



TOWN PLANNING
AND URBAN DESIGN

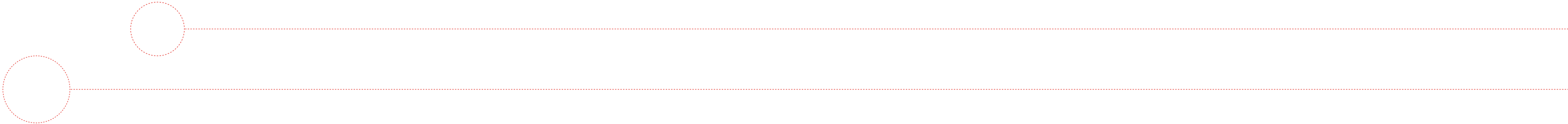


ELIMATTA VILLAGE DETAILED AREA PLAN

CORNER OF BRADFORD STREET & ALEXANDER
DRIVE, MENORA

PREPARED BY TPG TOWN PLANNING AND URBAN DESIGN
(TPG) ON BEHALF OF UNITING CHURCH HOMES

708-264A
AUGUST 2011



DOCUMENT CONTROL

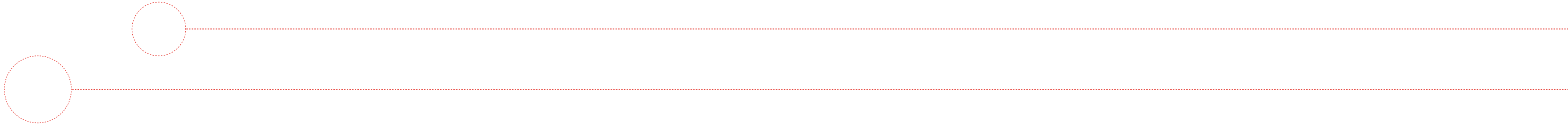
Document ID: PLANNING/PG 2008/708-264 Elimatta Village/Draft Documents/Draft Report/708-264 Elimatta Village						
Issue	Date	Status	Prepared by		Approved by	
			Name	Initials	Name	Initials
1	12.08.11	Draft	Matt Raymond		Tony Paduano	
2	18.08.11	Final	Matt Raymond		Tony Paduano	
<p>This report has been prepared for the exclusive use of the Client, in accordance with the agreement between the Client and TPG ('Agreement').</p> <p>TPG accepts no liability or responsibility whatsoever in respect of any use of or reliance upon this report by any person who is not a party to the Agreement or an intended recipient.</p> <p>In particular, it should be noted that this report is a qualitative assessment only, based on the scope and timing of services defined by the Client and is based on information supplied by the Client and its agents.</p> <p>TPG cannot be held accountable for information supplied by others and relied upon by TPG.</p> <p>Copyright and any other Intellectual Property arising from the report and the provision of the services in accordance with the Agreement belongs exclusively to TPG unless otherwise agreed and may not be reproduced or disclosed to any person other than the Client without the express written authority of TPG.</p>						

TPG reports are printed on:



CONTENTS

1. INTRODUCTION	1	5. IMPLEMENTATION - STAGING	23
1.1 Purpose of a Detailed Area Plan	1		
1.2 Proposal	1	6. CONCLUSION	25
1.3 Background: Uniting Church Homes	1		
2. SITE DETAILS	3	7. APPENDIX 1	27
2.1 Regional Context	3	Certificate of Title	27
2.2 Local Context	3	8. APPENDIX 2	29
2.3 Property Description	5	Architectural plans	29
2.4 Existing Site Attributes	5	9. APPENDIX 3	31
3. PLANNING CONTROLS	7	Traffic Assessment Report	31
3.1 Metropolitan Region Scheme	7		
3.2 City of Stirling Local Planning Scheme No.3	7		
3.3 City of Stirling Local Planning Policies	8		
3.4 Heritage Considerations	8		
3.5 Residential Design Codes	9		
3.6 Liveable Neighbourhoods a Western Australian Government Sustainable Cities Initiative (WAPC, 2007)	9		
4. DETAILED AREA PLAN DESIGN	11		
4.1 Land Use & Facilities	11		
4.2 Site Design	12		
4.3 Self Assessment	16		
4.4 Car Parking & Movement Network	18		



This page has been left blank intentionally.

1. INTRODUCTION

This documentation has been prepared by TPG Town Planning and Urban Design (TPG), in conjunction with McDonald Jones Architects and Shawmac traffic engineers, on behalf of the Uniting Church Homes in support of the proposed redevelopment of the Elimatta Village site located on the corner of Alexander Drive and Bradford Street, Menora.

The Detailed Area Plan (DAP) and associated supporting report has been prepared in accordance with Clause 6A.16 of the City of Stirling’s Local Planning Scheme No.3 (the Scheme). The DAP responds to the requirements identified in Council’s resolution (16th of March 2010) and subsequent correspondence (23rd of March 2010), where revised plans were required to be submitted prior to Council giving consent to advertise.

The DAP report consists of four parts:

- Site Details: providing a background context in terms of the site attributes, its local and regional context, and the opportunities and constraints presented to redeveloping and enhancing the site.
- Planning Controls: outlining the statutory and policy requirements relevant to the proposal.

- DAP Design: detailing the design philosophy, the planning and traffic rationale in formulating the DAP framework.
- Implementation: Consideration of how the DAP will be implemented, the anticipated staging for site development, and subsequent Development Applications over the site.

1.1 PURPOSE OF A DETAILED AREA PLAN

The Scheme identifies the function of DAPs as a planning tool to enhance, elaborate or expand upon the details or provisions contained in a structure plan or in other circumstances, such as the Elimatta Village site, for a particular lot or lots.

The DAP will guide Council’s assessment for future development applications over the site. It provides the necessary site layout details, including the identification of proposed building envelopes, height, movement networks, the distribution of land uses, landscaping, and anticipated apartment and unit yields. The finer details regarding detailed building design and colour palettes are not normally considered by DAPs, and are addressed in further detail at the subsequent Development Application and Building Licence stages.

1.2 PROPOSAL

The proposed DAP has been prepared in order to facilitate the orderly and proper planning of the Elimatta Village site. The redevelopment seeks to create a re-invigorated residential community development which is accessible to residents and visitors alike, whilst also giving consideration to building bulk and how to successfully integrate the redevelopment without negatively impacting on the existing neighbouring residential community. The Elimatta Village DAP seeks approval for the following elements:

- Aged persons accommodation – 17 Villas (single storey);
- Aged persons accommodation – 129 Apartments (2 to 4 storeys);
- Associated car parking (basement and ground level);
- Generous areas of integrated landscaping including a village green; and
- Facilities: including a clubhouse (consisting of pool, gym, ancillary communal café, dining, lounge, associated administration area and consultants professional rooms), lawn bowls rink, and mens shed.

1.3 BACKGROUND: UNITING CHURCH HOMES

The Uniting Church in Australia is one of the largest providers of welfare services in Australia. Uniting Church Homes (UCH) is an agency of the Western Australia Synod of the Church. UCH is incorporated under the provisions of the Uniting Church in Australia Act 1976 (WA). UCH provide a range of accommodation and care services for elderly people within a Christian environment but accept people from all backgrounds into their service and employment.

As a major provider of accommodation and care for the elderly in Western Australia UCH cares for 980 residents in its 20 residential care facilities throughout WA and provides over 600 independent living unit dwellings (ILU’s) within its villages.

The residents of the City of Stirling are well served by UCH with the provision of 258 ILU’s across five sites, 89 of which are let as rentals to lower income residents. Within the City of Stirling UCH also provides 227 care facility beds and 46 serviced units, all with 24/7 professional care and assistance.

EXISTING ELIMATTA ENTRANCE



VISION STATEMENT

'A good life for all our people'.

ELIMATTA VILLAGE

Elimatta Village was built during the 1960's. The site originally operated with 42 hostel care places and 78 ILU's which were periodically also used as serviced units. The ILU's reached the end of their economic useful life and were no longer meeting the expectations of older Australians. They were demolished in 2010 in preparation for redevelopment of the site after sitting predominantly vacant for a number of years. The Elimatta hostel is still operating and has an economic useful life of about eight years.

PRÉCIS

Australia has a rapidly ageing population and innovative planning is required to find solutions that will cater for the greater numbers of older people that will require support over the next 40 years, especially the greater numbers of frail older people. Service Providers like UCH are being challenged to:

- Develop new and better models of housing and of care, particularly models that enable people to 'age in place';
- Create communities that are more self supportive and age friendly; and
- Encourage older people's participation and value their contributions.

Essential features of the Elimatta Project that will make a significant contribution to the challenges of an ageing Australia will include:

- 95% of residents will be able to stay in their own home until the end of life;
- The apartments will be affordable by local people;

- A focus on maintaining and building connections with the local community; and
- Support and activities on the site including a service to help residents arrange to have health and care services delivered in their home when needed.

THE ELIMATTA PROJECT

The Elimatta Project is an innovative model of housing, care and support for older people with a strong focus on integration with the local community. It will provide a choice for older people to remain in their own home within a supportive community until their last days.

The redeveloped Elimatta village will follow the modern Apartments for Life principles which promote a separation between the provision of housing and care. The primary focus is to support quality of life through the provision of targeted support to residents in their appropriately designed home. Strong social networks with friends, family and neighbours contribute to people's physical and mental wellbeing in older age. There will be a program of health related and social activities at Elimatta to help residents maintain their wellbeing

and to build their social networks. Neighbours from the local community will be encouraged to participate and enjoy the benefits.

When residents' needs are met by the provision of services to their home, very few need to move into an aged-care facility. Elderly Australians want to remain independent in their own homes, manage their own lives, and participate in society. The Elimatta service model:

- provides appropriate architecture to support mobility within and around their home,
- facilitates the formation and continuance of social relationships, and
- assists residents with access to services that support independence such as meals, nursing care, or assistance with shopping and home care duties

The model is consistent with the goals of the Home and Community Care (HACC) programme which the City of Stirling has strongly supported since 1985. This approach is also consistent with the City of Stirling Seniors Plan 2007.

2. SITE DETAILS

The following section of the report provides details regarding the site's physical attributes, its spatial position locally and regionally.

2.1 REGIONAL CONTEXT

The subject site is located approximately 7 kilometres north of the Perth CBD and approximately 6 kilometres south-west of the Galleria Shopping Centre in Morley.

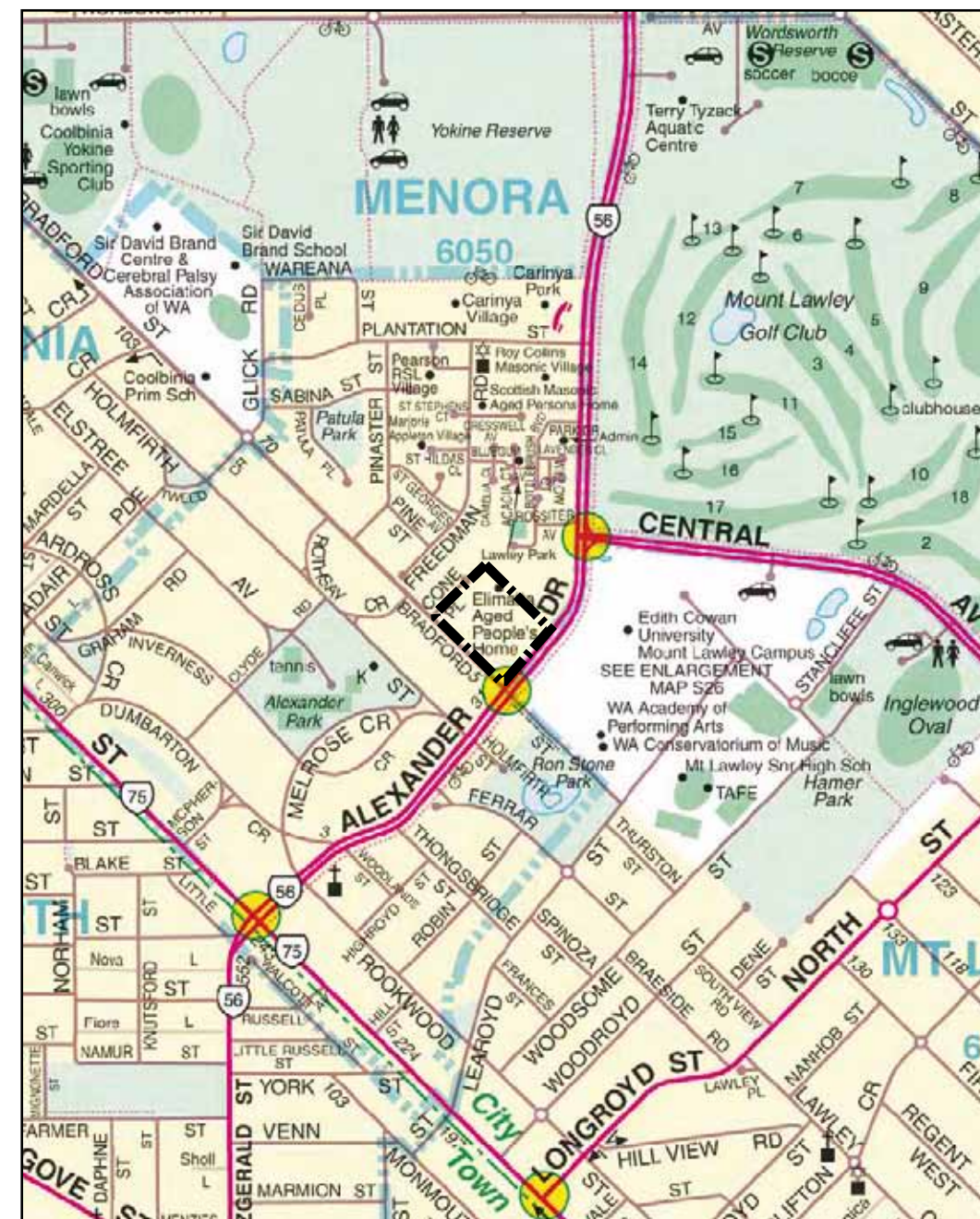
REFER TO FIGURE 1 – LOCATION PLAN

2.2 LOCAL CONTEXT

The surrounding area is characterised by low-rise low-density residential development to the south and south-west of the site. The Edith Cowan Mt Lawley University campus is located to the east of Alexander Drive, with the Mount Lawley Golf Club and Yokine Reserve located further north. A number of existing retirement villages are located to the north and north-west of the site, with the R.S.L care facilities located immediately north. Some of these structures to the north are 4-5 storeys in height, with a proposed medical centre which is to be built.

REFER TO FIGURE 2 – AERIAL PHOTO

FIGURE 1 – LOCATION PLAN



Source: StreetExpress


 Subject Site

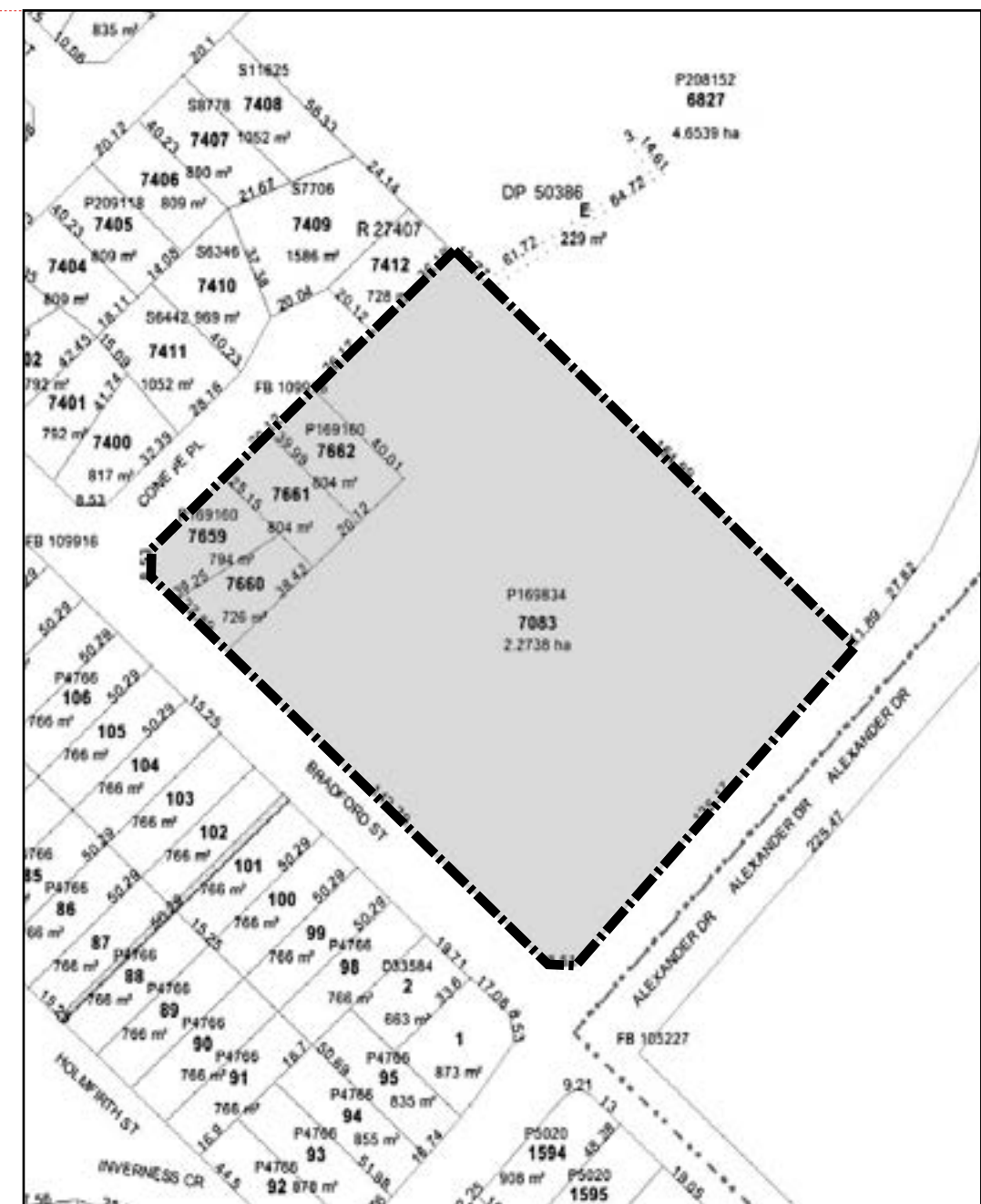
FIGURE 2 – A



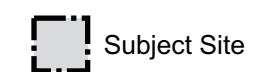
Source: Nearmaps



FIGURE 3 – SITE PLAN



Source: Landgate



2.3 PROPERTY DESCRIPTION

The subject site currently consists of Lots 7083, 7659, 7660, 7661 and 7662 Bradford Street, Menora. These five lots are in the process of being amalgamated into one lot of 2.5866 ha, with the Deposited Plan being lodged with Landgate shortly (WAPC Approval Ref: 140950). The site is bound by Alexander Drive to the south-east, Bradford Street to the west, Cone Place to the north-west, and Lawley Park to the north.

The Uniting Church (affiliation) is the registered proprietor. The following table details the Certificate of Title particulars. The amalgamation of these land titles will need to be undertaken at a future stage.

Lot	Diagram/Plan	Volume	Folio
7083	169834	1259	799
7659	69160	1319	520
7660	69160	1319	520
7661	69160	1319	520
7662	69160	1319	520

REFER TO FIGURE 3 – SITE PLAN

REFER TO APPENDIX 1 – CERTIFICATE OF TITLE

2.4 EXISTING SITE ATTRIBUTES

PHYSICAL CHARACTERISTICS

The site is generally characterised by a relatively flat topography sloping gradually to the west. The high point of the site occurs along the eastern edge near the intersection of Alexander Drive and Bradford Street. Much of the site has now been cleared ready for redevelopment. Some trees have been retained along the northern boundary and centrally within the site. It is intended that these trees be integrated into the future landscaped areas, where possible. The Elimatta hostel is still operating and has an economic useful life of approximately eight years.

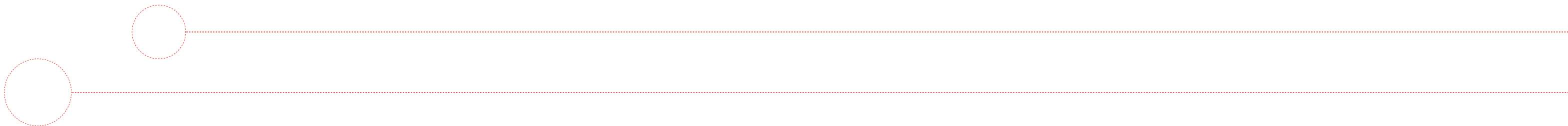
REFER TO FIGURE 4 – OBLIQUE PHOTO

EXISTING VEHICLE, PEDESTRIAN AND CYCLIST NETWORKS

There is currently a deceleration lane providing access off Alexander Drive into the site along the eastern boundary. Vehicle access points are provided approximately 200 metres west of Alexander Drive along Bradford Street, and a secondary entrance point off Cone Place. A pedestrian path exists along the north-eastern side of Bradford Street.



FIGURE 4 – OBLIQUE PHOTO



This page has been left blank intentionally.

3. PLANNING CONTROLS

The following section identifies the statutory and strategic planning documents which apply to the subject site, and how the provisions of these documents relate to the proposed DAP.

3.1 METROPOLITAN REGION SCHEME

The Metropolitan Region Scheme (MRS) is the statutory land use planning scheme for the Perth metropolitan region. The Scheme's function is to reserve and zone land and control development on reserved and zoned land. The MRS reflects the agreed strategic direction for land within the Perth metropolitan region and is a catalyst for changes to planning controls at the local level and subsequent local area planning and development processes. The subject site is appropriately zoned 'Urban' under the MRS to enable the proposed redevelopment to occur.

3.2 CITY OF STIRLING LOCAL PLANNING SCHEME NO.3

The site is subject to the provisions of the City of Stirling's Local Planning Scheme No.3. Under the provisions of the Scheme the subject site is zoned 'Private Institutions'.

The objectives of the 'Private Institutions' zone are:

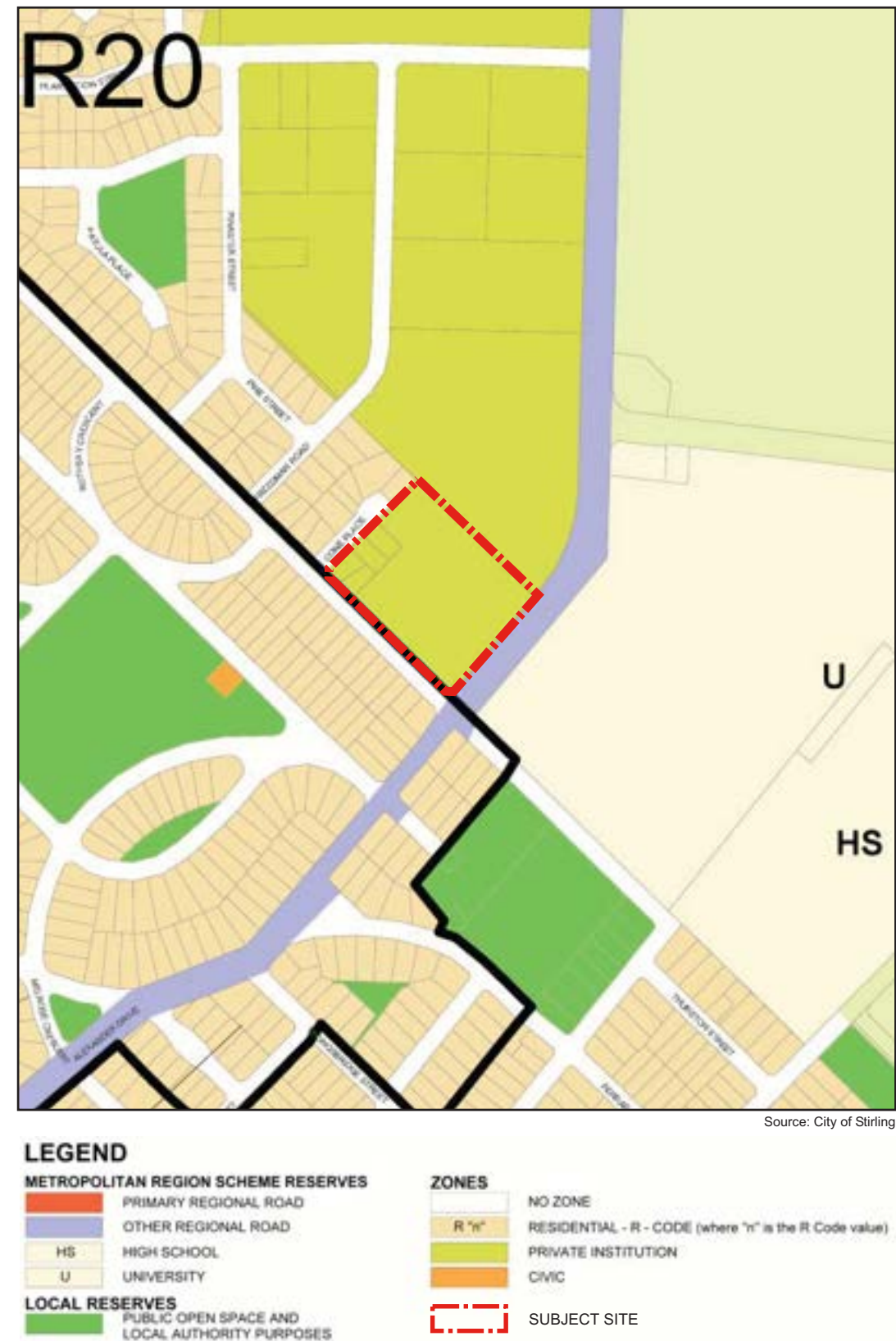
- (1) To provide for a range of privately owned community facilities, and uses that are incidental and ancillary to the provision of such facilities, which are compatible with surrounding development; and
- (2) to ensure that the standard of development is in keeping with surrounding development and protects the amenity of the area.

REFER TO FIGURE 5 – CITY OF STIRLING LOCAL PLANNING SCHEME No.3

The land uses proposed as part of this DAP are in keeping with Objective No.1. The land uses are considered appropriate for the locality as it is an extension of the existing aged care facilities in the area to the north, and simply replaces the previous operating land use. The DAP has been designed with Objective No.2 in mind, to ensure the redevelopment of the site protects the amenity of the area. It is noted that the land use 'Aged or Dependent Persons Dwelling' is a discretionary use under the Scheme's Table 1 (Zoning Table), enabling the proposed land use to occur.

The Scheme also sets out the requirements for the preparation and assessment of a DAP (Clause 6A.16). The Elimatta Village DAP has been prepared in accordance with these provisions.

FIGURE 5 – CITY OF STIRLING LOCAL PLANNING SCHEME No.3



3.3 CITY OF STIRLING LOCAL PLANNING POLICIES

The following Local Planning Policies have been reviewed and applied to the design solution for the Elimatta Village DAP:

POLICY 2.1 – ACCESS AND PARKING

Objectives:

- (1) To ensure adequate provision of secure accessible on-site parking for residents and visitors.
- (2) To ensure parking areas and driveways do not detract from the amenity of the local streetscape.

POLICY 4.5 – PRIVATE INSTITUTION DESIGN GUIDELINES

Objectives:

- (1) To ensure that development does not adversely affect the amenity of surrounding properties.
- (2) To encourage development that is sympathetic to the scale and bulk of surrounding properties.
- (3) To ensure that the efficiency of the local transport network is not encumbered by development.
- (4) To support the provision of viable and high quality retirement and aged care developments.
- (5) To ensure that development is well integrated with the surrounding community.

POLICY 6.6 - LANDSCAPING

Objectives:

- (1) To promote improved landscaping provision and design.
- (2) To improve the visual appeal of development, screen service areas and provide a buffer to boundaries.
- (3) To provide shade and ‘green relief’ in built up areas.
- (4) To promote more environmentally sustainable landscaping.

POLICY 6.7 – PARKING.

Objectives:

- (1) To facilitate the development of adequate parking facilities.
- (2) To ensure safe, convenient and efficient access for pedestrians, cyclists and motorists.
- (3) To ensure that a major parking problem is unlikely to occur.
- (4) To ensure that car parking does not have a detrimental impact on the character and amenity of a residential area.
- (5) To ensure that an oversupply of parking does not occur that discourages alternative forms of transport and is detrimental to urban design and Centre character.

The applicable elements of each of these policies are identified and addressed under the self-assessment table provided under section 4.3 of this DAP report.

3.4 HERITAGE CONSIDERATIONS

The subject site does not contain any known sites of European or Indigenous heritage. It is noted that the subject site is located opposite a Heritage Protection Area designated under the City of Stirling Planning Scheme. The Menora Heritage Protection Area can be described as an almost exclusively single residential district, primarily as a result of restrictive covenants existing on properties.

3.5 RESIDENTIAL DESIGN CODES

The following elements of the DAP were considered against the provisions of the Residential Design Codes:

- Locating building envelopes appropriately in relation to street setbacks, providing for a positive streetscape whilst also maximising the outdoor living areas northern aspect of the site;
- Minimising building bulk and overshadowing impacts within and external of the site;
- Consideration of visual privacy by minimising overlooking of active habitable spaces and outdoor living areas of other dwellings through thoughtful building placement and layout;
- The provision of sufficient open space for passive and active amenity;
- A demonstrated allocation of land area and suitable locations for on-site car parking requirements for residents;
- The integration of thoughtful pedestrian access throughout the site, providing permeable links to public transport services and through to the abutting RSL site;
- Consideration of essential facilities that will ultimately be required by residents, including rubbish collection/storage areas; and
- Consideration of the aged or dependent persons' dwellings requirements outlined under Part 6, section 6.11.2, particularly in relation to good accessibility within the site.

3.6 LIVEABLE NEIGHBOURHOODS A WESTERN AUSTRALIAN GOVERNMENT SUSTAINABLE CITIES INITIATIVE (WAPC, 2007)

Liveable Neighbourhoods has been prepared to implement the objectives of the Western Australian Planning Commission's State Planning Strategy which aims to guide the sustainable development of Western Australia to 2029.

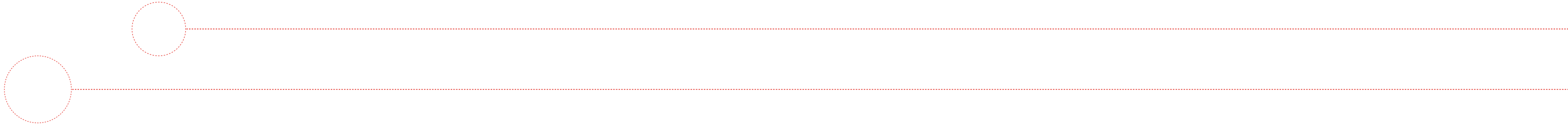
Liveable Neighbourhoods applies to structure planning and subdivision for greenfield sites and for the redevelopment of large brownfield and urban infill sites. The following elements of the strategic document were considered in the preparation of the proposed DAP:

An emphasis on achieving housing diversity, particularly around public transport nodes (it is noted the DAP site is located on a 'Improved Public Transport Route' within City of Stirling's Coolbinia-Inglewood-Menora-Mt Lawley Local Area Key Opportunities Map); and

Identified opportunities to intensify existing activities and to promote new uses that will make better use of transit facilities and services. This is particularly important for aged persons within the community, where many become dependent on public transport. The subject site is located within a 'Transit Oriented Precinct' as defined under the Policy due to its proximity to Alexander Drive. The principles of walkable catchments to transport corridors outlined within the Liveable Neighbourhoods documentation can be positively applied to the Elimatta Village site.



BRADFORD STREET LOOKING NORTH WEST



This page has been left blank intentionally.

4. DETAILED AREA PLAN DESIGN

The following section of the report provides an overview to the proposed DAP design, including land use and facilities, landscape integration, building height and interfacing, and logical movement networks. A planning self-assessment table is also included to demonstrate how the proposal meets the relevant statutory and policy requirements.

REFER TO FIGURE 6: ELIMATTA VILLAGE DAP

4.1 LAND USE & FACILITIES

The proposal will incorporate the following land uses:

- Independent Living Units (Dwelling Types: Apartments and Villas). The design is expected to include a mixture of 2 and 3 bedroom apartments and villas providing variety in housing choices and appealing to individual needs. There is a general acceptance now of multi-storey residential living for aged persons; and
- Community Facilities: Centrally located clubhouse consisting of ancillary café, dining, lounge, and administration. Lawn bowls, swimming pool, gym, and mens shed. An associated administration area and consultants professional rooms will also be incorporated.

FIGURE 6: ELIMATTA VILLAGE DAP



4.2 SITE DESIGN

The Design philosophy for the Elimatta Village DAP is for the creation of a central "community square" precinct which will not only act as a focus for the adjacent buildings, but will provide a community hub for the overall development. The proposal is a thoughtful and innovative interpretation of the standard Independent Living design formula, in keeping with the future planning and vision of UCH.

- enable efficient and logical movement of pedestrians, cyclists and vehicles within the site; and
- facilitate the central focus of the community 'square', where building footprints frame the community facilities (swimming pool, club rooms, and lawn bowls area).

REFER TO FIGURE 7 - ENVIRONMENTAL DESIGN CONSIDERATIONS

KEY PRINCIPLES

- To create a re-invigorated residential community development which is welcoming, attractive, and accessible for the residents, staff and visitors;
- To create a central focus for the development, providing a visual and physical connection to the apartment and villa buildings;
- To incorporate Environmentally Sustainable Design principles into each building and the development as a whole; and
- To provide for Independent Living Units that better reflect the contemporary standards and expectations, and the future needs of the community.

Building Envelopes:

The building envelopes shown on the DAP have been placed with due consideration to:

- provide desirable building interface outcomes within and external of the site; whereby the sufficient separation of buildings to the external residential buildings occurs, particularly along Bradford Street and Cone Place;
- to minimise the occurrence of overshadowing from the northerly sun to other buildings within the site;
- to facilitate the creation of an integrated and spacious landscape environment surrounding the building footprints;

FIGURE 7 - ENVIRONMENTAL DESIGN CONSIDERATIONS

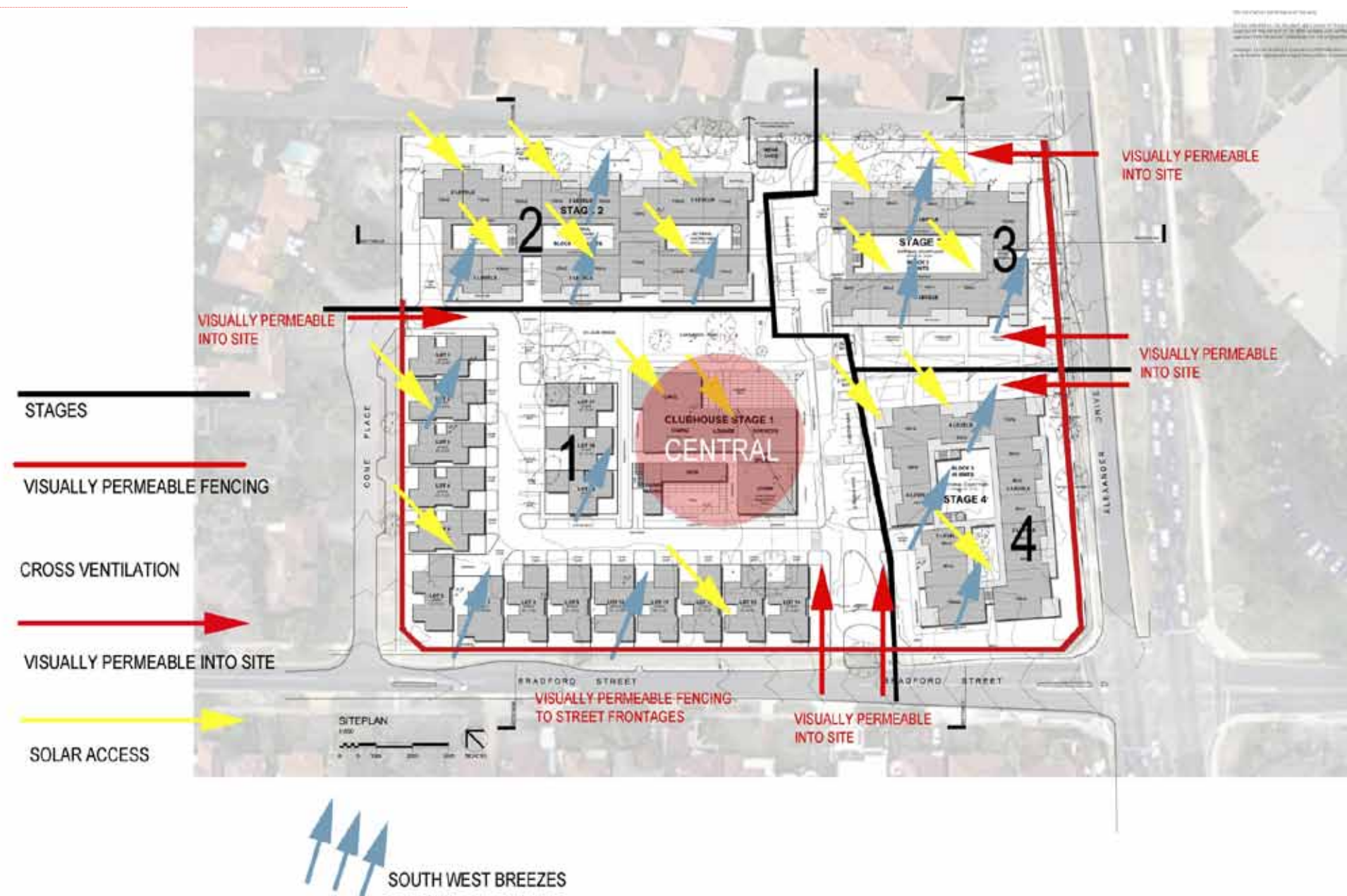
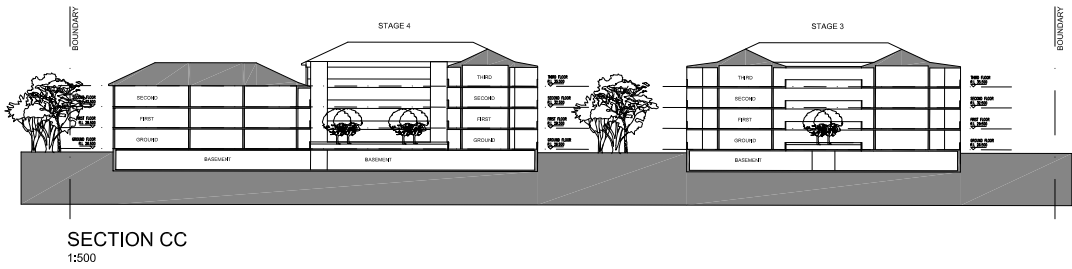
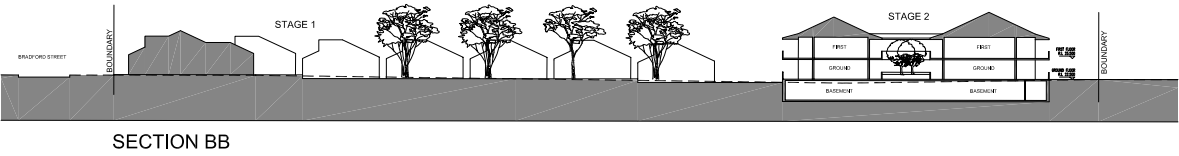
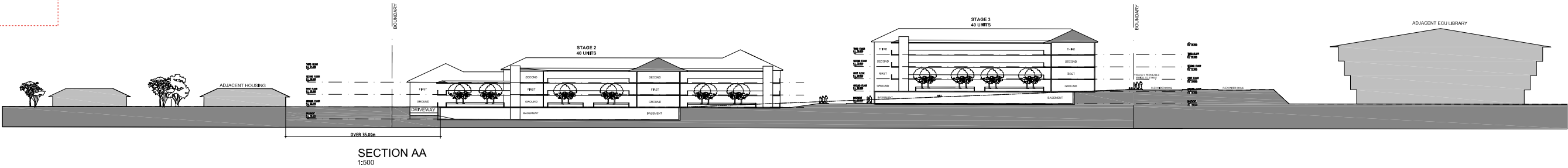


FIGURE 8 - CROSS SECTIONS OF PROPOSED BUILDINGS

Before any new construction, alteration or shop fabrication is commenced the contractor must check all drawings and dimensions against the intent of the drawing, and is to notify the superintendent of any discrepancies or omissions which will prevent or inhibit the satisfactory performance of the work.

Details indicated on this document apply solely to this project. Such details must not be used out of this context or for other building work without prior discussion with and approval from the person responsible for the original design.

Copyright to this drawing is reserved by McDonald Jones Architects Pty Ltd. and must not be retained or reproduced without their written permission.



NO.	DATE:	AMENDMENT:	NO.	DATE:	AMENDMENT:	NO.	DATE:	AMENDMENT:

DESIGN AND DOCUMENTATION BY:
MCDONALD JONES
ARCHITECTS PTY LTD

23 HAMILTON STREET, SUBIACO WA 6008
TEL (08) 9388 0333
FAX (08) 9388 0555
EMAIL m.j@macjones.net

JOB: ELIMATTA VILLAGE
ADDRESS: BRADFORD STREET, MENORA
CLIENT: UNITING CHURCH HOMES
DWG: SECTIONS

DRAWN: JT	DATE CREATED: 2011-03-31	CHECKED:
SCALE: 1:500	JOB No. 1107	DRAWING No. P.03 0
ISSUED FOR:		
FILE NAME:		
THIS IS A CAD DRAWING DO NOT AMEND MANUALLY.		



FIGURE 9 - AERIAL PERSPECTIVE, LOOKING NORTH

BUILT FORM, HEIGHT & INTERFACING

Figure 8 illustrates the spatial location of building heights across the site. Consideration has been given to building bulk and how to successfully integrate the redevelopment without negatively impacting on existing neighbouring residential sites.

The proposed independent living units that are to be located along the north-eastern side of Bradford Street and to the east of Cone Place will be limited to a single storey height. This is cognisant of the existing residential development on Cone Place and to the south of Bradford Street which is predominantly single storey.

The proposed height steps up to three storeys as Bradford Street approaches the intersection of Alexander Drive, providing the opportunity for a distinct and positive building form that frames the edge of the site.

REFER TO FIGURE 8 - CROSS SECTIONS OF PROPOSED BUILDINGS

REFER TO FIGURES 9 & 10 - AERIAL PERSPECTIVE

From the intersection of Bradford Street and Alexander Drive, the building form will step up from three to four storeys along the western edge of Alexander Drive. This building scale is in-keeping with the existing multi-storey developments within the R.S.L site to the north, and is considered consistent with the built form within the Edith Cowan University located further to the north-east. The apartments building bulk is significantly reduced on the northern corner of the site where it faces Cone Place. This is achieved by reducing the height to only two storeys. This will result in a built form that is compatible with the existing single storey development to the north-west of Cone Place.

LANDSCAPE INTEGRATION

A comprehensive landscape plan will be prepared for the site at the development application stage of the site's redevelopment. The plan will be prepared in accordance with the City of Stirling's Landscaping Policy and shall comprehensively address the elements of:

- Landscaped areas and widths;
- Plant numbers and types;
- Street trees;
- Identification of existing vegetation that is to be retained and integrated;



FIGURE 10 - AERIAL PERSPECTIVE, LOOKING NORTH-EAST

- Reticulation and mulching details; and
- Parking landscape design.

The landscape design will improve significantly upon what currently exists within and along the edges of the site. The existing landscape is poor and aesthetically unattractive, contributing little to the Bradford Street and Cone Place streetscapes.

It is envisaged that the landscape plan will promote the creation of strong individual landscaped spaces within the site, which are carefully designed to engender a sense of ownership, community, a unique 'sense of place' and well-being for residents and visitors alike. The outcomes of the landscape plan will help to soften the impact of the buildings and assist in reducing the scale of the overall development.

The DAP has considered well-defined building entry points and a fully accessible path system linking the various facilities on the site through what will be a quality landscaped setting. This is particularly important to encourage residents and visitors to take advantage of the communal areas centrally located within the site.

It is proposed that the existing trees located outside the proposed development footprints will be retained where practical. Key components of the landscape plan will include:

- The creation of a landscape treatment based on sustainable principles;
- Retention of significant trees where practical;
- The creation of defined entry points in the development;
- Utilise planting to help soften the impact of buildings, both viewed from within the development as well as externally;
- The creation of a community garden as a focus, providing passive recreation opportunities;
- Minimise the amount of irrigated grass areas in order to lessen maintenance and water usage;
- The introduction of walk paths as part of an overall safe and accessible circulation network, connecting to external footpaths on Alexander Drive and Bradford Street, and being suitably graded to enable easy movement; and
- The provision for a well considered stormwater drainage collection and storage strategy to ensure that additional in-flow does not put more pressure on the current system and cause potential flooding.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

The DAP considers the future needs of the Elimatta Village residents by reinforcing neighbourhood safety. This is achieved through careful attention to the relationship between public and private spaces to ensure passive surveillance. Passive surveillance is the natural observation that occurs when public spaces are visible from passing traffic and from surrounding homes.

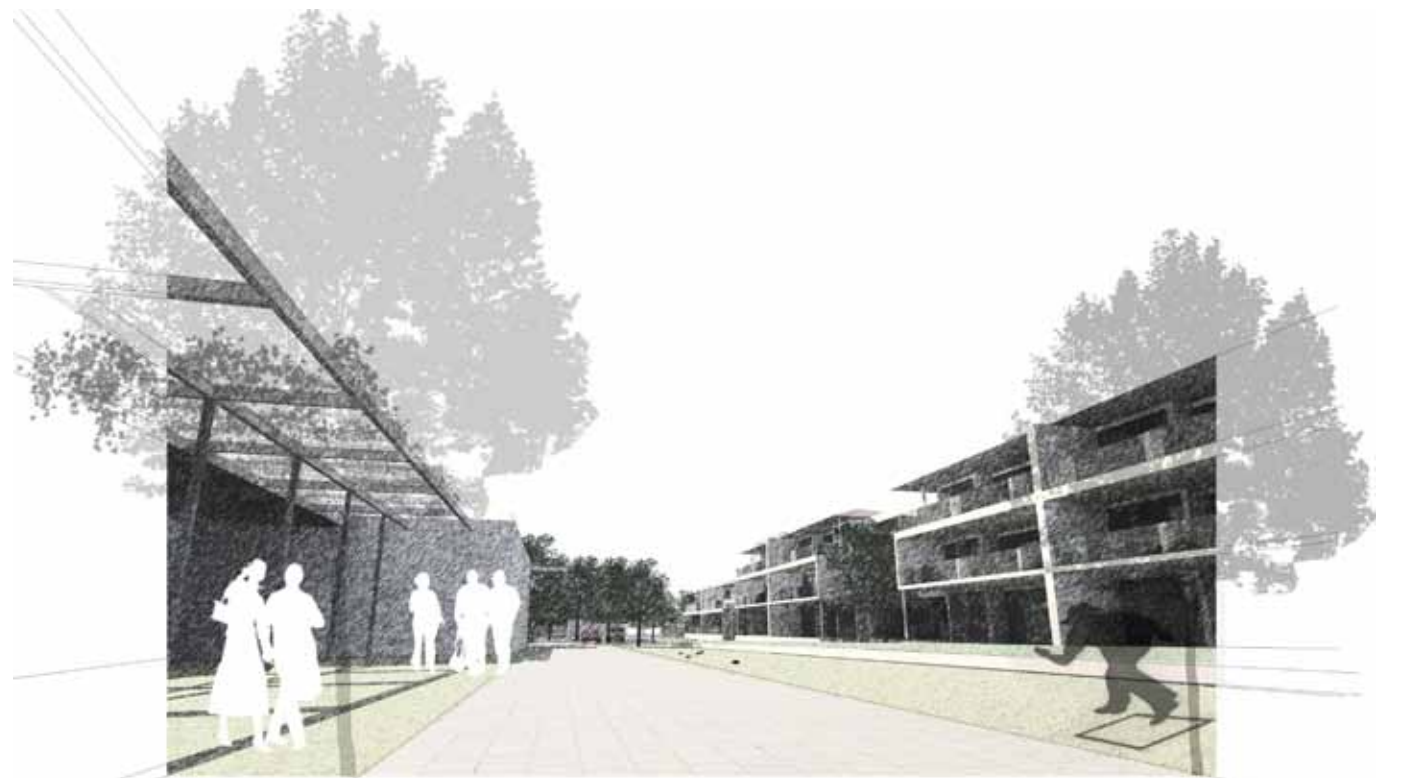
The proposed 'framing' of the community square by the placement of building footprints and private living spaces overlooking these public spaces will result in a safer environment. Development controls at the development approval stage of planning will play a special role in allowing for passive surveillance (e.g. visually permeable fences, balconies, roller doors and gates). CPTED strategies reduce crime, create a greater sense of security and reinforce the neighbourly aspect of an area.

BUILDING MATERIAL

A detailed colour and material schedule will be prepared during the development application stage of the approval process.



ARTIST IMPRESSION: VIEW EAST TOWARDS LANDSCAPED TERRACES



ARTIST IMPRESSION: VIEW WEST THROUGH VILLAGE GREEN



RESIDENCES SOUTH OF BRADFORD STREET



RSL DEVELOPMENT ON NORTHERN BOUNDARY OF THE ELIMATTA SITE

4.3 SELF ASSESSMENT

The following table provides a self-assessment checklist to demonstrate the DAPs compliance with the various Scheme provisions (including Local Planning Policy 4.5 – Private Institution Design Guidelines) and the Residential Design Codes.

Component	Requirement	Proposed	Compliance
Density	Maximum R80	Less than R80 (approximately R55, 146 dwellings)	Yes
Land Use Zone	To comply with land uses listed under Table 1, Private Institution Zone	'Aged or Dependent Persons Dwelling' land use is a Discretionary use under Table 1 and can be approved by Council. The land use is consistent with the historic use of the land. The support ancillary land uses are consistent with the 'Private Institutions' zone objectives.	Yes
Open Space	Provision of open space shall be in accordance with the Residential Design Codes open space requirements for a Residential R80 density coding. 45% of total site (1.163 ha)	Approximately 58% Open Space.	Yes
Outdoor Living Area	16sqm min outdoor living area	N/A	TBC at detailed design stage (DA)
Communal Open Space	Minimum requirement of 16m2 of communal space per Multiple Dwelling	The proposed development of 129 multiple dwellings requires a total area of 2064m2 dedicated for communal space.	TBC at detailed design stage (DA)
Amenities	Retirement complex developments shall be landscaped to provide recreational and entertainment areas for residents and visitors with amenities (such as shade areas, tables, barbecues, and swimming pools.	Café, pool, village green, lawn bowl rink.	Yes

Component	Requirement	Proposed	Compliance
Building Height	Development shall be restricted to 2 storeys above NGL adjacent to lot boundaries.	ILU single storey lots along perimeter of Bradford Street and Cone Place, with 2 storey apartments adjacent to drainage sump.	Yes
	Maximum of 4 storeys above NGL on the remainder of the site.	3-4 storeys along north-eastern boundary (adjacent to RSL site and Alexander Drive) which is lower than RSL's 5 storey apartment buildings.	Yes in context of RSL's site.
	Where buildings over 2 storeys in height are proposed, an application shall include justification which addresses the impact of: - Amenity - Overshadowing - Wind impacts - Building design - Siting - Bulk - Materials, scale and colour.	Buildings over 2 storeys have been appropriately located along the busy Alexander Drive road network and adjacent to the existing 5 storey RSL buildings. This logical placement of buildings therefore minimises impacts on local amenity.	Yes
		The building footprints will not overshadow adjoining properties more than the 50% site area requirement, on 21 June. The majority of overshadowing will occur internally onto the communal grounds and road areas.	Yes
		Building envelopes are sufficiently setback to comply with overlooking, and where any potential overlooking occurs, this would be onto non-habitable areas of adjoining lots.	Yes

Component	Requirement	Proposed	Compliance
Building Setbacks	Front Setback: 6 metres (for developments 1-2 storeys)	Designs of ILU's on Bradford Street and Cone Place are setback upto 5 metres.	Complies with Residential Design Codes requirements. Does not comply with Council Policy 4.5 – minor variation sought. The proposed single storey ILU's have minimal building bulk to the street. Yes
	Side & Rear Setbacks: Where adjacent to residential properties all side and rear setbacks of all development shall be calculated in accordance with the Residential Design Codes of W.A.	2 storey apartments abutting drainage lot are setback 6 metres. 3 storey apartments on the corner of Bradford Street and Alexander Drive are setback greater than 6 metres from Bradford Street. Setback along Alexander Drive is greater than 6 metres.	Yes Yes Yes
		Setback to RSL site is 6-15 metres.	Yes
Car Parking	To be in accordance with City's Parking Policy and Residential Design Codes. Required: 211 bays (plus bays for Clubhouse)	Number of car bays complies (235 bays provided on-site)	Yes
	Council Policy 4.5 refers to the long-term storage of recreational vehicles such as caravans and campervans to be considered/addressed.	It is not proposed to have areas for the storage of recreational vehicles on site. Administrative support will be provided to residents to access commercial providers of this service.	Yes
	Service and delivery vehicle loading/parking areas to be located away from dwellings and out of street view.	Deliveries will occur only outside Clubhouse.	Yes

Component	Requirement	Proposed	Compliance
Traffic	Full Transport Assessment required. Emergency vehicle and service access required (ambulance and fire engines, and service vehicles delivery and pick up).	Provided Provided off Bradford Street and Alexander Drive.	Yes Yes
Built Form	Orientation Development fronting street (entrances, windows, balconies facing street) to soften the institutional feel of developments, and achieve greater consistency with surrounding developments.	Building envelopes oriented to face streets, with passive surveillance opportunities to occur from windows, balconies and front yards.	Yes
	Streetscape Relationship Not to cause a detrimental impact on the amenity of the surrounding lots – traffic, parking impacts, noise, vibration, odour.	The required car parking is contained on-site to minimise traffic and parking impacts on surrounding area. All ILU's will have vehicles access garages located at the rear (reducing noise and building bulk of garages).	Yes
	Site levels shall generally match adjoining sites. (500mm of fill not permitted unless acceptable justification provided).	Earthworks levels match those of adjoining road reserves to provide a positive interface.	Yes
Fencing	To be in accordance with the City's Streetscapes local planning policy.	Visually permeable fencing to be provided along Bradford Street and Cone Place frontages	Yes

COMPLIANCE WITH THE PRIVATE INSTITUTION DESIGN GUIDELINES (CITY OF STIRLING POLICY 4.5)

The following section responds specifically to the Private Institution Design Guidelines five objectives:

Objective 1 : To ensure that development does not adversely affect the amenity of surrounding properties.

Response: The proposed land use and density of development is not considered to be inappropriate in light of the surrounding residential and retirement living land uses. The DAP has regard to the built form of the surrounding land uses, specifically along Bradford Street and Cone Place, where the development proposes single storey development. It is acknowledged that the existing dwellings fronting Bradford Street (to the south the of the subject site) are within the Menora Heritage Protection Area. Special attention will be applied to the architectural design aesthetic of the single storey ILU's fronting Bradford Street. The placement of garages to the rear of each ILU significantly benefits the streetscape bulk and operation of these units.

Objective 2: To encourage development that is sympathetic to the scale and bulk of surrounding properties.

Response: The DAP successfully locates the taller apartment building components away from the existing residential dwellings along Bradford Street and Cone Place. This stepping back of building bulk to the northern and eastern boundaries is a logical design solution. The layout is sympathetic to the existing residential areas, minimising potential impacts on these existing properties.

Objective 3: To ensure that the efficiency of the local transport network is not encumbered by development.

Response: The Traffic Management Study prepared in support of the DAP addresses issues such as traffic generation, impact on surrounding road networks and junctions, site access and parking supply. The inclusion of a left-in only slip lane (deceleration lane) off Alexander Drive is considered an appropriate solution to distribute some of the site's traffic movement. This arrangement will reduce the number of vehicles using Bradford Street, thereby reducing potential traffic noise and movement impacts on the surrounding residences on the street, whilst also resulting in a more pedestrian friendly village for the residents by reducing through traffic.

Objective 4: To support the provision of viable and high quality retirement and aged care developments.

Response: The original ILU's located within the subject site were built during the 1960's. The ILU's reached the end of their economic useful life and were no longer meeting the expectations of older Australians. These were subsequently demolished in 2010 in preparation for the redevelopment of the site. This DAP facilitates the redevelopment of this important retirement living site in order to supply an innovative model of housing, care and support for older people with a strong focus on integration with the local community. It will provide a choice for older people to remain in their own home within a supportive community until their last days.

Objective 5: To ensure that development is well integrated with the surrounding community.
+Response: The DAP has been designed to ensure the Elimatta Village is integrated into the existing urban fabric. Visually permeable fencing is to be provided to the single storey ILU's to provide a visual connection to the street. The proposed internal road network and pedestrian links logically connect to the surrounding roads and footpaths to provide a legible and permeable site. One of the proposed pedestrian links includes connectivity to the adjoining RSL site.

4.4 CAR PARKING & MOVEMENT NETWORK

A detailed Traffic Assessment has been undertaken by Shawmac Engineers (provided as a separate document) in support of the Elimatta Village DAP proposal. The report concludes that the additional traffic generated by the proposed redevelopment would have little impact on the existing road hierarchy and amenity of the abutting residential neighbourhood.

It is important to note that the number of access points to the site will not increase. There is an existing access and egress point off Alexander Drive that services the site, consisting of two crossovers. These two crossovers will be removed once the site is completely developed, and a new access point (left in/left out) provided further northeast on Alexander Drive, being serviced by a slip lane.

The following section of the report provides a background to the principles of the DAPs movement network, including a summary of the traffic assessment and the proposed on-site car parking provisions.

REFER TO FIGURE 11- PARKING LOCATIONS

VEHICLE ACCESS

Vehicle access to the site will be restricted to two access points:

- *Access Point 1 - Bradford Street.*

The principle entrance will be provided between Alexander Drive and Cone Place. This is a marked improvement on the existing crossover location which is in close proximity to the Alexander Drive intersection which has minimal separation distance. The majority of residents and visitors to the site will be directed into the new access point in order to minimise traffic volumes utilising the secondary access point on Cone Place.

- *Access Point 2 - Alexander Drive*

The other key access point, specifically servicing the apartments, will be located off Alexander Drive. This crossover will be solely for Elimatta residents. This will service residents in the apartment building No.3, thereby reducing traffic movements through the site. This will result in a more pedestrian friendly and liveable environment for residents to walk through the site.

- *Access Point 3 - Cone Place*

The secondary access point is to be provided off Cone Place, where full access currently exists for the site. This road will principally be a secondary access point to service the apartment buildings located along the north-eastern edge of the site.

INTERNAL ROAD NETWORK

The design layout provides a permeable movement network for vehicles, pedestrians and cyclists through the site. The road layout provides the most efficient land pattern, whilst maximising the ability to move easily through the site connecting all buildings and amenities together.

TRAFFIC MOVEMENT

The traffic assessment report calculates that peak hour traffic flows resulting from the proposed redevelopment will have negligible impact on the existing network. The increase in vehicle movement through Cone Place is small, with the current safe access and amenity being maintained.

PEDESTRIAN AND CYCLIST ACCESS

The proposal provides a high level of permeability via a series of interconnected pedestrian paths that link parking areas, building entries and site amenities through landscaped open space areas. The majority of these paths will be lined alongside the internal roads and link directly into the existing pedestrian network running along the north-eastern side of Bradford Street and Alexander Drive. Two pedestrian links will also be provided to connect the RSL site to the Elimatta Village.

CAR PARKING

The parking supply and demand analysis for the Elimatta Village DAP is outlined within the car parking assessment table. The report demonstrates that there are a sufficient number of car bays provided on site for residents and visitors.

Car parking will be provided in two ways: (1) underground parking and (2) at grade parking. The location of the car parking types is illustrated in Figure 11 - Parking Locations. Rear garages are to be provided to the ILU's. This will result in a better streetscape design outcome. Similarly, the integrated basement car parking will result in fewer cars being parked in the landscaped grounds of Elimatta Village, resulting in a more pedestrian friendly environment. The Elimatta Village is anticipated to provide a total of 235 car bays (174 bays for residents, 38 residential visitors + 23 spare bays for the Club House facilities).

FIGURE 11- PARKING LOCATIONS

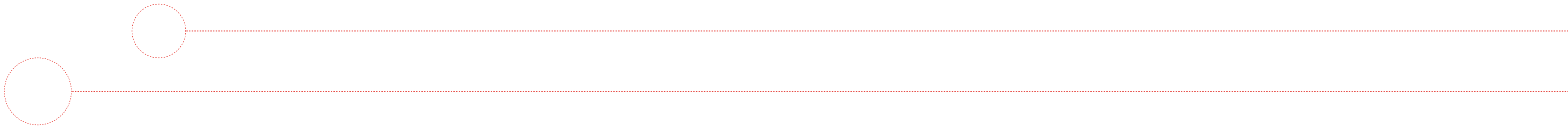


Car Parking Calculations Table:

Building Type	Number of Dwellings	Standard	No. of Bays required	Proposed No. of Bays
Clubhouse	N/A	No standard available for private Club House use	It is asserted that the Club House will primarily serve the needs of the on-site residents, + no. of staff and anticipated external visitors	23
Villas (Grouped Dwelling)	17	2 bays per dwelling	34	34
		Visitor Bays (1 space per 4 dwellings)	4.25	5
Apartments (Multiple Dwellings) ← 110m² floor area	85	1 bay per dwelling	85	85
		Visitor Bays 0.25 per dwelling	21.25	22
Apartments (Multiple Dwellings) → 110m² floor area	44	1.25 bay per dwelling	55	55
		Visitor Bays 0.25 per dwelling	11	11
Total			210.5 (211)	235*

* (does not include 5 existing verge bays located on Cone Place)

The proposed number of parking bays therefore meets the parking standards of the Residential Design Codes and the Local Planning Policy (2.4 – Access and Parking). It is important to also acknowledge that the dwelling configurations of the DAP are indicative only at this point. The Uniting Church will be providing for a range of apartment sizes to meet individual needs as the market evolves. It is also important to acknowledge the good level of access to the existing bus networks which are in close proximity to the site, promoting more sustainable movement outcomes, reducing car dependence.



This page has been left blank intentionally.

5. IMPLEMENTATION - STAGING

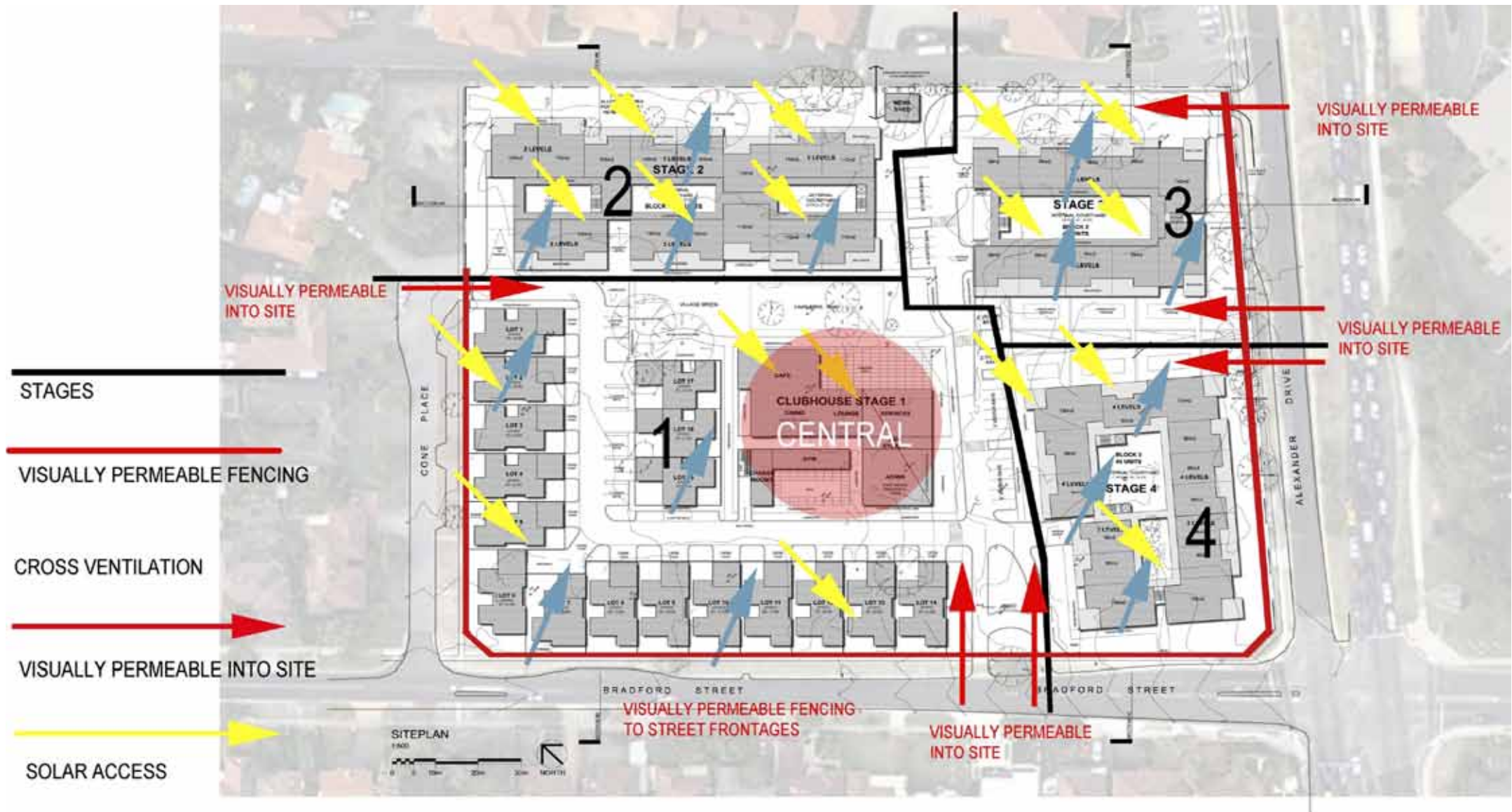
The 146 units of the Elimatta redevelopment will be undertaken in four stages over an eight or nine year period:

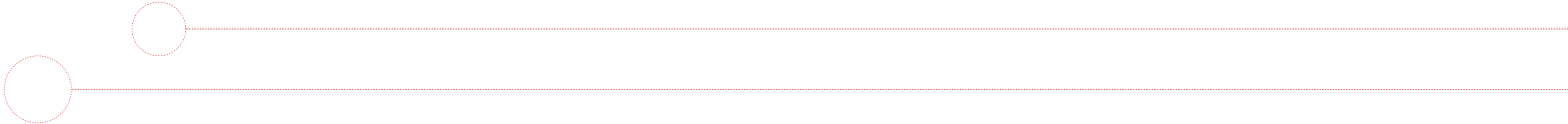
Stage No.	Proposed Development
Stage 1	17 villas and club house
Stage 2	40 apartments on Cone Place adjacent to the RSL site
Stage 3	40 apartments on Alexander Drive adjacent to the RSL site
Stage 4	49 apartments on the corner of Alexander Drive and and Bradford Street

The existing 42-bed hostel will remain in operation for about four to five years before the land will be required for ageing-in-place apartments. By this time the hostel facility will be obsolete.

REFER TO FIGURE 12: INDICATIVE STAGING PLAN

FIGURE 12: INDICATIVE STAGING PLAN





This page has been left blank intentionally.

6. CONCLUSION

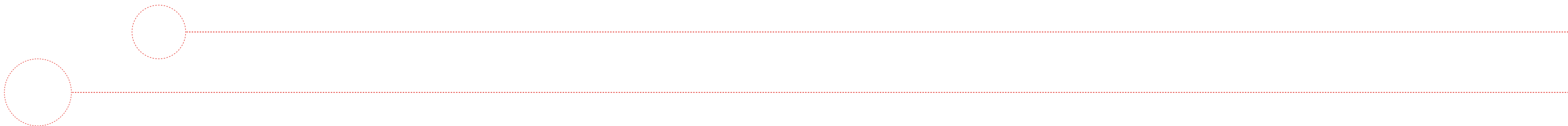
This documentation has been prepared by TPG Town Planning and Urban Design (TPG), in conjunction with McDonald Jones Architects and Shawmac traffic engineers, on behalf of the Uniting Church Homes in support of the proposed redevelopment of the Elimatta Village site located on the corner of Alexander Drive and Bradford Street, Menora.

The Elimatta Village DAP proposal seeks approval for the following elements:

- Independent Living Units (Dwelling Types: Apartments and Villas). The design is expected to include a mixture of 2 and 3 bedroom apartments and villas providing variety in housing choices and appealing to individual needs. There is a general acceptance now of multi-storey residential living for aged persons.
- Community Facilities: Centrally located clubhouse consisting of ancillary café, dining, lounge, administration, associated administration area and consultants professional rooms. Lawn bowls, swimming pool, gym, and mens shed.

This report demonstrates that the proposed redevelopment of the Elimatta Village is an appropriate and acceptable development that meets the local ageing community needs, and will have no significant adverse impacts on the amenity of the local area. The proposal will provide an attractive and modern aged persons community that will meet current and future accommodation needs.

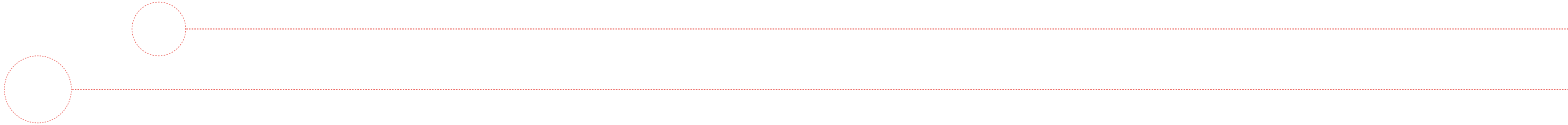
Given the assessment against the City of Stirling's Local Planning Scheme, in particular against the objectives and the standards of the Private Institution Design Guidelines (City of Stirling Policy 4.5), it is considered the proposal meets the standards suitable for a high quality and viable aged persons living development. We therefore request that the City of Stirling support the Elimatta Village DAP and initiate the public advertising process in accordance with Clause 6A.16.3 of the Scheme.



This page has been left blank intentionally.

APPENDIX 1

CERTIFICATE OF TITLE



This page has been left blank intentionally.

Superseded - Copy for Sketch Only



S. 2870

WESTERN

AUSTRALIA



INDEXED

Land No.

Permit No.

Lease No.

Name

REGISTER BOOK

Vol. 1259 Fol. 799

CROWN GRANT IN TRUST



2690/64

Elizabeth the Second, by the Grace of God, of the United Kingdom, Australia, and Her other Realms and Territories, Queen, Head of the Commonwealth, Defender of the Faith. To all to whom these Presents shall come, GREETING: Know ye that We, of Our special Grace, certain knowledge, and mere motion, have given and granted, and We do by these Presents, for Us, Our heirs and successors, in consideration of and to the intent that the Land and Hereditaments hereinafter described be used and held solely for the purpose of an "Aged People's Home Site" Give and grant unto

The United Congregational Churches in Western Australia Incorporated, of 563 William Street, Mount Lawley, Perth
the Congregational Union of Western Australia Incorporated of Trinity Congregational Church, Saint George's Terrace, Perth

hereafter called the Grantee, the natural surface and so much of the land as is below the natural surface to a depth of -- 40 -- feet of ALL THAT Piece or Parcel of Land situate and being in the District of Swan in Our said State, containing 5 acres 2 roods 19 perches more or less and marked and delineated in the Maps and Books of the Department of Lands and Surveys of Our said State as Swan Location 7083 and as the same is delineated and coloured green in the plan drawn in the margin hereof: TOGETHER with all Rights, Commodities, Hereditaments, and Appurtenances whatsoever thereunto in anywise appertaining. TO HAVE AND TO HOLD the said Piece or Parcel of Land to the said Grantee, their heirs and successors, one peppercorn of yearly rent on the twenty-fifth day of March in each year, or so soon after the said Grantee, in fee simple, yielding and paying for the same to Us, Our heirs and successors, all Rights of Gold, Silver, Copper, Tin, or other Metals, Ore and Minerals, or other substances containing Metals, and all Rights or Privileges of Mines and Quarries, and all Rights of Pasture and other Rights in and under the said land, with full liberty at all times to search and dig for and carry away the same; and for that purpose to enter upon the said land or any part thereof.

IN WITNESS whereof We have caused Our trusty and well-beloved HIS EXCELLENCY MAJOR-GENERAL SIR DOUGLAS ANTHONY KENDREW, Knight, Commander of the Most Distinguished Order of Saint Michael and Saint George, Companion of the Most Honourable Order of the Bath, Commander of the Most Excellent Order of the British Empire, Companion of the Distinguished Service Order, Governor in and over the State of Western Australia and its Dependencies in the Commonwealth of Australia, to affix to these presents the Public Seal of the said State.

Sealed this Eighteenth day of September, One thousand nine hundred and sixty-four

Grant under the Land Act, 1933

ENTERED ON RECORD this

18th day of September 1964

Swanbourne
 Minister for Lands.

W. B. B. B.
 for Minister for Lands.

Douglas Kendrew
 Governor.

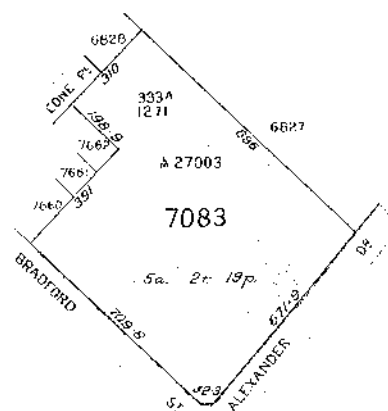
CERTIFICATE OF TITLE UNDER THE TRANSFER OF LAND ACT, 1893

The abovesaid Grantee is now the registered proprietor of an estate in fee simple subject to the easements and encumbrances notified hereunder in all the land described in this grant.

Dated the twenty-fifth day of September, One thousand nine hundred and sixty-four

R. H. Jones
 ASSISTANT REGISTRAR OF TITLES.

The area and measurements on the Plan below are more or less, and a post has been pinned at each corner of the Location:
 PLAN HEREIN REFERRED TO:



APPLICATION B411335 The within land is vested in
 United Church in Australia Property Trust (W.A.)
 of Westminster House, 10 Pier Street, Perth.
 (Act 139 of 1976) 3rd October 1977

Application H449273 The within land is vested in United Church Homes of
 313 Main Street, Balclutha. (Act 139 of 1976). Registered 19th May 2000
 at 12.48 hrs

CT 1259 0799



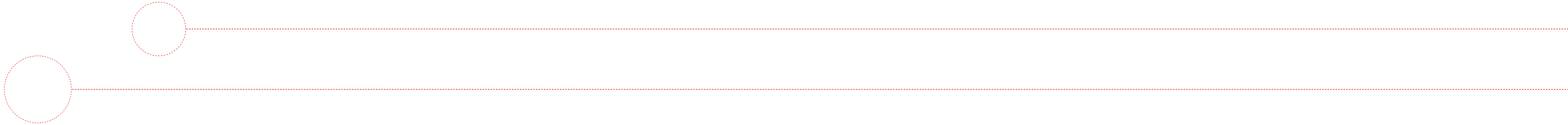
Scale: 3 centims to an inch.
 Conn. 3909/96 Dist. 69834
 Mount Lawley 19/11/64 L.S.

W. B. B. B.
 Surveyor General

For encumbrances and other matters affecting the land see back.

APPENDIX 2

ARCHITECTURAL PLANS



This page has been left blank intentionally.

Before any construction, all works in this fabrication is subject to the owner's final check all drawings and dimensions against the actual site to verify the construction is in accordance with the drawings and to ensure the construction is in accordance with the drawings and to ensure the construction is in accordance with the drawings.



AERIAL PERSPECTIVE IMAGE : TOWARDS NORTH EAST



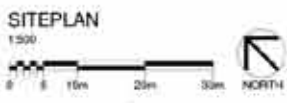
AERIAL PERSPECTIVE IMAGE : TOWARDS NORTH WEST



IMAGE_1 VIEW EAST TOWARDS LANDSCAPED TERRACES



IMAGE_2 VIEW WEST THROUGH VILLAGE GREEN



SECTION AA
1:500

NO.	DATE	AMENDMENT	NO.	DATE	AMENDMENT	NO.	DATE	AMENDMENT

DESIGN AND DOCUMENTATION BY
McDONALD JONES
ARCHITECTS PTY LTD
22 HAMILTON STREET, BUNNIE, SA 5008
TEL: (08) 8096 6235
FAX: (08) 8096 6000
WWW: mcdonaldjones.com.au

JOB: ELIMATTA VILLAGE
ADDRESS: BRADFORD STREET, MENORA
CLIENT: UNITING CHURCH HOMES
DWS: SITE PLAN



SCALE: 1:500	DATE: 2024-06-01	REVISION: 1107	PROJECT: P.01
100% 1:500 DRAWING CHECKED AND APPROVED			



Before any construction, alterations or demolition is commenced the developer must first obtain approval from the Council for the proposed development. The Council may require the developer to provide a detailed site plan and other information as a condition of approval. The Council may also require the developer to provide a detailed site plan and other information as a condition of approval. The Council may also require the developer to provide a detailed site plan and other information as a condition of approval.

NO.	DATE	REVISION

DESIGN AND DOCUMENTATION BY
MCDONALD JONES
ARCHITECTS PTY LTD
33 KIMWORTH STREET, SUDBURY VIC 3486
TEL: (08) 9396 8222
FAX: (08) 9396 8222
EMAIL: info@mcjones.com.au

JOB: ELIMATTA VILLAGE
ADDRESS: BRADFORD STREET, MENORA
CLIENT: UNITING CHURCH HOMES
DRAWING: BASEMENT AND PARKING PLAN

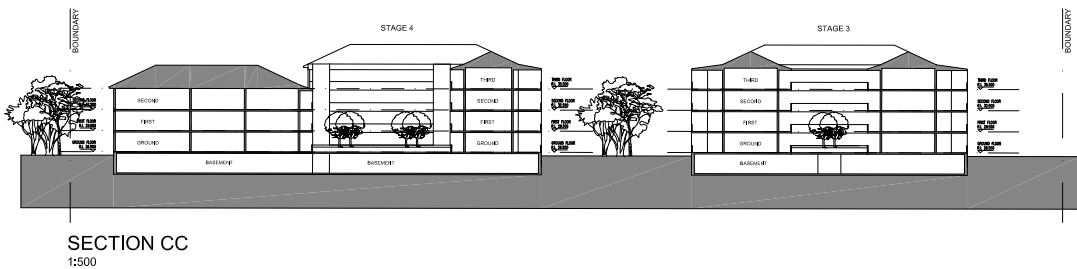
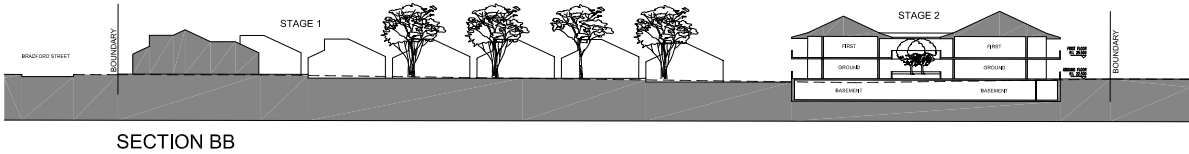
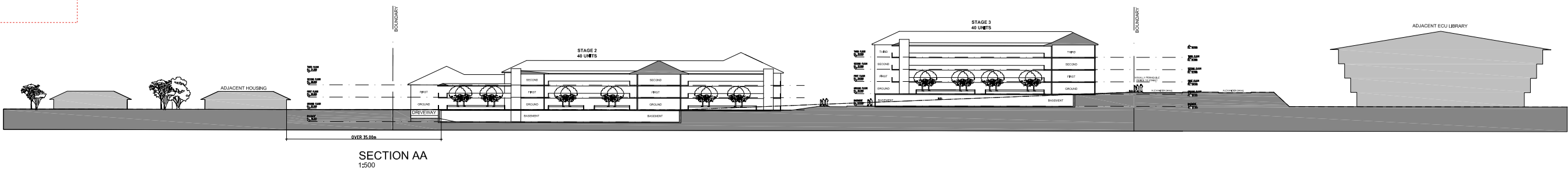


Scale: 1:1	DATE: 20/04/2017	1107	P.02
Scale: 1:500	Scale: 1:100	1107	P.02
Scale: 1:100	Scale: 1:50	1107	P.02
Scale: 1:50	Scale: 1:20	1107	P.02
Scale: 1:20	Scale: 1:10	1107	P.02
Scale: 1:10	Scale: 1:5	1107	P.02
Scale: 1:5	Scale: 1:2	1107	P.02
Scale: 1:2	Scale: 1:1	1107	P.02
Scale: 1:1	Scale: 1:0.5	1107	P.02
Scale: 1:0.5	Scale: 1:0.2	1107	P.02
Scale: 1:0.2	Scale: 1:0.1	1107	P.02

not be the superintendent or any discrepancies or omissions which will prevent or inhibit the satisfactory performance of the work.

Details indicated on this document apply solely to this project. Such details must not be used out of this context or for other building work without prior discussion with and approval from the person responsible for the original design.

Copyright to this drawing is reserved by McDonald Jones Architects Pty Ltd. and must not be retained or reproduced without their written permission.

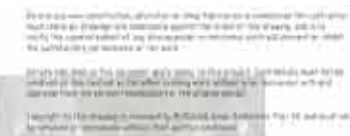


TE:	AMENDMENT:	NO.	DATE:	AMENDMENT:	NO.	DATE:	AMENDMENT:

DESIGN AND DOCUMENTATION BY:
McDONALD JONES
ARCHITECTS PTY LTD

23 HAMILTON STREET, SUBIACO WA 6008
TEL (08) 9388 0333
FAX (08) 9388 0555
EMAIL mj@macjones.net

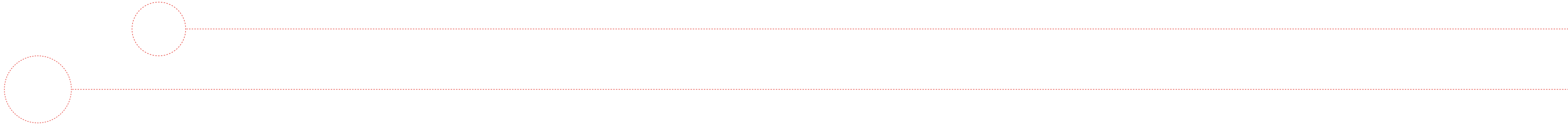
JOB:	ELIMATTA VILLAGE	DRAWN:	JT	DATE CREATED:	2011-03-31	CHECKED:	
ADDRESS:	BRADFORD STREET, MENORA	SCALE:	1:500	JOB No.	1107	DRAWING No.	P.03
CLIENT:	UNITING CHURCH HOMES	ISSUED FOR:					
DWG:	SECTIONS	FILE NAME:					
		THIS IS A CAD DRAWING DO NOT AMEND MANUALLY.					



NO.	DATE	REVISION	NO.	DATE	REVISION	DESIGN AND DOCUMENTATION BY:	JOB	ELIMATTA VILLAGE	SCALE	1:500	DATE	15/09/2018	BY	1107	PROJECT NO.	P.05
						MCDONALD JONES	ADDRESS	BRADFORD STREET, MENDRA								
						ARCHITECTS PTY LTD	CLIENT	UNITING CHURCH HOMES								
						33 HAMILTON STREET, SUDBROOK WA 6004 TEL (08) 9386 0355 P.O. BOX 9386 SUDBROOK WA 6004 WWW.MCDONALDJONES.COM.AU	DWG	ENVIRONMENTAL DESIGN CONSIDERATIONS								

APPENDIX 3

TRAFFIC ASSESSMENT REPORT



This page has been left blank intentionally.



CONSULTING CIVIL & TRAFFIC ENGINEERS, RISK MANAGERS.



Project: Elimatta Village, Menora
Transport Assessment V3

Client: tpg Town Planning and Urban Design

Author: Ryan Needham

Signature:

Reviewed: Gordon Macpherson AIT(Eng), Grad Dip Bus, MIEAust, CPEng, MAITPM, Road Safety Auditor

Date: 16/08/11

1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE +61 8 9355 1300
FACSIMILE +61 8 9355 1922
EMAIL admin@shawmac.com.au



Consulting Civil and Traffic Engineers & Risk Managers.

Document Status.

Ver. No.	Author	Reviewed by	Date	Approved for	Signature	Date
Draft	R. Needham	G. Macpherson	13/7/09	Review		
2	G. Macpherson	R. Needham	15/7/09	Use		15/07/09
3	G. Macpherson	T Shaw	16/08/11	Use		16/08/11

SHAWMAC PTY LTD

ABN 51 828 614 001

PO BOX 937 SOUTH PERTH

WA 6951

T: +61 8 9355 1300 F: +61 8 9355 1922 E: gmacpherson@shawmac.com.au

© Shawmac Pty. Ltd. 2011



CONTENTS.

1. Introduction 4

2. Transport Statement Objective 6

3. Site Location..... 6

4. Existing Village Environment 7

 4.1. Accommodation Facilities..... 7

 4.2. Parking 8

 4.2.1. Existing Parking Usage 8

 4.3. Road Hierarchy 8

 4.4. Existing Vehicular Traffic Flows 9

 4.5. Existing Access Arrangements..... 10

 4.6. Public Transport Facilities 11

 4.7. Crash Data 12

5. Traffic Generation 14

 5.1. Predicted Traffic Flows..... 14

 5.2. Traffic Flow Patterns..... 15

 5.3. Safe Access/ Egress..... 17

 5.4. Intersection Capacity Analysis..... 17

6. Predicted Parking Requirements 18

7. Public Transport Facilities..... 19

8. Pedestrian Facilities..... 19

9. Conclusions 19

10. Appendix A – SIDRA Intersection Analysis Results..... 21



1. Introduction

Shawmac Pty Ltd has been commissioned by TPG Town Planning Group and Urban Design (TPG) to undertake a traffic study in 2009 to determine and consider the traffic impacts associated with the proposed future redevelopment of the Elimatta Village Facility in Menora, Western Australia as part of a Master Plan for the site. Subsequent to that, the proposal was amended and a new Detailed Area Plan (DAP) prepared.

Elimatta Village is operated by Uniting Church Homes and was originally operational with 42 hostel care places, including 15 dementia specific places and 1 respite site, with 78 self contained units which were used either as independent living units or service units. The ILU’s reached the end of their economic useful life and were no longer meeting the expectations of older Australians. They were demolished in 2010 in preparation for redevelopment of the site after sitting predominantly vacant for a number of years. The Elimatta hostel is still operating and has an economic useful life of about eight years.

The 2009 proposed redevelopment sought to substantially upgrade existing infrastructure and provide facilities that would better meet the needs and expectations of clients. That proposal consisted of independent living units (174 Apartments, 14 Villas and 7 Row Houses) as well as community facilities including a club house, lawn bowls green and a swimming pool.

The Elimatta Village 2011 DAP seeks approval for the following elements:

- Aged persons accommodation – 17 Villas (single storey);
- Aged persons accommodation – 129 Apartments (2 to 4 storeys);
- Associated car parking (basement and ground level);
- Generous areas of integrated landscaping including a village green; and
- Facilities: including a clubhouse (consisting of pool, gym, ancillary communal café, dining, and lounge), lawn bowl rink, and men’s’ shed.

Figures 1 and 3 show the 2009 and 2011 proposals.



Consulting Civil and Traffic Engineers & Risk Managers.



Figure 1. Proposed Site Layout - 2009



Figure 2. Proposed Site Layout - 2011



Consulting Civil and Traffic Engineers & Risk Managers.

2. Transport Statement Objective

This Transport Statement outlines the likely impact of the proposed redevelopment on network traffic flows, parking facilities, safe access, pedestrian and cycle facilities and local amenity. As part of the assessment, Shawmac considered the likely traffic and parking demand that would be generated through the proposed development comparing such to current development facility.

The transport assessment considers aspects associated with:

- Generation of traffic including impacts on local schools, hospitals and residential areas.
- Use of public and other transport modes such as pathways etc.
- Safety and access issues

3. Site Location

The development site is located within the City of Stirling on the corner of Alexander Drive and Bradford Street in Menora. The site is bounded by Cone Place to the west and RSL care facilities to the north.

The site is located in a mixed land use environment with Edith Cowan University located to the east, Mount Lawley Golf Club and other aged care facilities to the north, and residential properties to the south and west. Figure 3 details the site location.



Consulting Civil and Traffic Engineers & Risk Managers.



Figure 3. Site Location

The site is currently occupied by the existing Elimatta Aged People’s Home. Access to the site is currently via crossovers on Bradford Street and Cone Place and from Alexander Drive. The originally proposed redevelopment sought to remove access from Alexander Drive and move the crossover on Bradford Street further west from the intersection of Alexander Drive and Bradford Street, while maintaining access from Cone Place. Current planning is to provide a “left in – left out” access to and from Alexander Drive.

4. Existing Village Environment

4.1. Accommodation Facilities

Table 1 details the existing and proposed accommodation facilities for the site.

Type	Accommodation	Existing Facilities	Accommodation	Proposed Facilities 2009	Accommodation	Proposed Facilities 2011
Care Facilities	Hostel Care	26 Beds	None			
	Respite Care	1 Bed				
	Dementia	15 Beds				
	Total	42 Beds				
Living Facilities	Independent Living Self Contained Units	78 Units	Independent Living Accommodation	195 Dwellings	Independent Living Accommodation	146 Dwellings



Consulting Civil and Traffic Engineers & Risk Managers.

Type	Accommodation	Existing Facilities	Accommodation	Proposed Facilities 2009	Accommodation	Proposed Facilities 2011
			Club House	1	Club House	1
			Lawn Bowls Green	1	Lawn Bowls Green	1

Table 1 Accommodation Facilities

The above represents the long term change to accommodation facilities associated with the Master Plan proposals and this has been utilised as the basis for traffic predictions.

4.2. Parking

The existing site provides approximately 20 parking bays excluding parking along the access streets and in driveways. Approximately 10 bays are provided for staff parking. Street parking is permitted along Cone Place, with 4 bays of 2 hr duration and 2 bays of 1 hr duration provided on the eastern side of Cone Place. “No Standing Any Time” restrictions apply on the western side of Cone Place as well as along Bradford Street and Alexander Drive adjacent to the development site.

4.2.1. Existing Parking Usage

Much of the resident accommodation on the site has now been demolished and an inspection of the site confirmed that staff and visitor parking near the hospital was generally full throughout the day (approx 10 bays used). The street parking on Cone Street is also generally empty throughout the day.

4.3. Road Hierarchy

The road network supports land use through a hierarchical approach to meet the competing demands of traffic and amenity. Distributor type roads such as Alexander Road have a primary function of shifting large volumes of traffic between neighbourhoods and regions. Distributor type roads forego street amenity for effective traffic flow. In modern street networks residential access is almost certainly excluded from these classes of roads.

Access roads such as residential streets have a primary function of providing property access and maintaining street amenity. While there is some tolerance for traffic volumes above desirable limits in access type roads this is only acceptable if a low speed environment can be maintained.

Applying the Western Australian Planning Commission’s (WAPC) document, “Liveable Neighbourhoods Layout, Design and Traffic Management Guidelines” Alexander Drive falls



Consulting Civil and Traffic Engineers & Risk Managers.

within the classification of an Integrator Arterial (type A) road. Alexander Road provides regional link between the Perth CBD and residential areas along its length to the north east.


Bradford Street falls within the classification of a Neighbourhood Connector (type B) road. Bradford Street provides local access to residential properties and connects residents to the distributor network.

Cone Place is an Access street (type C) road servicing a small area of approximately 14 residences as well as providing access to the existing Elimatta Aged People’s Home.

Table 2 details the desirable maximum traffic volumes for each of the road classifications as prescribed by the Liveable Neighbourhoods Street Layout, Design and Traffic Management Guidelines (2009).

Road Name	Road Classification	Desirable Max Traffic Volume (Vehicles per day)
Alexander Drive	Integrator A	15,000-35,000
Bradford Street	Neighbourhood Connector A	3,000
Cone Place	Access Street C	1,000

Table 2 Maximum Desirable Traffic Volumes – Road Hierarchy






Photo 1 – Cone Place: Local access road with residential amenity. 1.2m wide footpath provided adjacent to Elimatta site (left hand side). Restricted duration parking bays provided on side adjacent to Elimatta site, No Standing restrictions apply on opposite side.

Photo 2 – Bradford Street looking towards Alexander Dr: Bus bay provided adjacent to Elimatta Site, 1.5m footpath provided on LH side, 1.2m footpath provided on RH side. ‘No Standing’ restrictions apply on both sides.

4.4. Existing Vehicular Traffic Flows

The following table outlines the existing traffic flows on the streets abutting the Elimatta site. The table places the flows in the context of the maximum desirable flows detailed in Table 2 above. Traffic data for Alexander Drive was sourced from MRWA and collected in May 2008. Bradford Street traffic volumes were sourced from the City of Stirling and based on 1999 data with a 1.5% annual growth factor assumed to give 2011 values. This growth factor is considered



Consulting Civil and Traffic Engineers & Risk Managers.

to be realistic given the relatively stable development in this area over that period. Cone Place traffic volumes are based on RTA Trip Generation Guideline rates of 9 trips per residence for the 14 residences fronting Cone Place plus 1.3 trips per dwelling for the 34 aged housing dwellings within the existing Elimatta site with access from Cone Place.

Road Name	Road Classification	Desirable Max Traffic Volume (Vehicles per day)	Current Average Daily Traffic	Comment
Alexander Drive	Integrator A	15,000-35,000	35,583	Exceeding prescribed limits
Bradford Street	Neighbourhood Connector A	3,000	4,000	Exceeding prescribed limits
Cone Place	Access Street C	1,000	170	Within prescribed limits

Table 3 Existing daily traffic flows

It can be seen from the above that traffic flows for both Alexander Drive and Bradford Street are at the limit of desirable traffic flows. Given that the Bradford Street flows are measured at the interface of the arterial network the higher than desirable flows are acceptable even though residents abutting this portion of the street will have a slightly reduced residential amenity due to the higher traffic flows.

4.5. Existing Access Arrangements

Site access to the existing site occurs predominately from the Bradford Street crossover as this gives access to the administration and care facilities, while the Cone Place entrance is predominately used for access to 34 independent living self contained units. Access off Alexander Drive is predominately used by visitors to the site.

It is estimated that the Village under full operation in the original form would likely generate approximately 371 vehicle movements per day. This is calculated using trip generation rates sourced from the RTA’s Guide to Traffic Generating Developments and The Institute of Transportation Engineers Trip Generation Manual (USA).



Land use	Generation rate			Unit	Quantum	Estimated flow			Source
	ADT	AM Peak	PM Peak			ADT	AM Peak	PM Peak	
Residential Housing - Aged	3.48	0.08	0.11	Dwellin g	78	271	6	9	ITE Guide
Nursing Home	2.37	0.17	0.22	Beds	42	100	7	9	ITE Guide
Total						371	13	18	

Table 4 Existing Trip Generation

4.6. Public Transport Facilities

Transperth buses currently service the area via both Alexander Drive and Bradford Street with stops located adjacent to the site on Bradford Street and within 50 m distance from the site on Alexander Drive. These stop locations are serviced by bus routes 374, 19, 777, 886, 887 and 889. The site is comprehensively serviced by the bus network providing links between the CBD and regional and local hubs in Morley, Yokine, Alexander Heights and Ballajura. Most busses arrive at 15 minute intervals during weekday peak hours, 30 minute intervals outside morning peak hours, and hourly intervals on weekends. Table 5 shows the number of weekday and weekend bus services to and from Perth.

The use of public transport has the potential to reduce the number of private vehicle trips, resulting in less traffic on the road network and less demand for onsite parking facilities. Figure 4 shows the bus routes and bus stop locations in close proximity to the proposed development site.



Figure 4. Bus Services and Stop Locations

Route No.	Direction	Number of Services		
		Weekday	Saturday	Sunday and Public Hols
886	From Perth	16	None	None
	To Perth	17		
887	From Perth	21	17	7
	To Perth	22	18	8
889	From Perth	24	16	7
	To Perth	21	17	7
19	From Perth	38	27	10
	To Perth	39	28	11
20	From Perth	9	8	None
	To Perth	10	9	

Table 5 Summary of Bus Services

4.7. Crash Data

Table 6 shows the crash history for the 5 year period ending December 2008 for Alexander Drive, 100 m north of the Bradford Street intersection and Bradford Street, between Cone Place and Alexander Street.



Consulting Civil and Traffic Engineers & Risk Managers.



Figure 4. Bus Services and Stop Locations

Route No.	Direction	Number of Services		
		Weekday	Saturday	Sunday and Public Hols
886	From Perth	16	None	None
	To Perth	17		
887	From Perth	21	17	7
	To Perth	22	18	8
889	From Perth	24	16	7
	To Perth	21	17	7
19	From Perth	38	27	10
	To Perth	39	28	11
20	From Perth	9	8	None
	To Perth	10	9	

Table 5 Summary of Bus Services

4.7. Crash Data

Table 6 shows the crash history for the 5 year period ending December 2008 for Alexander Drive, 100 m north of the Bradford Street intersection and Bradford Street, between Cone Place and Alexander Street.



Consulting Civil and Traffic Engineers & Risk Managers.

The types and number of these crashes are considered not to be atypical of a high volume signalized intersection such as Alexander Drive and Bradford Street. Access to the proposed development site will only be provided from Bradford Street and Cone Place, and it is considered unlikely that the development will have an adverse effect on the existing crash patterns. Furthermore the removal of the existing site access from Alexander Drive may have a positive effect on crash patterns by removing the potential for conflicts between vehicles entering/existing the site and those travelling along Alexander Drive.

	Type	Number Bradford Street	Number Alexander Drive
Damage	Hospital	-	2 (4.3%)
	Medical	-	7 (15.2%)
	Major Property Damage	3	28 (60.9%)
	Minor Property Damage	1	9 (19.6%)
	Total	4	46
Crash	Rear End	2	34 (73.9%)
	Right Through	-	7 (15.2%)
	Right Angle	1	2 (4.3%)
	Sideswipe Same Dir.	-	1 (2.2%)
	Unknown	1	2 (4.3%)
	Total	4	46

Table 6 – Crash Data



The types and number of these crashes are considered not to be atypical of a high volume signalized intersection such as Alexander Drive and Bradford Street. Access to the proposed development site will only be provided from Bradford Street and Cone Place, and it is considered unlikely that the development will have an adverse effect on the existing crash patterns. Furthermore the removal of the existing site access from Alexander Drive may have a positive effect on crash patterns by removing the potential for conflicts between vehicles entering/existing the site and those travelling along Alexander Drive.

	Type	Number Bradford Street	Number Alexander Drive
Damage	Hospital	-	2 (4.3%)
	Medical	-	7 (15.2%)
	Major Property Damage	3	28 (60.9%)
	Minor Property Damage	1	9 (19.6%)
	Total	4	46
Crash	Rear End	2	34 (73.9%)
	Right Through	-	7 (15.2%)
	Right Angle	1	2 (4.3%)
	Sideswipe Same Dir.	-	1 (2.2%)
	Unknown	1	2 (4.3%)
	Total	4	46

Table 6 – Crash Data



5. Traffic Generation

5.1. Predicted Traffic Flows

In order to estimate the existing and additional traffic likely to be generated by the current and proposed development, the following source documents were utilised:

- Roads & Traffic Authority (RTA) Guide to Traffic Generating Developments (2002).
- US Department of Transport, Institute of Transport Engineers Trip Generation Handbook (2003)

The RTA's guide to traffic generating developments indicates that for housing for aged and disabled persons a generation rate of 1-2 per dwelling is appropriate. The guideline notes that in respect to the use of this formula, research indicated that subsidised developments i.e. developments run by religious organisations typically had lower trip generation rates than resident funded developments. The use of the ITE rate of 3.48 trips per dwelling is therefore considered to be conservative and traffic estimates are likely to be at the upper end of the expected range.

The proposed development also provides for a bowling green, club house and pool. These facilities have been provided for use of the residents and their visitors only, and as the trips generated by these persons have been accounted for in the rates per dwelling, no additional trips would be generated by these facilities.

Traffic data shows that the PM peak period is the likely highest period of traffic generation for these types of facilities. The table 7 outlines the predicted traffic generation at the site.

Land use	Generation rate			Unit	Quantum	Estimated flow			Source
	ADT	AM Peak	PM Peak			ADT	AM Peak	PM Peak	
Residential Housing - Aged - Attached (Apartment)	3.48	0.08	0.11	Dwellin g	146	508	12	16	ITE Guide
Total						508	12	16	

Table 7 – Proposed vehicle trip generation

The above predicts an additional 137 vehicles per day over and above the theoretical traffic generated by the original hostel and units. This additional traffic will have no measurable impact on current levels of service or street amenity.



5.2. Traffic Flow Patterns

The proposed development encourages drivers to access the site from the proposed main entrance off Bradford Street with additional access onto Bradford Street and Cone Place as detailed in Figure 5 below.



Figure 5. Predicted Trip Generation



Based on the assumed distribution of trips and allowing for peak flows to be approximately 10% of daily flows, peak hour trips are distributed as shown on Figure 6.

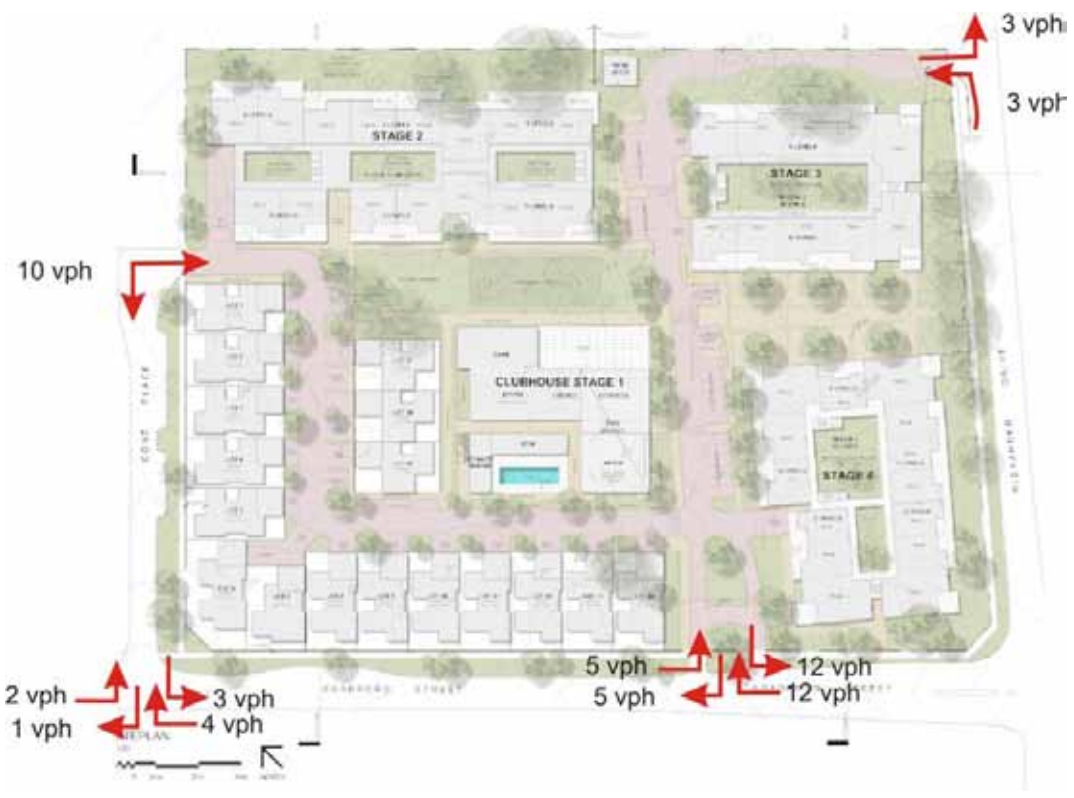


Figure 6. Peak Hour Trips

Street	Village generated Flows (Vpd)		Nett Change vpd	Change per peak hour
	Pre- existing	After development		
Alexander Drive	44	50	+6 vpd	+1 vph
Bradford Street	256	458	+202 vpd	+20 vph
Cone Place	71	100	+29 vpd	+3 vph
Total	371	508		

Table 8 – Village Generated Flows

It can be seen from the above that changes to peak hour flows are negligible and will have no measurable impact on levels of service or network capacity. While increased daily flows in Bradford Street and Alexander Drive add to flows already at the theoretical limit, the increases are small and will result in no measurable change to the current amenity and traffic environment. The increase in vehicle flows through Cone Place is small and current safe access and street



amenity will be maintained. Discounting pre-existing flows and assigning total flows from the proposed development onto the adjacent road network gives the total daily flows shown on Table 9.

Road Name	Road Classification	Desirable Max Traffic Volume (Vehicles per day)	Current Average Daily Traffic	Predicted Average Daily Traffic	Comment
Alexander Drive	District Distributor A	35,000	35,583	35,625	Exceeding prescribed limits
Bradford Street	Local Distributor	3,000	4,000	4,200	Exceeding prescribed limits
Cone Place	Access Street	1,000	170	270	Within prescribed limits

Table 9 – Predicted daily traffic flows

5.3. Safe Access/ Egress

The development proposes to move the crossover in Bradford Street further away from the intersection with Alexander Drive which should assist in reducing potential vehicle conflicts away from the intersection, creating a safer environment for those motorists entering and exiting the site. The existing access point from Cone Place will remain and continue to provide safe access.

It is expected that movements to and from the site will generally occur outside peak traffic periods. Flows in close proximity to the traffic signals are significantly impacted by the signal operations and it is expected that there will be sufficient gaps in network traffic for development traffic to safely enter the traffic stream.

5.4. Intersection Capacity Analysis

In order to assess the impacts associated with the changed traffic movements through the Cone Place - Bradford Street intersection, as well as the proposed crossover with Bradford Street, the predicted traffic flows were modelled using the SIDRA software package. The details of the SIDRA output are shown in Appendix A of this report.

The figures confirm that the additional flows have little impact on the existing performance of the network with both the Cone Place intersection and crossover operating at the highest level of service i.e. LoS A in the peak period.

Level of Service (LoS) is a qualitative measure describing the operational condition within the traffic stream, and their perception by motorists or passengers. A level of service definition



generally describes these conditions in terms of factors such as travel speed and travel time. In respect to intersections LoS defines reasonable ranges of control delay. There are six levels of service from Los A, the most unimpeded flow to Los F where the road capacity and intersection have reached or exceed capacity causing unacceptable delays for motorists. Levels of Service A and B represent free-flowing stable conditions where drivers have reasonable freedom to choose their speed and position in the traffic stream. A Level of Service D is generally considered acceptable for intersections during peak period flows.

6. Predicted Parking Requirements

The City of Stirling town planning scheme does not have any specific parking rates for Retiree Residential Development but requires that the requirements of the WAPC Residential Design Codes (R-Codes) are met. The following table details the R-Code requirements for the Elimatta Village development based on standard group and multiple dwelling occupation.

Building Type	Number of Dwellings	Standard	No. of Bays Required	Proposed No. of Bays
Clubhouse	N/A	No standard available for private Club House use.	The Club House will primarily serve the needs of the on-site residents, plus staff and anticipated external visitors.	23
Villas (Grouped Dwellings)	17	2 bays per dwelling	34	34
		Visitor Bays (1 space per 4 dwellings)	4.25	5
Apartments (Multiple Dwellings) <110m ² floor area	85	1 bay per dwelling	85	85
		Visitor Bays 0.25 per dwelling	21.25	22
Apartments (Multiple Dwellings) >110m ² floor area	44	1.25 bay per dwelling	55	55
		Visitor Bays 0.25 per dwelling	11	11
Total			210.5 (211)	235

Table 6 Parking Requirements

The proposed development provides for a total of 235 parking bays consisting of 38 visitor bays, 197 underground residential, plus an additional 5 existing verge bays located on Cone Place.

The proposed parking arrangements for Elimatta Village are reasonable and reflect the likely



Consulting Civil and Traffic Engineers & Risk Managers.

demands of the residents.

7. Public Transport Facilities

The site is well serviced by public transport and the proposed development will not adversely impact on the availability of such. The development will retain all existing bus stop facilities.

8. Pedestrian Facilities

The existing site has a good surrounding path network consisting of footpaths along both sides of Alexander Drive and Bradford Street, as well as the development side of Cone Place. The proposed development continues to provide good pedestrian connectivity within and around the site. The site will not adversely impact on any of the existing pathway facilities within the road reserves surrounding the site.

9. Conclusions

The Transport Assessment has been undertaken in accordance with the Department for Infrastructure Guidelines (Aug 2006). The assessment identifies that while the future development has the potential to generate an additional 137vpd over the theoretical generation potential of the pre-existing site, the additional traffic has little impact on either the mid-block road network performance as determined through the road hierarchy capacity, the performance of key intersections as detailed in the SIDRA analysis or the amenity of the abutting residential neighbourhood.

It can be reasonably expected that peak traffic flows for the retirement community will not coincide with the network peak traffic. As such, additional flows generated by the development can be more easily absorbed throughout the non-peak period.

The future development looks to ensure that access to the site is substantially provided from the main entrance on Bradford Street, thereby limiting the increase in traffic flows through Cone Place. The assessment indicated that Cone Place would experience an increase in traffic of approximately 100 vehicles per day resulting in an overall traffic flow of 270 vpd. This is well within the desirable capacity of 1,000 vpd for this class of road.

Intersection capacity modelling of Cone Place/Bradford Street as well as the crossover of the development site and Bradford Street indicates that these intersections will continue to operate at a high Level of Service (i.e. LoS A).



Consulting Civil and Traffic Engineers & Risk Managers.

The development will continue to be served by comprehensive public transport throughout the week and provide comprehensive pathway access across the site and throughout the neighbourhood.

The proposed number of parking bays is considered to be adequate and in line with the intent of the Residential Design Codes for aged person's dwellings and in excess of parking rates recommended in the RTA Guidelines which have been developed out of surveyed use of similar types of development throughout Australia.



10. Appendix A – SIDRA Intersection Analysis Results

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed	
		veh/h	%	v/c	sec	veh	m		per veh	km/h	
East: Bradford Street											
5	T	26	5.0	0.017	0.1	LOS A	0.1	0.6	0.10	0.00	57.9
6	R	4	5.0	0.017	8.7	LOS A	0.1	0.6	0.10	1.01	48.7
Approach		31	5.0	0.017	1.3	NA	0.1	0.6	0.10	0.14	56.4
North: Cone Street											
7	L	12	5.0	0.015	8.5	LOS A	0.1	0.4	0.10	0.62	48.5
9	R	4	5.0	0.015	8.8	LOS A	0.1	0.4	0.10	0.69	48.3
Approach		16	5.0	0.015	8.6	LOS A	0.1	0.4	0.10	0.63	48.4
West: Bradford Street											
10	L	5	5.0	0.016	8.3	LOS A	0.0	0.0	0.00	0.98	49.0
11	T	24	5.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		29	5.0	0.016	1.5	NA	0.0	0.0	0.00	0.18	57.7
All Vehicles		76	5.0	0.017	2.9	NA	0.1	0.6	0.06	0.26	55.0

Table A1 – Bradford Street – Cone Street Peak Hour Intersection Performance

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed	
		veh/h	%	v/c	sec	veh	m		per veh	km/h	
East: Bradford Street											
5	T	26	5.0	0.023	0.1	LOS A	0.1	0.8	0.11	0.00	57.7
6	R	13	5.0	0.023	8.7	LOS A	0.1	0.8	0.11	0.90	48.6
Approach		39	5.0	0.023	2.9	NA	0.1	0.8	0.11	0.29	54.4
North: Elimatta Access											
7	L	13	5.0	0.017	8.6	LOS A	0.1	0.5	0.11	0.61	48.5
9	R	5	5.0	0.017	8.9	LOS A	0.1	0.5	0.11	0.69	48.2
Approach		18	5.0	0.017	8.7	LOS A	0.1	0.5	0.11	0.63	48.4
West: Bradford Street											
10	L	5	5.0	0.017	8.3	LOS A	0.0	0.0	0.00	0.99	49.0
11	T	26	5.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		32	5.0	0.017	1.4	NA	0.0	0.0	0.00	0.16	57.8
All Vehicles		88	5.0	0.023	3.5	NA	0.1	0.8	0.07	0.32	54.2

Table A2– Bradford Street – Elimatta Access Peak Hour Intersection Performance