

DARLING SQUARE SE PLOT BASIX SUMMARY & ASSUMPTIONS

**SYDNEY INTERNATIONAL CONVENTION, EXHIBITION AND
ENTERTAINMENT PRECINCT (SICEEP)**

ISSUED WITH BASIX CERTIFICATE 628683M_04



Darling Square SE Plot BASIX Summary & Assumptions



Document History

Revision	Date	Prepared By	Checked By	Description
A	12-May-15	Daniel Andjelic	Jennifer Elias	Preliminary Report
B	17-Aug-15	Daniel Andjelic	Jennifer Elias	BASIX Certificate Issue
C	19-Feb-16	Daniel Andjelic	Jennifer Elias	Draft Revised BASIX Certificate Issue
D	23-Feb-16	Daniel Andjelic	Jennifer Elias	Revised BASIX Certificate Issue
E	01-Mar-16	Daniel Andjelic	Jennifer Elias	Revised BASIX Certificate Issue 2

Technical Enquiries		General Enquiries	
Name:	Daniel Andjelic	Name:	Jennifer Elias
Position:	Sustainable Design Advisor	Position:	Sustainable Design Consultant
Telephone:	(02) 9277 2015	Telephone:	(02) 9237 5997
Email:	Daniel.Andjelic@lendlease.com	Email:	Jennifer.Elias@lendlease.com

TABLE OF CONTENTS

TABLE OF CONTENTS	3
1.0 Introduction and Summary	4
2.0 Assumptions and Commitments	5
2.1 Project Areas	5
2.2 Central Systems	6
2.3 Water	7
2.3.1 Alternative Water Supply	7
2.3.2 Common Area Water Consumption	7
2.3.3 Dwellings Water Consumption	8
2.4 Thermal Comfort	8
2.5 Energy	10
2.5.1 Central Systems	10
2.6 Common Areas	12
2.6.1 Common Area Ventilation	12
2.6.2 Common Area Lighting	13
2.7 Dwellings	14
2.7.1 Ventilation	14
2.7.2 Lighting	14
2.7.3 Appliances	14
3.0 Appendix A: Thermal Performance Certificate	15

1.0 Introduction and Summary

This report summarises the assumptions made for the BASIX assessment of the Darling Square SE Plot Residential development at Haymarket Sydney.

The Building Sustainability Index (BASIX) sets energy reduction, thermal comfort and water reduction targets for new residential developments based on the average energy and water consumption of dwellings in NSW. The reduction targets range from 20 to 40%, depending on the type and location of the development. For buildings with 6 or more stories such as the Darling Square developments, a 20% reduction in energy consumption, and a 40% reduction in water use is required to pass.

For Thermal Comfort, BASIX requires a “pass” score based on heating and cooling “caps” set by BASIX; however the thermal performance of a development will affect its energy score. For example, a development that has excellent thermal performance reduces its reliance upon air conditioning, and is therefore awarded in BASIX with a positive contribution to its energy score.

The development receives the following scores:

Category	Requirement	Score Achieved
Water	40% Reduction	41%
Thermal Comfort	Pass	Pass
Energy	20% Reduction	20%

2.0 Assumptions and Commitments

Assumptions included in this section impact the performance of the development in relation to the BASIX targets.

2.1 Project Areas

The following areas have been measured from drawings issued in February 2016 by FJMT.

Site Details		
Site area	m ²	4646
Total roof area (for all buildings)	m ²	2559
Non-residential floor area	m ²	1596
Residential car spaces	No.	265
Non-residential car spaces	No.	3

Common Areas			
Space Type	SE1 Areas (m ²)	SE2 Areas (m ²)	SE3 Areas (m ²)
Car park	8637		
Storage cages open to carpark	1228		
Retail	Not Applicable		
Dedicated storage areas	240		
Substation	145		
Switch room	145		
Comms room	41		
Building manager's office	13		
Garbage rooms	37	32	36
Common garbage room	46		
Residential / condenser plant rooms	558	110	174
Common services plant rooms	197		
Ground floor lobbies & mail rooms	140	92	91
Podium BOH corridors	245		
Apartment corridors	2291	291	525
Fire stairs	Not Applicable		
Community room SE2	140		
Shared amenities	76		
Bike storage	112		
Building distribution room	27		

Darling Square SE Plot BASIX Summary and Assumptions



2.2 Central Systems

Central systems refer to components of the development which service numerous dwellings. The inputs for these systems contribute to the estimated water and energy consumption which determine the BASIX score for the development.

Central Systems Summary				
System	SE1	SE2	SE3	Notes
Swimming pools, spas, saunas	1			Shared swimming pool of dimensions 20m x 5m x 1.2m
Number of residential lifts	3	1	2	
Central on-site recycled/alternative water supply	No	No	No	No recycled water
Rainwater tank	Yes			Assume a single shared tank used for irrigation. Tank size 80kL
Central domestic hot water systems	Yes	Yes	Yes	One 'gas fired boiler' system is nominated for each building
Central cooling system	Yes	Yes	Yes	VRV with electric compressor and air cooled condenser
Central heating system	Yes	Yes	Yes	VRV with electric compressor and air cooled condenser
Fire sprinkler system	Yes	Yes	Yes	Fire test water will either be drawn from and recirculated back to a standalone fire break tank, or; Drawn from mains water and reticulated into the rainwater tank.

Darling Square SE Plot

BASIX Summary and Assumptions



2.3 Water

This section outlines the assumptions made for the water consumption and water supplied by the central systems.

2.3.1 Alternative Water Supply

A common rainwater tank shared between all 3 buildings will be provided to satisfy the landscape irrigation requirements. The capacity of this tank will be increased beyond what is required to satisfy the landscape demand to ensure that there is capacity to ensure fire services test water which cannot be recirculated is diverted back to the rainwater tank to assist in meeting the irrigation demand.

2.3.2 Common Area Water Consumption

The following table summarises all of the common areas where there will be water consumption.

Common Area – Water Consumption				
Water Use	Units	SE1	SE2	SE3
Common Landscape¹				
Common area lawn	m ²		223	
Common area garden (excl. lawn)	m ²		575	
Area of garden assumed indigenous or low water use species	m ²		0	
Other common area water uses				
Taps	4.5 L/min 6 star WELS rating	9 taps in ground floor amenities 4 taps in L6 & L7 residents facilities		
Toilets	3.5L/flush average 4 star WELS rating	9 toilets in ground floor amenities 2 toilets in L6 & L7 residents facilities		
Urinals	N/A	3 urinals in ground floor amenities		
Showerheads	<9 L/min 3 star WELS rating	5 showers in ground floor amenities		
Car washing bays	no.	None assumed		
Sprinkler test system ²	-	Closed system		

- 1) Landscape areas measured by Lend Lease Design off document titled 'Landscape DA Report Draft Issue B January 2016'.
- 2) While only some of the fire services test water is recirculated, the remainder is diverted to the rainwater tank. As the BASIX tool has no option for diverting to the rainwater tank the selection of a closed system was deemed the most appropriate as opposed to a system which diverted water to the sewer.

Darling Square SE Plot BASIX Summary and Assumptions



2.3.3 Dwellings Water Consumption

The water fixtures and fittings to be installed for all dwellings in the SE1, SE2 and SE3 developments are listed below.

Dwellings – Water Consumption			
Fittings and Fixtures	Water supply	L/min	WELS rating
Showerheads	Potable mains	≤7.5 L/min	3 star
Toilets	Potable mains	3.5L/flush average	4 star
Kitchen taps	Potable mains	4.5	6 star
Bathroom taps	Potable mains	4.5	6 star
Dishwashers	Potable mains	-	3.5 Star
Clothes Washer	Potable mains	Not provided	
Landscape Irrigation	Potable mains	No private landscaping is provided	

The flow rates stated above are the maximum flow rates to ensure that the BASIX water target is achieved.

2.4 Thermal Comfort

BASIX sets maximum heating and cooling loads to be achieved by each apartment as well as average heating and cooling loads throughout the development. To achieve a 'pass' in the thermal comfort section, individual apartments must not exceed the maximum load requirements and the development must not exceed the average load requirements set by BASIX.

Below are the significant construction assumptions which impact the thermal performance assessment.

Constructions		
Building Element	Construction	Detail / Properties
Windows	Single low-e clear glazing with aluminum frames	U Value1 = 5.4 W/m2.K; SHGC = 0.54; Operable areas of glazing have been estimated given each proposed window/door type and necessary safety requirements to restrict opening widths
External Shading		As per DA drawing set
External walls	Precast concrete panel	R1.5 insulation, 13mm plasterboard Medium colour
External walls	Terracotta cladding	R1.5 insulation, 13mm plasterboard Medium colour
Internal walls – within units	Plasterboard on studs	

Darling Square SE Plot BASIX Summary and Assumptions



Constructions		
Building Element	Construction	Detail / Properties
Internal walls – between units	Autoclaved Aerated Concrete blocks	AAC nominally 75mm thick 13mm plasterboard either side
Internal walls – between units and corridors	Autoclaved Aerated Concrete blocks	AAC nominally 75mm thick 13mm plasterboard either side.
Internal walls – between units and fire stairs, lifts.	Concrete (140mm)	R1.0 insulation 13mm plasterboard.
Floors – between units or retail	Concrete (200mm)	Tiles in bathrooms and laundries; timber to living areas and carpet covering to bedrooms No insulation
Floors – to carpark, plant room	Concrete (200mm)	Applicable floor covering + R1.0 insulation under slab
Ceilings – between units	Plasterboard	Suspended 13mm plasterboard ceiling Floor to ceiling heights as per DA drawing set
Roof – to external	Concrete	Suspended 13mm plasterboard ceiling R3.0 + foil added internal insulation. Floor to ceiling heights as per DA drawing set Medium colour

The following table summarises the BASIX average heating and cooling load requirements with those for the proposed project. The full thermal assessment report can be found in appendix A.

BASIX Thermal Comfort Results		
	BASIX Average Load Requirement (MJ/m2)	BASIX Average Loads (MJ/m2)
Heating	40	19.6
Cooling	32	22.2

2.5 Energy

The energy section of BASIX calculates a percentage reduction in expected greenhouse gas emissions compared with an average NSW dwelling. As SE Plot development has over 6 storeys above ground, the project must achieve a BASIX energy reduction of at least 20%. It considers the energy demands of the central systems, as well as the energy demands of the common areas and dwellings from the domestic hot water system, the HVAC system, lifts, lights and appliances.

2.5.1 Central Systems

Central Domestic Hot Water System

It has been assumed that a central 'gas fired boiler' domestic hot water system will be installed for each building to meet the domestic hot water demand. The hot water reticulation system will be continuous flow. Insulation for both the external and internal hot water pipes has been provided with thermal resistance values as follows:

- Piping external to building: no external piping
- Piping internal to building: R 1.0 m²K/W

Central Cooling and Heating Systems

Variable refrigerant volume units have been selected for both a central cooling and heating system. The following details have been input into the BASIX tool.

Central Cooling and Heating Systems		
	Cooling	Heating
System Type	Variable refrigerant volume units	Variable refrigerant volume units
Energy Source	Electric driven compressor	Electric driven compressor and air sourced evaporator
Heat Rejection Method	Air cooled condenser	-
Unit Efficiency	Low – COP <3.5	Low – COP <3.5

While BASIX does not require a minimum efficiency of the VRV system, the project's Green Star commitment will require a system with a high efficiency to be selected. While the exact efficiency requirement is still to be determined a cooling COP of at least 3.5 is anticipated.

Alternative Energy Supply

No alternative energy supply system had been proposed.

Darling Square SE Plot BASIX Summary and Assumptions



Lifts

There are 6 lift shafts in total. All lifts are gearless traction lifts with Variable Voltage Variable Frequency Drive (VVVF) motors. The number of levels each lift services has been interpreted from the plans and elevations.

Lifts				
	SE1	SE2	SE3	Notes
Number of lifts	3	1	2	Lifts assumed to have regenerative brakes
Levels served	28	7	8	See note below

Note that common area levels and plant only levels (i.e. Ground floor, L1, L30 of SE1 and L20 of SE3) are not counted in the above number of levels served by each lift

Other Central Systems

The following details of central systems are additional fields required by BASIX:

Other Central Systems	
Item	Details
Building Management System (BMCS)	Installed
Active Power Factor Correction (PFC)	Installed

Darling Square SE Plot BASIX Summary and Assumptions



2.6 Common Areas

2.6.1 Common Area Ventilation

The following table summarises the common areas requiring ventilation, the ventilation type and the efficiency or control measure.

Note that the efficiency measures available in BASIX are limited, so in some cases a conservative selection has been made.

Common Area Ventilation		
Area	Ventilation System Type	Efficiency Measure
Car park	Ventilation (supply + exhaust)	CO monitors + VSD fan
Storage cages open to car park	Ventilation (supply + exhaust)	CO monitors + VSD fan
Lift cars	-	-
Switch room	Ventilation exhaust only	-
Substation	No mechanical ventilation	-
Garbage rooms	Ventilation exhaust only	-
Comms room	Air conditioning system	Thermostatically controlled
Residential / condenser plant rooms	No mechanical ventilation	-
Common services plant rooms	Ventilation exhaust only	None
Storage areas	Ventilation supply only	Time clock or BMS controlled
Ground floor lobbies	Ventilation supply only	Time clock or BMS controlled
Community spaces	Air conditioning system	Time clock or BMS controlled
Hallway / lobbies apartments	Ventilation supply only	Time clock or BMS controlled
Ground floor BOH	Ventilation supply only	Time clock or BMS controlled
Building manager	Air conditioning system	Time clock or BMS controlled
Shared amenities	Ventilation exhaust only	Time clock or BMS controlled
Bike storage	Ventilation exhaust only	Time clock or BMS controlled
Building distribution room	Air conditioning system	Thermostatically controlled

2.6.2 Common Area Lighting

The BASIX tool requires inputs for the primary lighting type in each zone, where the primary lighting type is defined as the lamp type fitted to 80% or more of the light fittings to be installed. The following fittings have been set for the common areas:

Common Area Lighting		
Area	Lighting Type	Efficiency Measure
Car park	Fluorescent	Time clock and motion sensors
Storage cages open to car park	Fluorescent	Time clock and motion sensors
Lift cars	LED	Connected to lift call button
Switch room	Fluorescent	Manual on/off
Substation	Fluorescent	Manual on/off
Garbage rooms	Fluorescent	Motion sensors
Comms room	Fluorescent	Manual on/off
Residential / condenser plant rooms	Fluorescent	Motion sensors
Common services plant rooms	Fluorescent	Motion sensors
Storage rooms	Fluorescent	Motion sensors
Ground floor lobbies	LED	Motion sensors
Community spaces	LED	Motion sensors
Hallway / lobbies Apartments	LED	Motion sensors
Ground floor BOH	Fluorescent	Motion sensors
Building manager	Fluorescent	Manual on/off
Shared amenities	Fluorescent	Motion sensors
Bike storage	Fluorescent	Motion sensors
Building distribution room	Fluorescent	Motion sensors

Similar to the common area mechanical ventilation system, it is assumed that a lighting control system or connection to the BMCS via motion sensors or a time clock will be installed as a controls mechanism to ensure that lighting energy is not consumed where there are no occupants. Furthermore, it is assumed that the lighting controls in the lifts are triggered by the lift call button to avoid wasting energy in these spaces.

Darling Square SE Plot

BASIX Summary and Assumptions



2.7 Dwellings

2.7.1 Ventilation

Ventilation within dwellings is provided for bathrooms, kitchens and laundries. Individual exhaust fans are provided for bathroom, kitchen and laundries which are ducted to the façade.

It is assumed that the air conditioning can be classed as day-night zoned between bedrooms and living areas.

2.7.2 Lighting

The BASIX tool also takes into account energy consumption from lighting based on the lighting strategy. For each dwelling, the BASIX tool awards the number of bathrooms and kitchens that are naturally lit by either a window or skylight. BASIX awards the rooms which are primarily lit by fluorescent or LED lamps as these are more energy efficient lighting options; and further awards projects where these fittings cannot be replaced by alternatives.

It was assumed that for all rooms the primary lighting type is LEDs, and that these fittings will be specific to LEDs preventing occupants from replacing them with less efficient lamps. While the BASIX certificate will permit fluorescent or LED fittings, LEDs will be required to achieve the lighting energy targets required by Green Star.

Floor plans indicate that the majority of bathrooms and kitchens will not have access to natural light.

2.7.3 Appliances

In order to achieve the BASIX energy target, dishwashers and clothes dryers must be installed to all apartments with minimum energy star ratings as per the table below.

Dwelling Appliances		
Appliance	Input	Location
Stovetop	Gas	Whole project
Oven	Electric	Whole project
Dishwasher	3.5 star energy rating	Whole project
Clothes dryer	1.5 star energy rating	Whole project
Refrigerator	-	None required

3.0 Appendix A: Thermal Performance Certificate

Project Location	Darling Square SE Plot
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Building Element	Construction	Thermal Properties
Overhangs and Shading	Overhangs and shading as per drawings Fixed louvres and screens	-
External Wall	130mm concrete + Insulation and plasterboard. Total thickness of 250mm	R1.5 Insulation
Internal Walls	Party walls 130mm concrete + Insulation and plasterboard. Total thickness of 250mm	None
Exposed Roof	200mm concrete + R3.0 insulation and plasterboard to all exposed roof	R3.0 Bulk Insulation
Floor	200mm Concrete + timber floorboards (living areas) 200mm Concrete + carpet (bedrooms) 200mm Concrete + ceramic tiles (wet areas) No insulation to underside where adjacent to car park and outside air	None
Ceiling	Suspended concrete slab between apartments	-
Windows and Other Glazed Elements	Aluminium Framed Windows First Rate 5 Reference ALM-001-03 for all windows	Performance values of: U-Value = 5.4 Solar Heat Gain Coefficient = 0.54 (approximated by use of SHGC 0.49)
Ceiling Penetrations	All exhaust fans sealed - 200mm x 200mm All downlights sealed - 50mm x 50mm	-

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
L02				
	Level 2 SE2 04	34.1	15.4	5
	Level 2 SE2 03	16.1	14.4	6.9
	Level 2 SE2 02	16.1	14.4	6.9
	Level 2 SE2 01	50	39.8	3.2
	Level 2 SE1 01	39.5	15.4	4.7
	Level 2 SE1 02	41.6	19.7	4.3
	Level 2 SE1 03	37.5	21	4.4
	Level 2 SE3 06	28.2	21.6	5.0
	Level 2 SE3 05	28.9	21.3	4.9
	Level 2 SE3 04	22.4	22.5	5.4
	Level 2 SE3 03	28.9	21.3	4.9
	Level 2 SE3 02	28.9	21.3	4.9
	Level 2 SE3 01	18.3	30.1	5.1
L03				
	Level 3 SE2 04	7	14.6	8.0
	Level 3 SE2 03	4.4	13.2	8.4
	Level 3 SE2 02	4.4	13.2	8.4
	Level 3 SE2 01	30.8	39.8	3.9
	Level 3 SE1 01	18.7	18	6.3
	Level 3 SE1 02	20	20.9	5.8
	Level 3 SE1 03	20	20.9	5.8
	Level 3 SE1 04	16.5	25.5	5.7
	Level 3 SE1 05	41.7	22.6	4.2
	Level 3 SE1 06	38.2	18.3	4.6
	Level 3 SE1 07	37	19.1	4.6
	Level 3 SE1 08	38.2	18.3	4.6
	Level 3 SE1 09	43.3	19.9	4.2
	Level 3 SE3 08	32	14.3	5.3
	Level 3 SE3 07	9.2	15.7	7.6
	Level 3 SE3 06	5.6	20.8	7.4
	Level 3 SE3 05	12.9	24.4	6.2
	Level 3 SE3 04	5.6	20.8	7.4
	Level 3 SE3 03	12.9	24.4	6.2
	Level 3 SE3 02	12.9	24.4	6.2
	Level 3 SE3 01	6.9	28.4	6.4
L04				
	Level 4 SE2 04	7	14.6	8.0
	Level 4 SE2 03	4.5	12.9	8.4
	Level 4 SE2 02	4.5	12.9	8.4
	Level 4 SE2 01	30.8	39.8	3.9
	Level 4 SE1 01	49.8	24.8	3.7
	Level 4 SE1 02	42.6	21.8	4.2
	Level 4 SE1 03	20	20.9	5.8
	Level 4 SE1 04	16.5	25.5	5.7
	Level 4 SE1 05	41.7	22.6	4.2
	Level 4 SE1 06	38.2	18.3	4.6
	Level 4 SE1 07	37	19.1	4.6
	Level 4 SE1 08	38.2	18.3	4.6
	Level 4 SE1 09	43.3	19.9	4.2
	Level 4 SE3 08	32	14.3	5.3
	Level 4 SE3 07	8.6	17	7.6
	Level 4 SE3 06	31.1	22.3	4.8
	Level 4 SE3 05	45.5	26.5	3.8

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 4 SE3 04	5.6	20.8	7.4
	Level 4 SE3 03	5.6	20.8	7.4
	Level 4 SE3 02	5.6	20.8	7.4
	Level 4 SE3 01	5.6	20.8	7.4
L05				
	Level 5 SE2 04	7	14.6	8.0
	Level 5 SE2 03	4.4	13.2	8.4
	Level 5 SE2 02	4.4	13.2	8.4
	Level 5 SE2 01	30.8	39.8	3.9
	Level 5 SE1 01	18.7	18	6.3
	Level 5 SE1 02	20	20.9	5.8
	Level 5 SE1 03	16.2	20.4	6.3
	Level 5 SE1 04	26.4	23.5	5
	Level 5 SE1 05	18.7	20.6	5.9
	Level 5 SE1 06	30.9	17.3	5.1
	Level 5 SE1 07	29.9	24.2	4.7
	Level 4 SE1 08	29.0	16.8	5.3
	Level 4 SE1 09	35.9	19.5	4.7
	Level 5 SE3 08	24	15.8	5.9
	Level 5 SE3 07	9.2	15.7	7.6
	Level 5 SE3 06	5.6	20.8	7.4
	Level 5 SE3 05	12.9	24.4	6.2
	Level 5 SE3 04	5.6	20.8	7.4
	Level 5 SE3 03	12.9	24.4	6.2
	Level 5 SE3 02	12.9	24.4	6.2
	Level 5 SE3 01	6.9	28.4	6.4
L06				
	Level 6 SE2 04	8.3	11.3	8.2
	Level 6 SE2 03	4.4	13.2	8.4
	Level 6 SE2 02	4.4	13.2	8.4
	Level 6 SE2 01	30.8	39.8	3.9
	Level 6 SE1 11	33.7	17.4	4.9
	Level 6 SE1 10	15.3	19.4	6.5
	Level 6 SE1 09	27.2	17.5	5.4
	Level 6 SE1 08	27.5	17.6	5.4
	Level 6 SE1 07	25.8	39.5	4.1
	Level 6 SE1 06	11.4	36.3	5.2
	Level 6 SE1 05	7.1	13.4	8.2
	Level 6 SE1 04	7.1	13.4	8.2
	Level 6 SE1 03	3.8	19.5	7.8
	Level 6 SE1 02	8.6	17.0	7.6
	Level 6 SE1 01	49.8	24.8	3.7
	Level 6 SE3 10	10.2	20.2	6.9
	Level 6 SE3 09	26.6	21.6	5.2
	Level 6 SE3 08	31.1	22.3	4.8
	Level 6 SE3 07	45.5	26.5	3.8
	Level 6 SE3 06	5.6	20.8	7.4
	Level 6 SE3 05	12.9	24.4	6.2
	Level 6 SE3 04	5.6	20.8	7.4
	Level 6 SE3 03	12.9	24.4	6.2
	Level 6 SE3 02	12.9	24.4	6.2
	Level 6 SE3 01	7.1	27.8	6.5
Level 7				



NatHERS Thermal Performance Certificate

	Energy Rating	Certificate Number	14070004
☐	single-dwelling rating		5.9 stars
☒	multi-unit development (attach listing of ratings)	heating	20.2 MJ/m ²
		cooling	21.8 MJ/m ²
If selected, data specified is the average across the entire development			
Recessed downlights confirmation:		☒ Rated with	☐ Rated without
Assessor Name/Number		Patrick Phelan	VIC/BDAY/12/1407
Assessor Signature			Date 16/2/16

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 7 SE2 04	42.6	21.8	4.2
	Level 7 SE2 03	28.8	16.7	5.4
	Level 7 SE2 02	27.2	17.5	5.4
	Level 7 SE2 01	48.9	22.3	3.9
	Level 7 SE1 11	33.7	17.4	4.9
	Level 7 SE1 10	15.3	19.4	6.5
	Level 7 SE1 09	27.5	17.6	5.4
	Level 7 SE1 08	20.7	14.3	6.5
	Level 7 SE1 07	25.8	39.5	4.1
	Level 7 SE1 06	5.7	32.7	6.1
	Level 7 SE1 05	15.7	20.1	6.4
	Level 7 SE1 04	15.7	20.1	6.4
	Level 7 SE1 03	8.6	17	7.6
	Level 7 SE1 02	19.7	19.8	5.9
	Level 7 SE1 01	22.5	20.8	5.6
	Level 7 SE3 10	26.6	21.6	5.2
	Level 7 SE3 09	31.1	22.3	4.8
	Level 7 SE3 08	45.5	26.5	3.8
	Level 7 SE3 07	5.6	20.8	7.4
	Level 7 SE3 06	5.6	20.8	7.4
	Level 7 SE3 05	15.7	36.2	4.9
	Level 7 SE3 04	10.2	20.2	6.9
	Level 7 SE3 03	26.6	21.6	5.2
	Level 7 SE3 02	3.3	20.9	7.7
	Level 7 SE3 01	10.2	20.2	6.9
L8				
	Level 8 SE2 05	13.0	24.3	6.2
	Level 8 SE2 04	17.3	30.3	5.2
	Level 8 SE2 03	17.4	25.7	5.6
	Level 8 SE2 02	17.4	25.8	5.6
	Level 8 SE2 01	49	40.5	3.2
	Level 8 SE1 11	33.7	17.4	4.9
	Level 8 SE1 10	15.3	19.4	6.5
	Level 8 SE1 09	27.5	17.6	5.4
	Level 8 SE1 08	20.7	14.3	6.5
	Level 8 SE1 07	25.8	39.5	4.1
	Level 8 SE1 06	5.7	32.7	6.1
	Level 8 SE1 05	15.7	20.1	6.4
	Level 8 SE1 04	15.7	20.1	6.4
	Level 8 SE1 03	8.6	17	7.6
	Level 8 SE1 02	19.7	19.8	5.9
	Level 8 SE1 01	22.5	20.8	5.6
	Level 8 SE3 10	26.6	21.6	5.2
	Level 8 SE3 09	31.1	22.3	4.8
	Level 8 SE3 08	45.5	26.5	3.8
	Level 8 SE3 07	22.5	20.8	5.6
	Level 8 SE3 06	27.8	17.6	5.4
	Level 8 SE3 05	48.9	22.3	3.9
	Level 8 SE3 04	27.2	17.5	5.4



NatHERS Thermal Performance Certificate

	Energy Rating	Certificate Number	14070004
☐	single-dwelling rating		5.9 stars
☒	multi-unit development (attach listing of ratings)	heating	20.2 MJ/m ²
		cooling	21.8 MJ/m ²
Recessed downlights confirmation:		☒ Rated with	☐ Rated without
Assessor Name/Number		Patrick Phelan VIC/BD4V/12/1407	
Assessor Signature			Date 16/2/16

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 8 SE3 03	6.9	39.9	5.3
	Level 8 SE3 02	11.5	20.5	6.8
	Level 8 SE3 01	10.2	20.2	6.9
L09	Level 9 SE1 11	33.7	17.4	4.9
	Level 9 SE1 10	15.3	19.4	6.5
	Level 9 SE1 09	27.5	17.6	5.4
	Level 9 SE1 08	20.7	14.3	6.5
	Level 9 SE1 07	25.8	39.5	4.1
	Level 9 SE1 06	5.7	32.7	6.1
	Level 9 SE1 05	15.7	20.1	6.4
	Level 9 SE1 04	15.7	20.1	6.4
	Level 9 SE1 03	8.6	17	7.6
	Level 9 SE1 02	19.7	19.8	5.9
	Level 9 SE1 01	22.5	20.8	5.6
	Level 9 SE3 10	42.7	21.9	4.2
	Level 9 SE3 09	9.2	15.7	7.6
	Level 9 SE3 08	18.3	18.7	6.3
	Level 9 SE3 07	15.9	21.4	6.2
	Level 9 SE3 06	32.7	26.9	4.4
	Level 9 SE3 05	15.9	21.4	6.2
	Level 9 SE3 04	32.7	26.9	4.4
	Level 9 SE3 03	14.5	39	4.8
	Level 9 SE3 02	11.5	20.5	6.8
	Level 9 SE3 01	23.5	23.1	5.3
L10	Level 10 SE1 11	33.7	17.4	4.9
	Level 10 SE1 10	15.3	19.4	6.5
	Level 10 SE1 09	27.5	17.6	5.4
	Level 10 SE1 08	20.7	14.3	6.5
	Level 10 SE1 07	25.8	39.5	4.1
	Level 10 SE1 06	5.7	32.7	6.1
	Level 10 SE1 05	15.7	20.1	6.4
	Level 10 SE1 04	15.7	20.1	6.4
	Level 10 SE1 03	8.6	17	7.6
	Level 10 SE1 02	19.7	19.8	5.9
	Level 10 SE1 01	22.5	20.8	5.6
L11	Level 11 SE1 11	33.7	17.4	4.9
	Level 11 SE1 10	15.3	19.4	6.5
	Level 11 SE1 09	27.5	17.6	5.4
	Level 11 SE1 08	20.7	14.3	6.5
	Level 11 SE1 07	25.8	39.5	4.1
	Level 11 SE1 06	5.7	32.7	6.1
	Level 11 SE1 05	15.7	20.1	6.4
	Level 11 SE1 04	15.7	20.1	6.4
	Level 11 SE1 03	8.6	17	7.6
	Level 11 SE1 02	19.7	19.8	5.9
	Level 11 SE1 01	22.5	20.8	5.6

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
L12	Level 12 SE1 11	33.7	17.4	4.9
	Level 12 SE1 10	15.3	19.4	6.5
	Level 12 SE1 09	27.5	17.6	5.4
	Level 12 SE1 08	20.7	14.3	6.5
	Level 12 SE1 07	25.8	39.5	4.1
	Level 12 SE1 06	5.7	32.7	6.1
	Level 12 SE1 05	15.7	20.1	6.4
	Level 12 SE1 04	15.7	20.1	6.4
	Level 12 SE1 03	8.6	17	7.6
	Level 12 SE1 02	19.7	19.8	5.9
	Level 12 SE1 01	22.5	20.8	5.6
L13	Level 13 SE1 11	33.7	17.4	4.9
	Level 13 SE1 10	15.3	19.4	6.5
	Level 13 SE1 09	27.5	17.6	5.4
	Level 13 SE1 08	20.7	14.3	6.5
	Level 13 SE1 07	25.8	39.5	4.1
	Level 13 SE1 06	5.7	32.7	6.1
	Level 13 SE1 05	15.7	20.1	6.4
	Level 13 SE1 04	15.7	20.1	6.4
	Level 13 SE1 03	8.6	17	7.6
	Level 13 SE1 02	19.7	19.8	5.9
	Level 13 SE1 01	22.5	20.8	5.6
L14	Level 14 SE1 11	33.7	17.4	4.9
	Level 14 SE1 10	15.3	19.4	6.5
	Level 14 SE1 09	27.5	17.6	5.4
	Level 14 SE1 08	20.7	14.3	6.5
	Level 14 SE1 07	25.8	39.5	4.1
	Level 14 SE1 06	5.7	32.7	6.1
	Level 14 SE1 05	15.7	20.1	6.4
	Level 14 SE1 04	15.7	20.1	6.4
	Level 14 SE1 03	8.6	17	7.6
	Level 14 SE1 02	19.7	19.8	5.9
	Level 14 SE1 01	22.5	20.8	5.6
L15	Level 15 SE1 11	33.7	17.4	4.9
	Level 15 SE1 10	15.3	19.4	6.5
	Level 15 SE1 09	27.5	17.6	5.4
	Level 15 SE1 08	20.7	14.3	6.5
	Level 15 SE1 07	25.8	39.5	4.1
	Level 15 SE1 06	5.7	32.7	6.1
	Level 15 SE1 05	15.7	20.1	6.4
	Level 15 SE1 04	15.7	20.1	6.4
	Level 15 SE1 03	8.6	17	7.6
	Level 15 SE1 02	19.7	19.8	5.9
	Level 15 SE1 01	22.5	20.8	5.6
L16	Level 16 SE1 11	33.7	17.4	4.9
	Level 16 SE1 10	15.3	19.4	6.5
	Level 16 SE1 09	27.5	17.6	5.4
	Level 16 SE1 08	20.7	14.3	6.5
	Level 16 SE1 07	25.8	39.5	4.1
	Level 16 SE1 06	5.7	32.7	6.1
	Level 16 SE1 05	15.7	20.1	6.4



NatHERS Thermal Performance Certificate

	Energy Rating	Certificate Number	14070004
☐	single-dwelling rating		5.9 stars
☒	multi-unit development (attach listing of ratings)	heating	20.2 MJ/m ²
		cooling	21.8 MJ/m ²
Recessed downlights confirmation:		☒ Rated with	☐ Rated without
Assessor Name/Number		Patrick Phelan	VIC/BDV/12/1407
Assessor Signature			Date 16/2/16

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 16 SE1 04	15.7	20.1	6.4
	Level 16 SE1 03	8.6	17	7.6
	Level 16 SE1 02	19.7	19.8	5.9
	Level 16 SE1 01	22.5	20.8	5.6
L17	Level 17 SE1 11	33.7	17.4	4.9
	Level 17 SE1 10	15.3	19.4	6.5
	Level 17 SE1 09	27.5	17.6	5.4
	Level 17 SE1 08	20.7	14.3	6.5
	Level 17 SE1 07	25.8	39.5	4.1
	Level 17 SE1 06	5.7	32.7	6.1
	Level 17 SE1 05	15.7	20.1	6.4
	Level 17 SE1 04	15.7	20.1	6.4
	Level 17 SE1 03	8.6	17	7.6
	Level 17 SE1 02	19.7	19.8	5.9
	Level 17 SE1 01	22.5	20.8	5.6
L18	Level 18 SE1 11	33.7	17.4	4.9
	Level 18 SE1 10	15.3	19.4	6.5
	Level 18 SE1 09	27.5	17.6	5.4
	Level 18 SE1 08	20.7	14.3	6.5
	Level 18 SE1 07	25.8	39.5	4.1
	Level 18 SE1 06	5.7	32.7	6.1
	Level 18 SE1 05	15.7	20.1	6.4
	Level 18 SE1 04	15.7	20.1	6.4
	Level 18 SE1 03	8.6	17	7.6
	Level 18 SE1 02	19.7	19.8	5.9
	Level 18 SE1 01	22.5	20.8	5.6
L19	Level 19 SE1 11	33.7	17.4	4.9
	Level 19 SE1 10	15.3	19.4	6.5
	Level 19 SE1 09	27.5	17.6	5.4
	Level 19 SE1 08	20.7	14.3	6.5
	Level 19 SE1 07	25.8	39.5	4.1
	Level 19 SE1 06	5.7	32.7	6.1
	Level 19 SE1 05	15.7	20.1	6.4
	Level 19 SE1 04	15.7	20.1	6.4
	Level 19 SE1 03	8.6	17	7.6
	Level 19 SE1 02	19.7	19.8	5.9
	Level 19 SE1 01	22.5	20.8	5.6
L20	Level 20 SE1 11	33.7	17.4	4.9
	Level 20 SE1 10	15.3	19.4	6.5
	Level 20 SE1 09	27.5	17.6	5.4
	Level 20 SE1 08	20.7	14.3	6.5
	Level 20 SE1 07	25.8	39.5	4.1
	Level 20 SE1 06	5.7	32.7	6.1
	Level 20 SE1 05	15.7	20.1	6.4
	Level 20 SE1 04	15.7	20.1	6.4
	Level 20 SE1 03	8.6	17	7.6
	Level 20 SE1 02	19.7	19.8	5.9
	Level 20 SE1 01	22.5	20.8	5.6
L21	Level 21 SE1 11	33.7	17.4	4.9
	Level 21 SE1 10	15.3	19.4	6.5


Energy Rating

Certificate Number **14070004**

☐ single-dwelling rating **5.9** stars

☒ multi-unit development (attach listing of ratings)

heating **20.2** MJ/m²
 cooling **21.8** MJ/m²

Recessed downlights confirmation: ☒ Rated with ☐ Rated without

Assessor Name/Number **Patrick Phelan VIC/BDAY/12/1407**

Assessor Signature  Date **16/2/16**

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 21 SE1 09	27.5	17.6	5.4
	Level 21 SE1 08	20.7	14.3	6.5
	Level 21 SE1 07	25.8	39.5	4.1
	Level 21 SE1 06	5.7	32.7	6.1
	Level 21 SE1 05	15.7	20.1	6.4
	Level 21 SE1 04	15.7	20.1	6.4
	Level 21 SE1 03	8.6	17	7.6
	Level 21 SE1 02	19.7	19.8	5.9
	Level 21 SE1 01	22.5	20.8	5.6
L22	Level 22 SE1 11	33.7	17.4	4.9
	Level 22 SE1 10	15.3	19.4	6.5
	Level 22 SE1 09	27.5	17.6	5.4
	Level 22 SE1 08	20.7	14.3	6.5
	Level 22 SE1 07	25.8	39.5	4.1
	Level 22 SE1 06	5.7	32.7	6.1
	Level 22 SE1 05	15.7	20.1	6.4
	Level 22 SE1 04	15.7	20.1	6.4
	Level 22 SE1 03	8.6	17	7.6
	Level 22 SE1 02	19.7	19.8	5.9
	Level 22 SE1 01	22.5	20.8	5.6
L23	Level 23 SE1 11	33.7	17.4	4.9
	Level 23 SE1 10	15.3	19.4	6.5
	Level 23 SE1 09	27.5	17.6	5.4
	Level 23 SE1 08	20.7	14.3	6.5
	Level 23 SE1 07	25.8	39.5	4.1
	Level 23 SE1 06	5.7	32.7	6.1
	Level 23 SE1 05	15.7	20.1	6.4
	Level 23 SE1 04	15.7	20.1	6.4
	Level 23 SE1 03	8.6	17	7.6
	Level 23 SE1 02	19.7	19.8	5.9
	Level 23 SE1 01	22.5	20.8	5.6
L24	Level 24 SE1 11	33.7	17.4	4.9
	Level 24 SE1 10	15.3	19.4	6.5
	Level 24 SE1 09	27.5	17.6	5.4
	Level 24 SE1 08	20.7	14.3	6.5
	Level 24 SE1 07	25.8	39.5	4.1
	Level 24 SE1 06	5.7	32.7	6.1
	Level 24 SE1 05	15.7	20.1	6.4
	Level 24 SE1 04	15.7	20.1	6.4
	Level 24 SE1 03	8.6	17	7.6
	Level 24 SE1 02	19.7	19.8	5.9
	Level 24 SE1 01	22.5	20.8	5.6
L25	Level 25 SE1 11	33.7	17.4	4.9
	Level 25 SE1 10	15.3	19.4	6.5
	Level 25 SE1 09	27.5	17.6	5.4
	Level 25 SE1 08	20.7	14.3	6.5
	Level 25 SE1 07	25.8	39.5	4.1
	Level 25 SE1 06	5.7	32.7	6.1
	Level 25 SE1 05	15.7	20.1	6.4
	Level 25 SE1 04	15.7	20.1	6.4
	Level 25 SE1 03	8.6	17	7.6



NatHERS Thermal Performance Certificate

	Energy Rating	Certificate Number	14070004
☐	single-dwelling rating		5.9 stars
☒	multi-unit development (attach listing of ratings)	heating	20.2 MJ/m ²
		cooling	21.8 MJ/m ²
Recessed downlights confirmation:		☒ Rated with	☐ Rated without
Assessor Name/Number		Patrick Phelan VIC/BDAY/12/1407	
Assessor Signature			Date 16/2/16

Project Location	Darling Square SE Plot
Postcode	2000
Accredited Assessor	Patrick Phelan
Organisation	Cundall
Date	16/02/2016

Level	Lend Lease Number	Heating	Cooling	Star Rating
	Level 25 SE1 02	19.7	19.8	5.9
	Level 25 SE1 01	22.5	20.8	5.6
L26	Level 26 SE1 11	33.7	17.4	4.9
	Level 26 SE1 10	15.3	19.4	6.5
	Level 26 SE1 09	27.5	17.6	5.4
	Level 26 SE1 08	20.7	14.3	6.5
	Level 26 SE1 07	25.8	39.5	4.1
	Level 26 SE1 06	5.7	32.7	6.1
	Level 26 SE1 05	15.7	20.1	6.4
	Level 26 SE1 04	15.7	20.1	6.4
	Level 26 SE1 03	8.6	17	7.6
	Level 26 SE1 02	19.7	19.8	5.9
	Level 26 SE1 01	22.5	20.8	5.6
L27	Level 27 SE1 11	33.7	17.4	4.9
	Level 27 SE1 10	15.3	19.4	6.5
	Level 27 SE1 09	27.5	17.6	5.4
	Level 27 SE1 08	20.7	14.3	6.5
	Level 27 SE1 07	25.8	39.5	4.1
	Level 27 SE1 06	5.7	32.7	6.1
	Level 27 SE1 05	15.7	20.1	6.4
	Level 27 SE1 04	15.7	20.1	6.4
	Level 27 SE1 03	8.6	17	7.6
	Level 27 SE1 02	19.7	19.8	5.9
	Level 27 SE1 01	22.5	20.8	5.6
L28	Level 28 SE1 11	33.7	17.4	4.9
	Level 28 SE1 10	15.3	19.4	6.5
	Level 28 SE1 09	27.5	17.6	5.4
	Level 28 SE1 08	20.7	14.3	6.5
	Level 28 SE1 07	25.8	39.5	4.1
	Level 28 SE1 06	5.7	32.7	6.1
	Level 28 SE1 05	15.7	20.1	6.4
	Level 28 SE1 04	15.7	20.1	6.4
	Level 28 SE1 03	8.6	17	7.6
	Level 28 SE1 02	19.7	19.8	5.9
	Level 28 SE1 01	22.5	20.8	5.6
L29	Level 29 SE1 11	43.1	25	3.9
	Level 29 SE1 10	50	24.4	3.8
	Level 29 SE1 08	29.1	18.4	5.2
	Level 29 SE1 07	29.7	23	4.8
	Level 29 SE1 06	10.2	34.7	5.4
	Level 29 SE1 05	13.0	25.0	6.1
	Level 29 SE1 04	11.9	25.4	6.2
	Level 29 SE1 03	11.9	25.4	6.2
	Level 29 SE1 02	19.1	24.5	5.5
	Level 29 SE1 01	27.2	15.6	5.6
		20.2	21.8	5.9