recommendations. The comprehensive CPTED Assessment that was completed in relation to the Concept Plan in 2008 is summarised below and the findings of this assessment continue to apply to those parts of the development that are unchanged.

6.1 PREVIOUS ASSESSMENTS

Urbis completed a comprehensive CPTED Assessment for Newleaf Bonnyrigg Concept Plan in 2008. The report acknowledged the considerable safety issues including a lack of surveillance and poor connectivity and permeability, and many of these issues were attributed to the renewal area's Radburn design.

The redesign of the renewal area has a deliberate emphasis on redressing safety concerns and subsequently was considered to successfully resolve several of the identified safety issues. The 2008 CPTED Assessment assessed CPTED principles in relation to the following features of the Concept Plan:

- Dwellings
- Car parking areas
- Windows
- Fencing
- Open space park layout and landscaping
- Lighting
- Streetscape and layout
- Definition of public and private spaces
- Maintenance of the public domain
- Vacated areas and areas under construction.

Table 1 overleaf summarises Urbis' analysis and recommendations in relation to each of these elements. As previously stated, the majority of these findings continue to be relevant to the current revision of the Concept Plan, given that no significant changes are proposed in relation to the majority of features. An assessment of new impacts arising from amendments to the Concept Plan is contained in Section 6.2 of this report.

TABLE 1 – COMMENTS AND RECOMMENDATIONS FROM URBIS' 2008 CPTED ASSESSMENT

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
All dwelling types	<p>Homes front all streets, parks and public spaces which strongly improves passive surveillance opportunities onto these areas.</p> <p>Locating habitable rooms to public spaces will ensure surveillance over a significant part of the day when inhabitants are most active.</p> <p>Plans seek to have no distinction between public and private housing which will assist in community integration and communication.</p> <p>Internal dwelling spaces are redesigned to lessen opportunities to 'read' dwelling layouts from the street.</p> <p>Issues around the potential for ladders to the first floor have been addressed by the type of roofing to be used.</p>	<p>Planting any medium height or dense foliage should be avoided, including planter boxes of heights which would obscure a person hiding behind them.</p> <p>Bars on windows and doors should be discouraged, however if they are used they must not make the neighbourhood look unsafe. These should look as unobtrusive and integrated into the design of the building as possible.</p> <p>Paths from car parking areas to main dwelling entrances need to be well lit and not obscured by vegetation.</p> <p>Living areas should overlook car parking areas for surveillance.</p> <p>All dwellings should have adequate lighting for a person to safely pass through external areas.</p> <p>Ensure first floor windows are of a height to prevent easy access of this nature and consideration should be given during the assessment process to use of suitable materials.</p> <p>Front doors should be positioned to ensure maximum surveillance from the street and to minimise possibilities for concealment.</p> <p>Clear sightlines should be maintained to and from the street.</p> <p>Car parking should not obscure views of front door from the street. Where tandem parking occurs, installation of sensor lighting should occur.</p> <p>Installation of sensor lighting should be considered where there is a side entry, alcove or storage bins adjacent to an entry area, to mitigate against the potential for loitering.</p> <p>External lighting must be vandal resistant.</p> <p>Strong materials and locks should be used which cannot be forced or breached.</p> <p>Enduring and strong materials should be used to minimise maintenance requirements.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
		<p>Building materials, structures and vegetation should not be available to be used as ladders for unauthorised access opportunities. Landscaping must not conceal entry/exits.</p> <p>Entry/exits and garbage bin areas must be well lit and bin areas located so as not to provide ladders to upstairs windows.</p>
Car parking for dwellings	Theft of or from a vehicle in Bonnyrigg is at or below the NSW average.	<p>Car parking areas should be well supervised without blocking critical view lines to and from a dwelling.</p> <p>Clustered car parking should have sensor lighting included.</p>
Car parking in the public domain	<p>Car parking has been limited in the Town Centre to encourage walking, cycling and use of public transport.</p> <p>Local collector roads will have 11 metre wide carriageways with provision for on-street parking on both sides.</p> <p>Small streets have been designed with parking on one side only, with sight lines to achieve passive surveillance from the first storey of adjacent dwellings.</p>	N/A
Windows	N/A	<p>Window frames should be made from strong materials which are difficult to breach.</p> <p>Windows should provide surveillance to adjoining public areas and where possible should not be out of view from street.</p> <p>Windows should not provide someone outside a dwelling the opportunity to see across a majority of internal rooms and thus understand the layout of the home.</p> <p>Upper level windows should not to be placed alongside structures which could be used as external ladders such as boundary fences or first floor roofs. Consideration should be given, at the assessment stage, as to the type of materials used.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
Fencing	N/A	<p>Front fences for dwellings should be visually permeable and provide residents with confidence regarding the separation of the public sphere with their gardens and dwellings. Fencing made of metal poles painted in dark colours is recommended to optimise visibility.</p> <p>Mail boxes identifying street number should be clearly seen from street.</p> <p>Fencing used to screen service areas such as garbage bays and clothes lines should not provide opportunities for entrapment and lack of surveillance from other areas.</p>
Lighting	Users need to be able to way find safely, to avoid potential hazards and ensure the safety of other users of the space.	<p>Lighting needs to be available for drivers to be aware of the road and pedestrians. Similarly lighting can help pedestrians feel they can be seen and their sense of personal security increased.</p> <p>Park areas deemed to be high-risk areas should be lit to a low level to discourage anti-social behaviour. Selected features such as BBQ areas will be lit to a low level to discourage anti-social behaviour at night.</p>
Open space	<p>Open space is currently poorly maintained and provides an opportunity for criminal and anti-social behaviour to occur with little chance of surveillance or capture.</p> <p>The Concept Plan has given considerable attention to CPTED principles with clear sight lines and opportunities for surveillance, multiple uses and clear cues for expected behaviour.</p> <p>The open space layout will result in a better used and safer environment with connection across the renewal area for pedestrians and cyclists.</p> <p>Parks will be well lit with surveillance from passing street traffic as well as surrounding houses. This surveillance is facilitated by increased housing density and orientation towards the parkland.</p> <p>The Concept Plan intends to reinstate a creek line along the</p>	<p>Landscaping should not conceal entry/exits to open space.</p> <p>Clearly demarcated entries/exits and borders of the parks and open space will promote a sense of community ownership and access control.</p> <p>Paths should not lead people into areas that may be dead ends, areas of entrapment or which may cause directional confusion.</p> <p>Lighting in the public domain should generally be kept to main roads and access ways. Areas requiring high luminence (around activities) should be well lit. Where there are potential areas for vandalism, crime or antisocial activity in the public domain there should be no, or very dim lighting.</p> <p>Lighting should allow for facial recognition within 15 metres.</p> <p>Lighting should not be obscured by vegetation.</p> <p>Lighting should comply with AS1158/1680. It should also be vandal resistant.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
	<p>length of the new valley park and there were concerns that this inclusion would be the site of drug dealing, drinking and rubbish dumping.</p>	<p>Lighting should be positioned to adequately illuminate all seating areas.</p> <p>Planting of any medium height or dense foliage should be avoided as should planter boxes of heights which would obscure a person hiding behind them.</p> <p>Trees, especially along the creek line, are to have clear trunk lines to a height of two metres.</p> <p>Where possible clear sightlines should be maintained.</p> <p>Rapid removal graffiti policy and procedures should be implemented to ensure graffiti removed within 24 hours of it being reported.</p> <p>Parks and open space areas should be well maintained and have rubbish bins which are regularly emptied.</p> <p>Pedestrian crossings should be provided at various points for all parks and open spaces.</p> <p>Parks and open space should be designed to inhibit the entry of private vehicles.</p> <p>Design elements should be used which discourage congregation of groups and anti-social or criminal activities such as malicious damage to property and public drinking. Elements could include stainless steel inserts or similar in public furniture, sprinkler systems set for night time use and designated alcohol free zones in areas of potential public congregation. These could also be public art installations which encourage ownership and pride.</p> <p>A variety of activities available to people of all ages should be provided in public areas. This will encourage increased public activity and a decrease in boredom of young people which may lead to malicious damage, public drinking or other criminal or anti-social activities.</p> <p>Children's playgrounds should be fenced with seating available nearby for parents/carers ensuring clear sight lines to play area.</p> <p>All toilets in parks and open spaces should be locked at night.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
		<p>Furniture should be made from low maintenance, vandal resistant design and materials.</p> <p>Shade and shelter structures should not hinder sight lines and should be sited in open areas able to be viewed clearly by others at a distance.</p>
Streetscape and layout	<p>There are many issues with the existing streetscape and road layout.</p> <p>Current low levels of connectivity within the street network and the separation of pedestrian and vehicular activities have created an environment which provides many opportunities for concealment and easy escape for offenders, particularly when alluding police pursuit.</p> <p>The main entry point for homes is through the back via the vehicular entrance. These back entry points often have high timber fences which have graffiti or appear to have deteriorated with age. Houses in the many cul-de-sacs have these high timber fences which provide little or no surveillance or connection to the street and promote feelings of unsafeness and threat.</p> <p>Way finding and orientation were difficult during a site visit which would cause difficulties for those unfamiliar to the area or to emergency services trying to access the area such as police.</p> <p>The Concept Plan will address these issues through an integrated pedestrian, cycle, public transport and vehicle network which will traverse the streets and parks of the renewal area, thus reducing the reliance on private vehicles and promoting use of the paths and parks.</p> <p>Opportunities for escape and concealment will be replaced by</p>	<p>As the road network is opened up with through roads, we identify that there may be a need for increased traffic calming measures to decrease the potential for speeding and increase the safety of pedestrians.</p> <p>Paths should not lead people into areas that may be dead ends, areas of entrapment or which may cause directional confusion.</p> <p>Lighting should generally be kept to main roads and access ways. Areas requiring high luminence (around activities) should be well lit.</p> <p>Where it is located, lighting should allow for facial recognition within 15 metres.</p> <p>Lighting should not be obscured by vegetation.</p> <p>Lighting and furniture (including bus shelters) should be made from vandal resistant design and materials eg metal and shatter proof glass.</p> <p>Lighting should be provided along frontages to direct pedestrian traffic along main roads at night to allow for adequate vision.</p> <p>Planting any medium height or medium dense foliage should be avoided, as should planter boxes of heights which would obscure a person hiding behind them.</p> <p>Where possible, clear sightlines should be maintained, particularly in any cul-de-sacs.</p> <p>Cul-de-sacs should to be replaced by through streets wherever possible.</p> <p>Parks should have adequate rubbish bins.</p> <p>Clear and unambiguous signage should be used in all areas of the public domain.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
	<p>better connectivity and sightlines.</p> <p>Compared to the existing road layout, the proposed road network provides more connections to the surrounding regional road network. Accessibility is therefore increased and efficiency of the road network improved as local traffic is more evenly distributed across the internal road network.</p> <p>Detailed internal road network design will encourage slow speeds to facilitate increased pedestrian and cycle activity and discourage through traffic and minimise traffic on sensitive road frontages.</p> <p>No changes are proposed to existing drop-off and pick-up facilities at schools or community centres.</p>	<p>Dedicated pedestrian pathways should be in all parks and areas of open space in addition to running alongside streets.</p> <p>While there have been general concerns expressed about small streets, these can, to a large extent, be overcome by establishment of good sight lines and natural surveillance.</p>
Definition of public and private spaces	<p>Attention has been given to the importance of providing physical cues to alert people to transitions from public semi-public and private spaces to assist with access control and territorial reinforcement such as attention to landscaping and fencing.</p> <p>Definition and ease of 'way finding' is an important element of influencing and controlling the movement of people toward the most appropriate and safe route. It also assists in defining the preferred use of a space.</p>	<p>To avoid any confusion and excuse making, there should be no ambiguity as to who owns and is responsible for an area whether it be public, semi-private or private. Reference should be made to the landscaping and fencing plans.</p> <p>Clear transitions from public to private areas are essential. When the behaviour expected in each of these areas is clearly understood and signed then residents will feel increased confidence in moving from one area to the next.</p>
Maintenance of the public domain	<p>The Spotless Group will be responsible for all facilities maintenance, all social housing, agreed public areas and facilities within the renewal area.</p>	<p>A maintenance program should be endorsed with clear responsibilities identified to ensure the clean and well-kept nature of the public domain.</p> <p>There should be no ambiguity as to who is responsible for the care of all areas within the renewal area. Rapid removal graffiti policy and procedures should be implemented to ensure graffiti is removed within 24 hours of it being reported across all public domain areas in the renewal area.</p>

FEATURE	COMMENTS / OBSERVATIONS	RECOMMENDATIONS
		<p>Public toilets, especially those in parks should be lockable at night, well maintained and lit.</p> <p>Lighting must comply with AS1158/1680. It should be vandal resistant.</p> <p>Broken or burnt out lighting should be fixed within 24 hours of notification.</p> <p>Parks and open space areas should well maintained.</p> <p>A Public Domain Maintenance Plan should be prepared and made available. It should include frequency and responsibility for maintaining and cleaning parks, nature strips and open space areas.</p> <p>Incident management strategies should be in place and publicly promoted and available including identifying when it is necessary to call the police and who should be responsible. This could be done via letter box drop in the area. These strategies could include a quick response number that residents may call.</p>
<p>Vacated areas and areas under construction</p>	<p>Construction within the renewal area is expected to continue over a period of 12 years with construction planned to be complete by 2021.</p>	<p>Equipment should be stored so that it cannot be used for criminal activities such as vandalism, during assault, break and enter or as opportunities for concealment. This may be done by storing equipment behind 1.8 metre high fence or inside a secure and robust shed.</p> <p>As much as possible, storage of equipment and construction should not lead to loss of casual surveillance opportunities within the public domain.</p> <p>Vacant buildings or those under construction should be sealed with 1.8 metre fencing so that they are not used for illegal purposes such as vandalism, assault or drug dealing.</p> <p>Night security patrols to vacated areas and surrounds should be provided.</p> <p>Appropriate lighting to vacated areas should be provided.</p> <p>The use of night security guards to patrol vacated areas should be considered.</p>

6.2 ADDITIONAL IMPACTS ARISING FROM AMENDMENTS

In undertaking a CPTED Assessment for the amended Newleaf Bonnyrigg Concept Plan, it is important to note that the proposed changes to the Concept Plan are fairly minor and do not significantly change the nature of the development. The following Assessment therefore considers only amendments to the Concept Plan.

In particular, the impact of increased densities of dwellings around public areas and revisions to open space are assessed. The impact of the amendments are considered to be minor, and in a number of particular ways help improve the overall safety of the renewal area. It is noted however, that the safety impacts and recommendations identified in previous studies should continue to apply and should be responded to in the current Stage 4 application, as well as future stages of development.

6.2.1 INCREASED DENSITIES ADJACENT TO PUBLIC AREAS

As previously noted, it is proposed to increase the density of the renewal area by 7%. This will result in 168 new dwellings provided in addition to the 2,332 approved in 2009. The total number of dwellings will be 2,500 at the completion of the project and there will be an additional 462 people living within the area.

Higher densities are to be located adjacent to amenities and centres of community activity (i.e. open space, schools and Bonnyrigg Plaza) and this will provide valuable natural surveillance to these public areas. It is understood that dwellings adjacent to open space will be deliberately designed to overlook parklands to offer residents increased amenity, and this also has benefits for natural surveillance of public areas. As was noted in Urbis' 2008 CPTED Assessment, natural surveillance should be maximised by locating habitable rooms towards public spaces and by ensuring sightlines are not obscured by landscaping or public facilities.

It will be important that distinction is made between the public and private realms in order to minimise conflict between users of open space and community facilities and residents that live adjacent to them. This will provide residents with a sense of privacy and safety and contribute to positive outcomes in relation to territorial reinforcement and ownership. Physical cues such as signage and changes to design features (eg paving) can be used to communicate the transition from public to private realms, and space management strategies, including landscaping, may also be considered. Access control will also play an important part in managing the interface between public areas and private residences. For instance, in order to discourage unauthorised access, residential properties adjacent to community areas should have key access and clear signage and consideration may be given to installing CCTV systems.

It is noted, however, that the distinction between public and private domains should be done subtly and sensitively so not to convey a sense of distrust or exclusion to users of public areas. Users should feel comfortable and welcome in public spaces, and it should be clear that residences are accessible in an emergency. This will improve perceived safety for both users of public areas and residents.

6.2.2 CHANGES TO SITE LAYOUT

It is understood that Newleaf Communities proposes to alter the site layout plan for the remaining stages to better reflect market demand. Compact lots and 3-storey garden apartments are likely to be provided in lieu of the 6 and 8-plexes dwelling previously planned for the future stages. 2-bedroom walk up apartments will account for approximately 60% of the replacement dwellings, with the remainder provided as 3-bedroom terraces and duplexes.

The proposed changes have previously been approved in July 2011 and are not considered to have adverse impacts on safety within the renewal area and will, in a number of ways enhance safety. It is understood that the proposed changes to the dwelling typology will:

- Improve the location of car parking (including removal of 'car courts') such that fewer garages face the street and this will lessen the potential for conflict between pedestrians using public open spaces and vehicles entering and existing residential properties. It will be important, however, that the location and design of garages not be conducive to concealment or criminal activity and that natural surveillance is still possible. Sensor operated lighting and arrangement of windows to overlook streets will contribute to achieving this.

- Continue to locate living spaces close to the street, with windows overlooking public areas. This is an important feature of natural surveillance. There is scope to activate the frontages of dwellings that front open space areas to further increase natural surveillance.
- Improve intrinsic privacy for residents, particularly in duplex dwellings and compact lots which feature zero lot lines, shared walls and rear gardens. Larger areas of private open space will be located to the rear of traditional dwellings. This reduces the likelihood of theft of yard items and limits the need for the installation of privacy screens and plantings that can block sight lines and hinder natural surveillance.

Previous recommendations relating to lighting, materials, access control and appropriate landscaping should continue to be adhered to (refer to Table 1).

6.2.3 REVISIONS TO OPEN SPACE BOUNDARIES AND FACILITIES

Minor amendments to the boundaries and dimensions of open space have been necessitated by changes to the composition and density of adjacent dwellings. Improved linkages between a number of open space areas are also proposed. There will be an increase in the overall quantum of open space in the renewal area as a result of the amendments. An additional 1,300 square metres of open space (required due to the increase in population resulting from the amendments) will be accommodated in boundary adjustments.

The proposed changes to each of the open space areas within the renewal area have been reviewed, and there are not considered to be significant impacts arising from these changes. Those impacts identified are discussed below, with recommendations made where necessary. It is again emphasised however that recommendations made by Urbis in 2008 are important to continue to be observed in remaining stages.

Management of vacant areas during staged development

The need for vacant areas or areas under construction to be carefully managed was highlighted in Urbis' 2008 Assessment of the renewal area's redevelopment and this continues to be of relevance to the amendments.

Of particular note with regard to the current amendments and the commencement of Stage 4, is the 'Middle Valley Creek Park', which includes community gardens, the Newleaf Community Offices, car parking, the future community centre and any associated commercial uses. It is understood that the majority of this park is to be provided in Stages 6 and 7, but that the Newleaf Communities Offices adjacent to the park are to be developed in the current Stage 4. There are adjoining residential properties that are currently occupied, and it will be important to manage the Community Offices and vacant areas set aside for Park 3 to minimise disruption to residents of these dwellings. In particular, it will be important to ensure any noise and safety impacts associated with after-hours activities at the Newleaf Communities Offices and car park are minimised to adjoining dwellings that are understood to remain in use until a later stage. Consideration may be given to lighting, signage and management strategies that limit use of exits near these dwellings during evening hours.

Connectivity between open spaces

Connectivity and legibility are important features in the redesign of Newleaf Bonnyrigg and the value of ease of way-finding is significant to individuals' comfort and perceptions of safety. There are a number of proposed amendments to the open space layout within the Concept Plan that have implications for connectivity within the renewal area.

One change of particular note is the proposed relocation of the 'Bonnyrigg Avenue Entry Park' further east on Tarlington Parade to immediately opposite the school. It is understood this has been necessitated to protect a significant tree and though warranted, this relocation will have implications for connectivity between the 'Bonnyrigg Avenue Entry Park' and the 'Village Park' (under the original Concept Plan these were adjacent). It is noted however that this loss of connectivity has, in part, been rectified by providing a green linkage south of the 'Bonnyrigg Avenue Entry Park' to 'Forest Park'.

It is further noted that proximity and connectivity to the supermarket and community centre is also lost as a result of moving the 'Bonnyrigg Avenue Entry Park' to opposite the school. There is, however, some benefit in having a park in close proximity to the school, provided safety is considered in its design. Consideration may be given to lower speed limits and traffic calming devices.

Connectivity between open space is otherwise considered sufficient, with green linkages available through the centre of the renewal area (between the 'Entry Park', 'Lower Valley Creek Park', 'Valley Creek Park' and 'Upper Valley Creek Park') and in the west (between the 'Hilltop Park' and the 'Junior Play Park'). To ensure residents and visitors to the renewal area feel comfortable utilising these connections, it will be important that pathways are clearly signed, well lit, visible from residences and community facilities, and appropriately designed to minimised potential conflict with vehicles.

On-street parking

The potential for conflict between vehicles and users of open space is an important consideration, with many open space areas within the renewal area bounded by roads. The 'Hilltop Park' and 'Junior Play Park' in particular are ringed by roads and it has been indicated that on-street parking is assumed in these areas and can play a valuable role in ensuring casual surveillance of playing fields. However, car parking in the public domain was also assessed in Urbis' 2008 CPTED Assessment and recommendations prescribed at this stage are considered sufficient (refer Table 1 above).

7 Conclusion

The CPTED Assessment has considered proposed amendments to the Concept Plan for Newleaf Bonnyrigg, including increased dwelling densities around public areas, changes to the site layout to reflect market demand and revisions to open space boundaries and facilities. The potential safety impacts of these amendments have been considered in the context of local demographic characteristics, trends in criminal activity, and CPTED principles and it is noted that many of the impacts identified in the assessment process and consultations with the architects been addressed in the Concept Plan design.

The proposed amendment were found to have few impacts in relation to the overall safety of the renewal area, perhaps attributable to their being relatively minor changes. Minor impacts were identified in relation to:

- Ensuring a clear distinction is maintained between the public and private realms where higher density development is located adjacent to community areas.
- Ensuring that the relocation of garages, while lessening the potential for conflict between pedestrians and vehicles, are well lit and subject to passive surveillance to deter loitering, concealment or criminal activity.
- Careful management of vacant areas during staged development.
- Maintaining connectivity between open space.
- Managing on-street parking around open space areas.

These impacts are further considered able to be minimised to an acceptable standard through measures which can be implemented in the design process, such as lighting, natural surveillance, traffic calming devices, access control and signage.

A number of benefits of the proposed design changes were also identified with regard to safety within the renewal area, including:

- An increase in natural surveillance to public areas, through increased densities adjacent. This can be enhanced through locating habitable rooms towards public spaces and by ensuring sightlines are not obscured by landscaping or public facilities
- Improving the location of car parking such that fewer garages face the street, lessening the potential for conflict between pedestrians using public open spaces and vehicles entering and existing residential properties.
- Improving privacy for residents in redesigned dwelling types, minimising the need for privacy screens and plantings that obscure sightlines to public areas.
- Maintaining and extending connectivity between open spaces, supplemented by appropriate lighting and signage.

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