

83 UNIVERSITY DRIVE, NORTH LAMBTON SNL CONSTRUCTIONS JUNE 2016

SMITH & TZANNES



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ΤI	TLE	DESIGN REPORT
PF	ROJECT	83 UNIVERSITY DRIVE, NORTH LAMBTON
PF	ROJECT NO	14_086
CI	lent	SNL CONSTRUCTIONS
PI	RINCIPAL AUTHOR	Peter Smith [Reg. No 7024] psmith@s-tz.com.au
RI	EVISION & DATE	REV C 29-06-2016
ST	TATUS	DEVELOPMENT APPLICATION
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INTRODUCTION

This report has been prepared by Smith & Tzannes on behalf of the applicant and land owner SNL Constructions to support a Development Application for the erection of residential dwellings at 83 University Drive, North Lambton, with an analysis the existing site and context constraints and opportunities.

DESIGN VERIFICATION

I, Peter Smith, being a registered architect in accordance with the Architects Act 2003, registration no. 7024:

- a. directed the design of the residential flat development at 83 University Drive, North Lambton; and
- b. that the design quality principles set out in the State Environmental Planning Policy No 65 – Apartment Design Guide (Residential Apartment Development) are achieved for the residential flat development.

PETER SMITH Director Smith & Tzannes

A sensitive approach which takes as its starting point a broad range of site constraints and opportunities, resulting in a rich and diverse scheme. The central idea of creating a community and a diverse range of housing opportunities to service the university. The proposal intelligently thinks about the site issues from first principles bringing the context into the development and creating a new fine model of university housing for Newcastle.



SITE ANALYSIS

LOCAL CONTEXT

The site is bounded by The University of Newcastle Callaghan Campus in the north, the industrial suburbs of Waratah and Mayfield to the east, North Lambton and Jesmond to the west, and North Lambton Reservoir directly to the south.

The immediate area of North Lambton and Waratah West was developed principally from the 1960's - 1980's and consists of single dwelling housing. Much of the housing is used as rental accommodation for students, teaching and support staff for the university and near by hospitals.

The surrounding residential development currently consists of single dwelling houses on medium sized residential blocks.

The closest commercial centre to the site is the shopping complex at Jesmond. A large part of the area is restricted in its development due to reserves and reservoirs.

SITE CONTEXT

The site is occupied only by thick bushland.

SITE ANALYSIS

SITE DESCRIPTION

The site is has a street frontage of approx. 330m to University Drive. It has common boundaries with seven residential properties and one infrastructure lot.

The site is known as 83 University Drive North Lambton. Lot 40 in DP 216171 and Lot 5 in DP 259126.

The site has an area of 3.25 Hectares.

FLORA AND FAUNA

The site consists of dense eucalypt woodland and weeds, with portions of vegetation disturbed by informal walking tracks and utilities. The presence of birds and mammals on site has been detected as the Flora and Fauna Assessment which forms part of this Development Application.

DRAINAGE & FLOODING

Natural drainage for the site falls in two directions due to the east and west due to the north-south ridge line in the centre of the site. Stormwater runoff currently discharges into the stormwater infrastructure within University Drive which continues through the University to the Newcastle Wetland Reserve.





LOCATION PLAN: UNIVERSITY DRIVE WARATAH WEST

TOPOGRAPHY

The site has a ridgeline which runs north - south through the centre of the site and a valley towards the western end of the lot causing runoff to flow from the in a north easterly direction from the ridgeline and a north westerly direction through the valley. The site slopes towards this from about 15.76 AHD in the north eastern corner to 0.89 AHD and falling, at the south western corner of the site.

The valley in the western part of the site presents a steep topography that has slopes up to 18° the remainder of the site has slopes between 5-10°.

MICROCLIMATE

Three principle wind directions affect the development. Moderate East north-easterlies prevail in the summer, opposing the strong northwesterlies during spring. During the colder months wind blows from the east and northwest.

NOISE

The most significant noise source is traffic along University Drive.

VIEWS

Significant views are available from the site to the north across the University to Newcastle Wetlands.

SOLAR ACCESS

Good solar access is provided to the site. It is unlikely that any development on the site will have shading impacts on any adjoining property.

SERVICES

A high pressure water pipe traverses the site - this cannot be built upon and will affect the location of any buildings.







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GEOTECHNICAL HAZARDS

HUNTER WATER HIGH PRESSURE PIPE

MAINTAIN SOLAR ACCESS













PRIVACY CONCERNS

VIEW CORRIDOR (REFER NOTES)

SOLAR REV C 29-06-2016







83 UNIVERSITY DRIVE NORTH LAMBTON | DESIGN REPORT



- 1. WEST END OF SITE
- 2. EAST END OF SITE
- 3. EAST END STREETSCAPE
- 4. WEST END STREETSCAPE

REV C 29-06-2016

DESIGN STRATEGY

DESIGN PRINCIPLES

The following design principles relate to the response to the site conditions, and how amenity has been achieved for the proposal.

1. Environmental and Ecological strategy

Environmental and Ecological strategy concentrating development to eastern portion of the site providing an ecological zone to the west and preservation of the ecological corridor through the valley.

2. Circulation network and social spaces

A network of vehicle and pedestrian links through the site connecting dwellings and social gathering spaces.

3. Urban and built form response

Siting appropriate building typologies in response to the existing typography and University Drive. Selective building materials to articulate each building typology and scale.

4. Materiality, scale and identity

Responding to the natural environment and the varying site conditions through materiality, context and functionality.





REV C 29-06-2016

1. ENVIRONMENTAL AND ECOLOGICAL STRATEGY

The site is traversed by a north-south orientated ridge that divides the side. The east of the ridge gently slopes towards Stannett Street and provides a location ideal for housing development.

The west of the ridge is characterised by steep topography with a central valley draining water through to Newcastle Wetlands Reserve beyond the university. The natural characteristics of the site restrict the extent of development and this part has been retained for bushland and passive recreation.

Much of this space will be provided as managed bushland to reduce the risk from bushfire but also to reduce weed infestation.

The bushland character is carried through the landscape of the development - picking up stylistic cues from the University Campus - however a series of more manicured 'green' nodes provide opportunities for gathering spaces across the site.

A high tree canopy is proposed to be retained along the frontage to University Drive and within the street network of the site.





LANDSCAPE STRATEGY

REV C 29-06-2016

C:02

2. CIRCULATION NETWORK AND SOCIAL SPACES

The key to the success of the new community is the network of pedestrian, vehicular and social spaces. These provide the links and connections across the site and the opportunities for engagement.

PEDESTRIAN CONNECTIONS

The most significant pedestrian connection is the traverse link across the site, from Stannett Street through the centre of the site to the west across the ridge and around the valley. This pathway connects the higher density development along the perimeter of the site and encouraging movement through, rather than outside the site, encouraging gatherings and passive surveillance.

VEHICLE CONNECTIONS'

The vehicle network is quite simple, with entry through the main tree lined boulevard around to the rear of the development and creating a loop through the central community. The street network allows for connections to the basement car parking distributed across the site and also provides active street spaces - ensuring good surveillance, safety and security at all times.

The principal access to the site is from University Drive about midway between Stannett Street and the ridge - the alignment of the main avenue also coincides with the alignment of the high pressure water main that traverses the site.

Additional entry and exit is available from Stannett Street.

VIEWS AND LINKAGES & NODES

The views and linkages through the site are important - providing visual transparency and physical connections.

Three social nodes are provided:

- The community 'green' adjacent the main avenue. This is a large level grassed space that can accommodate all sorts of activities for the community.
- A smaller pocket park at the top of the stairs on the traverse pedestrian spine.
- The central courtyard between buildings C, D & E again providing a large level space with high levels of surveillance accommodating a range of social activities.

All spaces are connected by the traverse pedestrian link - which in itself provides opportunities for engagement and shortcuts across the site to the University and beyond.





PEDESTRIAN CIRCULATION

VEHICLE CIRCULATION

CONNECTIONS AND NODES REV C 29-06-2016

C:03

3. URBAN FORM AND BUILT FORM RESPONSE

The buildings have been carefully placed around the site to create urban spaces, work with and respect the topography and define a robust edge to University Drive.

An apartment building typology defines the edge to University drive and also the traverse pedestrian link. This robust architectural response is characterized by deeply recessed windows and balconies. This articulation provides shade, privacy and amenity to these residents on an otherwise busy road. Hardy wall materials such as concrete and brick provide a sustainable and textured façade whilst also making reference to the historical brick making past of the region.

Internally the remainder of the buildings are characterised by finer grained town / terrace house forms - the skillion roofs play with the topography and provide visual interest.

The spacing of the buildings allows for exceptional solar access to the dwellings and open space - but still provides a sense of enclosure and definition to the new streets.







VIEW AT CENTRE OF UNIVERSITY DRIVE STREETSCAPE

HEIGHT

The built form does in some parts exceed the height limit as measured from the existing ground level. This is in part due to the steep topography. The height non-compliance is generally along the University Drive frontage where the development provides a robust presence.

This allows for the remainder of the development to enhance the environmental and amenity aspects of the development.





HEIGHT OF BUILDING
7.351m
8.45m
6.28m
8.215m
11.695m
12.25m
8.755m
11.885m
10.550m
10.000m

4. MATERIALITY & IDENTITY

The aesthetics of the proposed development carries strong thematic influences from parts of the University campus across the road - the use of face brick providing timeless durable finish.

The colour palette of materials provides a strong link to the bushland and the colours of the earth being a mix of browns, tans and mid reds.

The apartment buildings that have a frontage to University drive have a more robust and almost institutional aesthetic with visually thick walls that create shadow and texture. The town house buildings to the rear have a finer grain and play with the site topography with alternating skillion roofs and projecting balcony elements.





83 UNIVERSITY DRIVE NORTH LAMBTON | DESIGN REPORT









ROOF - TERRACES

ROOF APARTMENTS

GUTTER DOWNPIPES & BALUSTRADES

WINDOWS & BALUSTRADES

RENDERED BALCONY / SLAB EDGES

BRICK COLOURS

REV C 29-06-2016

DESIGN OUALITY

STATE ENVIRONMENTAL PLANNING POLICY NO.65 - DESIGN QUALITY OF **RESIDENTIAL FLAT BUILDINGS**

STANDARD / CONTROL

Principle 1: Context and Neighbourhood Character Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood. Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

Principle 2: Built Form and Scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildinas.

Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

Principle 3: Density

Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.

Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.

Principle 4: Sustainability

Good design combines positive environmental, social and economic outcomes. Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials, and deep soil zones for groundwater recharge and vegetation.

COMMENT

The proposed development is located in an area adjacent the university. The Newcastle Urban Strategy provides that this area has the opportunity to provide housing and services associated with the University and nearby hospitals.

The site is in a sense separated from the immediate residential context with large frontage to University Drive. The proposed

without compromising adjacent development.

The bulk and scale proposed for the development is suitable

density of the site is not able to be achieved. It is that consolidating development to the eastern portion of the site will provide the best built form outcome. Although additional density was considered it thought that this could lead to development that had a height that was out of character with the generally lower rise area.

Due to the topographical constraints on the site the nominated

The site planning enhances the opportunities for sustainable development through the placement of building footprints that work with the topography, living spaces that respond to the orientation to maximise solar access and daylight and thin built forms that encourage natural ventilation.

A positive social environment is created through the careful placement of linked common spaces that encourage gathering and social interaction. Strong visual surveillance is provided to all pedestrian spaces to enhance passive security.

A substantial area of the site is provided as managed bushland that maintains the character of the site.

STANDARD / CONTROL

Principle 5: Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neiahbourhood.

Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, coordinating water and soil management, solar access, micro-climate, tree canopy, habitat values, and preserving green networks. Good landscape design optimises usability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity, provides for practical establishment and long term management.

Principle 6: Amenity

Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes spaces throughout the proposal. to positive living environments and resident well being

Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas, and ease of access for all age groups and degrees of mobility.

Principle 7: Safety

Good design optimises safety and security, within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.

A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the from the spaces as not to create dead-ends. location and purpose.

Lighting will be incorporated to comply with the required safety category.

children

Principle 8: Housing Diversity and Social Interaction

Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets

Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix. Good design involves practical and flexible features, including different types of communal spaces for a broad range of people, providing opportunities for social interaction amongst residents.

existing topography and the natural constraints.

COMMENT

the proposed landscape finds a fine balance between the streetscape demanded by the intensity of the development similar to that of the University campus with high level tree canopy linked by managed understory planting.

High levels of amenity are provided in the internal and external

The dwellings have generous internal spaces with good access to sunlight and davlight.

Storage is provided both within the dwellings but also located within basement parking.

Although there is not requirement by Council - provision is made for adaptable dwellings to accommodate persons with a disability.

The development will generate the opportunity for good passive surveillance and active uses adjacent to and within the public domain without compromising the privacy of residents.

Streets are provided with vehicle access to enable constant passive surveillance, while the pedestrian-only connections afford good lines of sight across the public open spaces. The spaces are defined with low planting and maintaining multiple means of exist



The development on the site has a strong connection with the

Although large areas of the existing landscape will be modified, existing natural character of the bushland and the more urban Substantial native planting provides for a landscape character

The proposal has been designed to accommodate the principles of Crime Prevention Through Environmental Design (CPTED).

Two different forms of housing are provided to meet the demands of different needs of people who would like to live close to the university - apartment and townhouse typologies

This provides opportunities for different 'family' units to co-habit whether it be singles, couples, flat mates or young families with

Throughout the masterplan are a series of different types of communal spaces - passive, active and gathering spaces ranging from sitting spaces within along the main pedestrian link that traverses the site, to communal spaces for BBQ and the 'green' space adjacent the entry to the site.

STANDARD / CONTROL

Principle 9: Aesthetics

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.

The visual appearance of well designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

COMMENT

The aesthetics of the proposed development carries strong thematic influences from parts of the University campus across the road - the use of face brick providing timeless durable finish.

The colour palette of materials provides a strong link to the bushland and the colours of the earth being a mix of browns, tans and mid reds.

The apartment buildings that have a frontage to University drive have a more robust almost institutional aesthetic with visually thick walls that create shadow and texture. The town house buildings to the rear have a finer grain and play with the site topography with alternative skillion roofs and projecting balcony elements.

APARTMENT DESIGN GUIDE - DESIGN CRITERIA

CL.	STANDARD / CONT	ROL			COMPLY	COMMENT		
2F	Building Separatio	n						
	Building height	Separation dis	stance		Y	Building separation is noted on the plans.		
		Between habitable rooms/ balconies	Between habitable and non-habitable rooms	Between non-habitable rooms				
	Up to 4 storeys high (app 12m)	12m	9m	6m				
3D	Communal and put 1. Communal open 2. Developments ac principal usable pa hours between 9 ar	blic open space space has a min thieve a minimur rt of the commu n and 3 pm on 2	Y	79% achievement for 2hrs. Refer to development schedule for full breakdown.				
3E	Deep soil zones 1. Deep soil zones a	are to meet the f	ollowing minimum r	Y	13,730m² - 45%.			
	Site Area		Minimum dimensions	Deep soil zone (% of site area)				
	Less than 650m ²		-					
	650m ² - 1,500m ²		3m	7%				
	Greater than 1,500)m²	6m	_				
	Greater than 1,500 significant existing)m² with g tree cover	6m					
3F	Visual privacy 1. Separation betwe visual privacy is ach buildings to the sid	een windows and nieved. Minimum e and rear bound	l balconies is provid required separatio Jaries are as follows	Y	Refer to building separation above.			
	Building height	Ha	bitable rooms No d balconies roo	n-habitable ms				
	Up to 12m (4 store	eys)	6m	3m				

CL. STANDARD / CONTROL COMPLY COMMENT 4A Solar and daylight access 1. Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and access 3pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas. 3. A maximum of 15% of apartments in a building receive no direct Υ sunlight between 9 am and 3 pm at mid winter. access. 4B Natural ventilation 1. At least 60% of apartments are naturally cross ventilated in the first Υ nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilate 2. Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line. 10.75m. 4C Ceiling heights 1. Measured from finished floor level to finished ceiling level, minimum ceiling heights are: Minimum ceiling height for apartment and mixed use buildings Habitable rooms 2.7m Non-habitable 2.4m For 2 storey apartments 2.7m for main living area floor 2.4m for second floor, where its area does not exceed 50% of the apartment area. 4D Apartment size and layout 1. Apartments are required to have the following minimum internal areas: Apartment type Minimum internal area Studio 35m² 50m² 1 bedroom this report. 2 bedroom 70m² 3 bedroom 90m² The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m² each. 2. Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms. 4D Environmental performance 1. Habitable room depths are limited to a maximum of 2.5 x the ceiling heiaht. 2. In open plan layouts (where the living, dining and kitchen are combined) Ν the maximum habitable room depth is 8m from a window.



76% dwellings receive 2hrs solar access.

22% dwellings receive no solar access.

This non compliance should be read in respect to the prevalence of southwestern facing units in Building G which are targeted towards single occupants. Otherwise the remainder of buildings achieve an excellent proportion of daylight access.

81% dwellings are cross ventilated.

The maximum building depth is 10.75m.

A floor to floor level of 3m is provided which will allow for a 2.7m ceiling space in all habitable rooms

The proposed development exceeds the minimum dwelling sizes indicated in the table. Individual dwelling areas are provided in the development schedule at the rear of this report.

Every habitable room has a window that exceeds 10% of the floor area.

The maximum habitable room depth is 2.5 x ceiling height.

The maximum depth of any living room is 9.8m. This occurs in a small number of dwellings. The kitchen is located at the rear and is large in size for a 1 bed dwelling.

CL. STANDARD / CONTROL

4E Private open space and balconies

3+ bedroom apartments

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Y

Y

- Private open space and balconies

 1. All apartments are required to have primary balconies as follows:

 Dwelling type
 Minimum area
 Minimum depth

 Studio apartments
 4m²

 1 bedroom apartments
 8m²
 2m

 2 bedroom apartments
 10m²
 2m
- Y Balcony areas meet this requirement - please refer to Development Schedule for compliance.

The minimum balcony depth to be counted as contributing to the balcony area is 1m.

12m²

2.4m

 For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m² and a minimum depth of 3m.

4F Common circulation and spaces

1. The maximum number of apartments off a circulation core on a single level is eight.

The maximum number of dwellings off one core is 8 in Building J and Building G.

Storage is provided both internally and within the basement - refer to Development Schedule for

compliance.

4G Storage

 In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided:

Dwelling type	Storage size volume
Studio apartments	4m ³
1 bedroom apartments	6m ³
2 bedroom apartments	8m³
3+ bedroom apartments	10m ³

At least 50% of the required storage is to be located within the apartment.



SOLAR ANALYSIS

The following analysis presents 'views from the sun' that provides a view of the parts of the development that receive solar access at a selected point in time. The winter solstice has been selected as it provides the time when the sun is generally lowest in the sky and presents the greatest shadow at a time when sunlight is most desirable.

The analysis demonstrates that the building separation is adequate to ensure that good solar access is provided to private and communal open space.

The analysis also confirms the extent of compliance with the Residential Design Guide in that 76% of dwellings receive more than 2hrs solar access. 79% of dwellings have the open space receiving 2hrs solar access at the equinox.

Individual compliance of the dwellings is provided in the development schedule at the end of this report.





VIEW FROM THE SUN WINTER SOLSTICE 9AM







VIEW FROM THE SUN WINTER SOLSTICE 12PM

VIEW FROM THE SUN WINTER SOLSTICE 3PM



2 JUNE 21 9 am - BUILDINGS C AND G





3 JUNE 21 9am - BUILDINGS B, D, E, I λ₩D J

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3 JUNE 21 12 noon - BUILDINGS B, D,E,I À₩D J

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DETELOPMENT AFFLIGATION







3 JUNE 21 3pm - BUILDINGS B, D, E, I À₩D J



2 JUNE 21 3pm - BUILDINGS C AND G



DEVELOPMENT SCHEDULES

DWELLING ANALYSIS

DWELLINGS	WELLINGS ACCOMODATION				FEATURES		PRIVATE OPEN SPACE (POS)		STORAGE			SOLAR ACCESS PRIVATE OPEN SPACE			LIVING ROOM WINDOV			
UNIT No.	TYPE	INTERNAL AREA (m²)	BEDROOMS	BATH	STUDY	ADAPT.	CAR SPACES	POS (m2) AREAS	MDH 4m x 4m	INTERNAL (m³)	BASEMENT (m³)	REQUIRED (m³)	PROPOSED (m³)	FIRST SUN	LAST SUN	TOTAL	FIRST SUN	LAST S
A-01	М	84	2 Bed	2	0	0	1	19	YES	1.0	9.0	8.0	10	11:00	15:00	4:00	12:00	15:00
A-02	L	84	2 Bed	2	0	0	1	19	YES	1.0	8.0	8.0	9	11:00	15:00	4:00	11:00	15:00
A-03	L	84	2 Bed	2	0	0	1	21	YES	1.0	8.0	8.0	9	10:00	15:00	5:00	10:30	15:00
A-04	L	84	2 Bed	2	0	0	1	21	YES	1.0	9.0	8.0	10	10:00	15:00	5:00	10:00	14:30
A-05	L	84	2 Bed	2	0	0	1	37	YES	1.0	8.0	8.0	9	9:00	15:00	6:00	9:00	15:00
A-06	L	84	2 Bed	2	0	0	1	37	YES	1.0	9.0	8.0	10	9:00	15:00	6:00	9:00	14:30
A-07		84	2 Bed	2	0	0	1	37	YES	1.0	8.0	8.0	9	9:00	15:00	6:00	9:00	15:00
A-08	<u>M</u>	84	2 Bed	2	0	0	1	38	YES	1.0	8.0	8.0	9	9:00	14:30	5:30	9:00	14:30
A_10	<u>N</u>	84	2 Bed	2	0	0	1	27	YES	1.0	8.0	8.0	9	9:00	15:00	6:UU E 00	10:00	14:00
A-10	0	84	2 Bed	2	0	0	1	27	VEC	1.0	8.0	8.0	9	9:00	14:00	5:00	10:00	14:00
Δ-12	0	84	2 Bed	2	0	0	1	27	YES	1.0	8.0	8.0	9	9.00	1/00	5.00	10:00	14:00
Δ-13	0	84	2 Bed	2	0	0	1	41	YES	1.0	8.0	8.0	9	9.00	15:00	6.00	10:00	14.00
A-14	0	84	2 Bed	2	0	0	1	41	YES	1.0	8.0	8.0	9	9:00	14:00	5:00	11:00	14:00
A-15	0	84	2 Bed	2	0	0	1	51	YES	1.0	8.0	8.0	9	9:00	15:00	6:00	11:30	15:00
B-01	AA	99	2 Bed	2	0	0	1	29	NO	6.0	3.0	8.0	9	9:00	12:00	3:00	9:00	13:00
B-02	S	85	2 Bed	2	0	0	1	30	NO	4.0	3.0	8.0	7	9:00	12:00	3:00	9:00	13:00
B-03	S	85	2 Bed	2	0	0	1	30	NO	4.0	3.0	8.0	7	9:00	12:00	3:00	9:00	12:00
B-04	S	85	2 Bed	2	0	0	1	30	NO	4.0	3.0	8.0	7	9:00	11:00	2:00	9:00	12:00
B-05	S	85	2 Bed	2	0	0	1	30	NO	4.0	3.0	8.0	7	9:30	11:00	1:30	9:00	11:00
B-06	R	135	3 Bed	2	1	0	1	36	NO	3.0	9.0	10.0	12	9:00	12:00	3:00	9:00	15:00
C-01	Р	86	2 Bed	2	0	0	1	36	NO	3.0	7.0	8.0	10	9:00	11:00	2:00	9:00	12:00
C-02	KK	85	2 Bed	2	0	0	1	35	NO	3.0	5.0	8.0	8	9:00	11:00	2:00	9:00	12:00
<u>C-03</u>	KK	86	2 Bed	2	0	0	1	35	NO	3.0	4.0	8.0	7	9:00	11:00	2:00	9:00	12:00
<u> </u>	KK	86	2 Bed	2	0	0	1	36	NO	3.0	5.0	8.0	8	9:00	11:00	2:00	9:00	12:00
<u> </u>	KK	86	2 Bed	2	0	0	1	36	NU	3.0	5.0	8.0	8	9:00	11:00	2:00	9:00	13:00
<u> </u>		85	2 Bed	2	0	0	1	39	YES	3.0	9.0	8.0	10	9:00	11:00	2:00	9:00	13:30
C_09		0/	2 Bed	2	0	0	1	44	VEC	3.0	7.0	0.0	0	9:00	0.00	2:00	9:00	13:00
C-08	<u> </u>	85	2 Bed	2	0	0	1	43	YES	3.0	5.0	8.0	7	9.00	11.00	2.00	9.00	13:00
C-10	11	85	2 Bed	2	0	0	1	43	YES	3.0	5.0	8.0	8	0.00	0.00	0.00	9.00	13.00
C-11	LL	85	2 Bed	2	0	0	1	43	YES	3.0	5.0	8.0	8	9:00	11:00	2:00	9:00	13:00
C-12	NN	84	2 Bed	2	0	0	1	44	YES	3.0	9.0	8.0	12	11:00	11:30	0:30	9:00	13:00
D-01	V	57	1 Bed	1	1	0	1	18		4.0	5.0	6.0	9	9:00	15:00	6:00	9:00	15:00
D-02	GG	87	2 Bed	2	0	0	1	30		0.0	5.0	8.0	5	9:00	15:00	6:00	9:00	15:00
D-03	GG	87	2 Bed	2	0	0	1	30		0.0	5.0	8.0	5	9:00	15:00	6:00	9:00	15:00
D-04	GG	87	2 Bed	2	0	0	1	30		0.0	5.0	8.0	5	9:00	15:00	6:00	9:00	15:00
D-05	CC	116	3 Bed	2	0	0	1	16		4.0	5.0	10.0	9	9:00	15:00	6:00	9:00	15:00
D-06	HH	84	2 Bed	2	1	0	1	10		4.0	5.0	8.0	9	9:00	15:00	6:00	9:00	15:00
D-07	HH	84	2 Bed	2	1	0	1	10		4.0	5.0	8.0	9	9:00	15:00	6:00	9:00	15:00
D-08	HH	84	2 Bed	2	1	0	1	10		4.0	5.0	8.0	9	9:00	15:00	6:00	9:00	15:00



	τοται	CROSS
51 501	TUTAL	VENT.
5:00	3:00	YES
5:00	4:00	YES
5:00	4:30	YES
4:30	4:30	YES
5:00	6:00	YES
4:30	5:30	YES
5:00	6:00	YES
4:30	5:30	YES
4:00	4:00	YES
4:00	3:00	YES
5:00	3:30	YES
3:00	4:00	YES
3:00	4:00	YES
2:00	3:00	YES
2:00	3:00	YES
1:00	2:00	YES
5:00	6:00	YES
2:00	3:00	YES
3:00	4:00	YES
3:30	4:30	YES
3:00	4:00	YES
5:00	6:00	YES

VENTILATION

DWELLING	VELLINGS ACCOMODATION			TION	FEATURES			PRIVATE OPEN SPACE (POS)		STORAGE	SOLAR ACCESS			SS			VENTILATION			
													PRIVATE UPEN	ISPACE			VINDOVV			
UNIT No.	TYPE	INTERNAL AREA (m²)	BEDROOMS	BATH	STUDY	ADAPT	. CAR SPACES	POS (m2) AREAS	MDH 4m x 4m	INTERNAL (m³)	BASEMENT (m³)	REQUIRED (m ³)	PROPOSED (m³)	FIRST SUN	LAST SUN	TOTAL	FIRST SUN	LAST SUN	TOTAL	CROSS VENT.
D-09	HH	84	2 Bed	2	1	0	1	10		8.0	5.0	8.0	13	9:00	15:00	6:00	9:00	15:00	6:00	YES
D-10	HH	87	2 Bed	2	1	0	1	12	VEC	4.0	5.0	8.0	9	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-01 E-02	<u> </u>	92	2 Bed	2	0	0	1	33	YES VES	5.0	5.0	8.0	10	9:00	15:00	6:00	9:00	14:30	5:30	VES
E-02	S	92	2 Bed	2	0	0	1	35	YES	5.0	6.0	8.0	11	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-04	S	88	2 Bed	2	0	0	1	35	YES	5.0	6.0	8.0	11	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-05	S	89	2 Bed	2	0	0	1	35	YES	5.0	5.0	8.0	10	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-06	S	88	2 Bed	2	0	0	1	35	YES	1.0	5.0	8.0	6	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-07 E-08	<u>S</u>	92	2 Bed	2	0	0	1	35	YES	5.0	<u>5.0</u>	8.0	10	9:00	15:00	6:00	9:00	15:00	6:00	YES
E-09	S	147	3 Bed	2	1	0	1	34	NO	5.0	5.0	10.0	10	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-01	В	54	1 Bed	1	1	0	1	8		3	8	6	11	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-02	В	54	1 Bed	1	1	0	1	8		3	8	6	11	9:00	15:00	6:00	9:00	12:30	3:30	NO
F-03	<u> </u>	54	1 Bed	1	1	0	1	8		3	4	6	7	9:00	15:00	6:00	9:00	12:30	3:30	NO VEC
F-04 F-05	<u>в</u> І	52	1 Bed	1	1	0	1	0		3	4	6	7	9:00	15:00	0:00	9:00	12:30 N·NN	0.00	YES
F-06	FF	73	2 Bed	2	1	0	1	10		3	13	8	16	0:00	0:00	0:00	0:00	0:00	0:00	YES
F-07	В	54	1 Bed	1	1	0	1	8		3	4	6	7	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-08	В	54	1 Bed	1	1	0	1	8		3	4	6	7	9:00	15:00	6:00	9:00	12:30	3:30	NO
F-09	<u> </u>	54	1 Bed	1	1	0	1	8		3	4	6	7	9:00	15:00	6:00	9:00	12:30	3:30	NO VEC
F-10 F-11	 	52	1 Bed	1	1	0	1	11		3	4	6	7	0.00	0.00	0.00	9:00 0:00	0.00	0.00	YES
F-12	FF	73	2 Bed	2	1	0	1	10		3	7	8	10	0:00	0:00	0:00	0:00	0:00	0:00	YES
F-13	FF	74	2 Bed	2	1	0	1	31		3	6	8	9	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-14	В	54	1 Bed	1	1	0	1	8		3	3	6	6	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-15	<u> </u>	54	1 Bed	1	1	0	1	8		3	3	6	6	9:00	15:00	6:00	9:00	12:30	3:30	NO
F-16 F-17	B	54	1 Bed	1	1	0	1	8		3	3	6	6	9:00	15:00	6:00	9:00	12:30	3:30	
F-18	FF	74	2 Bed	2	1	0	1	11		3	5	8	8	0:00	0:00	0:00	0:00	0:00	0:00	YES
F-19	JJ	51	1 Bed	1	0	0	1	9		3	4	6	7	0:00	0:00	0:00	0:00	0:00	0:00	YES
F-20	В	54	1 Bed	1	1	0	1	8		3	6	6	9	9:00	15:00	6:00	9:00	15:00	6:00	YES
F-21	B	54	1 Bed	1	1	0	1	8		3	6	6	9	9:00	15:00	6:00	9:00	12:30	3:30	NO
F-22 F-23	B	54	1 Bed	1	1	0	1	8		3	5	6	8	9:00	15:00	6:00	9:00	12:30	3:30	
F-24	FF	74	2 Bed	2	1	0	1	11		3	5	8	8	0:00	0:00	0:00	0:00	0:00	0:00	YES
F-25	JJ	51	1 Bed	1	0	0	1	9		3	4	6	7	0:00	0:00	0:00	0:00	0:00	0:00	YES
G-01	G	89	2 Bed	2	1	0	1	19		5.0	6.0	8.0	11	9:00	15:00	6:00	9:00	15:00	6:00	YES
G-02	G	89	2 Bed	2	1	0	1	19		5.0	5.0	8.0	10	9:00	15:00	6:00	9:00	15:00	6:00	YES
G-03	F	69	Z Bea	<u> </u>	1	0	1	17		<u>5.0</u>	<u> </u>	8.0 6.0	11	9:00	15:00	6:00	9:00	15:00	6:00	YES
G-05	F	49	Studio	1	1	0	1	17		6.0	0.0	6.0	6	9:00	15:00	6:00	9:00	15:00	6:00	YES
G-06	G	89	2 Bed	2	1	0	1	17		5.0	6.0	8.0	11	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-07	G	89	2 Bed	2	1	0	1	17		5.0	6.0	8.0	11	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-08	K r	57	1 Bed	1	1	0	1	26		11.0	10.0	6.0	21	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-10	F	50	Studio	1	1	0	1	10		7.0	5.0	6.U 6.0	12	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-11	F	50	Studio	1	1	0	1	10		7.0	6.0	6.0	13	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-12	F	50	Studio	1	1	0	1	10		7.0	5.0	6.0	12	0:00	0:00	0:00	14:00	14:30	0:30	YES
G-13	Н	79	2 Bed	1.5	0	0	1	31		3.0	12.0	8.0	15	9:00	15:00	6:00	9:00	15:00	6:00	YES
<u>G-14</u>	<u>K</u>	58	1 Bed	1	1	0	1	16		8.0	10.0	6.0	18	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-15	F	5U 50	Studio	1	1	U 0	1	/ 7		7.0		6.U 6.0	/ 7	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-17	F	50	Studio	1	1	0	1	7		7.0		6.0	7	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-18	F	50	Studio	1	1	0	1	7		7.0		6.0	7	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-19	Н	79	2 Bed	1.5	0	0	1	12		3.0	5.0	8.0	8	9:00	15:00	6:00	9:00	15:00	6:00	YES
G-20	K	58	1 Bed	1	1	0	1	21		1.0	12.0	6.0	13	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-21 G-22	F	5U 50	Studio	1	1	U 0	1	7		7.0	0.8 6 D	0.0	15	U:UU 	U:UU n.nn	0:00	14:00	15:00	1:00	YES
G-23	F	50	Studio	1	1	0	1	7		7.0	7.0	6.0	13	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-24	F	50	Studio	1	1	0	1	7		7.0	7.0	6.0	14	0:00	0:00	0:00	14:00	15:00	1:00	YES
G-25	Н	79	2 Bed	1.5	0	0	1	12		3.0	10.0	8.0	13	9:00	15:00	6:00	9:00	15:00	6:00	YES



REV C 29-06-2016

DWELLING	S		ACCOMODA	TION		FEATU	RES	PRIVATE OPI	EN SPACE (POS)	SPACE (POS) STORAGE S			SOLAR ACCESS PRIVATE OPEN SPACE LIVING ROOM WII			INDOW		
UNIT No.	TYPE	INTERNAL AREA (m²)	BEDROOMS	BATH	STUDY	ADAPT.	CAR SPACES	POS (m2) AREAS	MDH 4m x 4m	INTERNAL (m³)	BASEMENT (m³)	REQUIRED (m³)	PROPOSED (m³)	FIRST SUN	LAST SUN	TOTAL	FIRST SUN	LAST S
I-01	В	54	1 Bed	1	1	0	1	8		3.0	9.0	6	12	9:00	15:00	6:00	9:00	15:0
I-02	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	9:00	15:0
I-03	В	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	9:00	15:0
1-04	В	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	9:00	15:0
I-05	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	9:00	15:0
I-06	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	9:00	15:0
I-07	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	9:00	15:0
I-08	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	9:00	15:0
I-09	Y	49	1 Bed	1	0	0	1	14		1.0	7.0	6	8	9:00	15:00	6:00	9:00	15:0
I-10	Y	49	1 Bed	1	0	0	1	12		1.0	7.0	6	8	0:00	0:00	0:00	0:00	0:00
I-11	FF	73	2 Bed	2	1	0	1	11		1.0	8.0	8	9	0:00	0:00	0:00	0:00	0:00
I-12	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	12:00	15:0
I-13	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	12:00	15:0
I-14	В	54	1 Bed	1	1	0	1	8		3.0	5.0	6	8	9:00	15:00	6:00	12:00	15:0
I-15	В	54	1 Bed	1	1	0	1	8		3.0	5.0	6	8	9:00	15:00	6:00	9:00	15:0
I-16	Y	49	1 Bed	1	0	0	1	11		1.0	7.0	6	8	9:00	15:00	6:00	9:00	15:0
I-17	DD	58	1 Bed	1	0	1	1	11		1.0	9.0	6	10	0:00	0:00	0:00	0:00	0:00
I-18	FF	73	2 Bed	2	1	0	1	11		1.0	17.0	8	18	0:00	0:00	0:00	0:00	0:00
J-01	Y	50	1 Bed	1	0	0	1	9		1.0	7.0	6	8	10:00	15:00	5:00	10:00	15:0
J-02	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-03	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-04	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-05	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-06	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-07	Y	50	1 Bed	1	0	0	1	9		1.0	7.0	6	8	10:00	15:00	5:00	10:00	15:0
J-08	В	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	11:00	15:0
J-09	В	54	1 Bed	1	1	0	1	8		3.0	4.0	6	7	9:00	15:00	6:00	11:00	15:0
J-10	В	54	1 Bed	1	1	0	1	8		3.0	4.0	6	7	9:00	15:00	6:00	11:00	15:0
J-11	В	54	1 Bed	1	1	0	1	8		3.0	4.0	6	7	9:00	15:00	6:00	11:00	15:0
J-12	B	54	1 Bed	1	1	0	1	8		3.0	4.0	6	7	9:00	15:00	6:00	11:00	15:0
J-13	В	54	1 Bed	1	1	0	1	8		3.0	4.0	6	7	9:00	15:00	6:00	11:00	15:0
J-14	FF	74	2 Bed	2	1	0	1	11		3.0	10.0	8	13	0:00	0:00	0:00	0:00	0:00
J-15	DD	58	1 Bed	1	0	1	1	12		1.0	13.0	6	14	0:00	0:00	0:00	0:00	0:00
J-16	FF	73	2 Bed	2	1	0	1	9		1.0	2.0	8	3	0:00	0:00	0:00	0:00	0:00
J-17	<u> </u>	54	1 Bed	1	1	0	1	8		3.0	7.0	6	10	9:00	15:00	6:00	10:00	15:0
J-18	B	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	10:00	15:0
J-19	B	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	10:00	15:0
J-20	B	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	10:00	15:0
J-21	B	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	10:00	15:0
	B	54	1 Bed	1	1	0	1	8		3.0	6.0	6	9	9:00	15:00	6:00	10:00	15:0
J-23	<u>++</u>	74	2 Bed	2	1	U	1	10		1.0	2.0	8	3	0:00	0:00	0:00	0:00	0:00
J-24	<u></u>	58	1 Bed	1	0	1	1	11		1.0	6.0	6	.7	0.00	0:00	0:00	0.00	0:00
J-25	۲ŀ	74	2 Bed	2	1	U	1	11		3.0	10.0	8	13	0:00	0:00	0:00	0:00	0:00
145		1000/4 0					145.0	2584.0	0.0							106		



VENTILATION

•		00000
AST SUN	TOTAL	VENT.
15:00	6:00	NO
15:00	6:00	YES
0:00	0:00	YES
0:00	0:00	YES
15:00	3:00	YES
15:00	3:00	YES
15:00	3:00	YES
15:00	6:00	YES
15:00	6:00	YES
0:00	0:00	YES
0:00	0:00	YES
15:00	5:00	YES
15:00	4:00	NO
15:00	5:00	YES
15:00	4:00	YES
0:00	0:00	YES
0:00	0:00	NU
15.00	0:00	YES
15:00	5:00	
15:00	5:00	
15:00	5:00	
15:00	5:00	
15:00	5:00	
0.00	0.00	VEC
0.00	0:00	VEC
0.00	0:00	NO
0:00	0:00	INU
	110	126
	71%	81%

68%