

Residential Development

Sustainability Management Plan

77 Park Street South Melbourne VIC 3205

Revision: Job No: Date: 02 MEL1535 18 March 2022

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Location:	77 Park Street, South Melbourne
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2. Introduction

This report provides an overview of the ecologically sustainable design (ESD) strategy for the proposed development at 77 Park Street, South Melbourne. The development consists of apartments and townhouses from ground to level 5 with car parking across multiple basement levels.

The objective of this report is to describe how best practice ESD will be incorporated in the development, including targets and proposed design approaches, and to demonstrate that the development meets or exceeds the standards required by the Port Phillip City Council, specifically the requirement to achieve the design potential to a minimum +50% BESS score.

2.1 SITE OVERVIEW

The site is located at 77 Park Street, South Melbourne. The proposed residential development contains three basement levels, and ground level to level 5. It comprises of the following:

- Apartments
- Townhouses
- Basement car and bicycle parking



FIGURE 1: PROPOSED DEVELOPMENT

2.2 STATUTORY CONTEXT

2.2.1 Port Phillip City Council

The site is situated within Melbourne in the City of Port Phillip. The City of Port Phillip has objectives and strategies relating to ESD which are contained in the planning scheme. These policies and objectives have been taken into consideration throughout this assessment and in our advice given to the applicant. Overall, the proposed ESD initiatives of this development will meet Council's overarching goal of promoting sustainable design and buildings.

The City of Port Phillip Scheme Clause 22.13 addresses the Environmentally Sustainable Development requirements for developments within the Port Phillip City Council. The key objectives outlined in Clause 22.13-2 are addressed using the Sustainable Design Assessment in the Planning Process (SDAPP) framework which



ensures the consistent inclusion of environmental performance considerations into planning permit approvals. The framework identifies 10 key sustainable design criteria that need to be addressed, as follows:

- Indoor environment quality
- Energy efficiency
- Water efficiency
- Stormwater management
- Building materials
- Transport
- Waste Management
- Urban Ecology
- Innovation
- Construction and building management

The Built Environment Sustainability Scorecard (BESS) has been utilised to benchmark the environmental performance of the project. The proposal has the preliminary design potential to achieve the following BESS Score:

• 57% - Best Practice

2.3 SUMMARY OF ESD INITIATIVES

Table 2 demonstrates summary of ESD initiatives in the different SDAPP categories including Management, Water, Energy, Stormwater, IEQ, Transport, Waste Management, Urban Ecology and Innovation.

	ESD Initiativ	ves
Management	 ESD Professional engaged Thermal modelling of all residential areas 	Metering strategyBuilding users guide
Water	 Water efficient fittings, fixtures and appliances: Showers: 3 Stars (>6 but ≤7.5L/min) Toilets: 4 Stars Taps: 5 Stars Dishwashers: 4 Stars 	 20,000L rainwater tank connected to toilets for flushing Water meters for all major water uses Individual water meters for each apartment and townhouse
Energy	 High Performance Fabric and Glazing >10% reduction in electricity consumption to residential areas 6.5 star average NatHERS rating 	 >10% reduction in energy/ gas consumption to residential areas for the hot water system External lighting controlled by motion detector High performance LED lighting 2.5kWp PV system
Stormwater	105% STORM Score	
IEQ	 Adequate daylight to residential areas High performance double glazing 	 100% of dwellings have an external window in all bedrooms, this is greater than the BESS requirement of 90%
Transport	 Residential bicycle spaces provided Transit score of 94 achieved for the development 	 Walkscore of 96 achieved for the development
Waste and Building Materials	 Recycling facilities as accessible as general waste facilities Sustainable material selection Certified timber selection PVC reduction 	 Recommended that the Head contractor is an ISO 14001:2015 certified company with certified environmental management systems

TABLE 2: SUMMARY OF ESD INITIATIVES.

	Building re-use	•	Waste management plan for construction and operational period
Urban Ecology	 The site will contain vegetation through landscaping and planter boxes 		
Innovation	Contractor education		

3. ESD Initiatives

The following section provides details of the ESD initiatives which have been deemed potentially suitable for the project. These form the overall benchmarking assessment of the building. These initiatives are currently adopted or under consideration; best endeavours will be made to include these in the fully developed design.

3.1 MANAGEMENT



The SDAPP 'Management' category encourages and rewards the adoption of practices and processes that enable and support best practice sustainability outcomes throughout the different phases of a project's design, construction and its ongoing operation.

Throughout the 'Management' category, SDAPP intends to improve the sustainability performance of a project by influencing areas where decision-making is critical. This category rewards the implementation of processes and strategies that support positive sustainability outcomes during construction. The category also promotes practices that ensure a project will be used to its optimum operational potential.

The 'Management' category rewards projects that achieve the following outcomes:

- Coordinated approaches
- Commitment to implementation
- Sustainable cultures and behaviours

TABLE 3: ACTIONS FOR BUILDING MANAGEMENT

Action	Criteria Targeted	Response-Strategies and Innovation
Engage ESD Professional	\checkmark	• ADP Consulting will be appointed as the ESD Consultant from schematic design to construction to completion.
Thermal Performance Modelling – Multi-Dwelling Residential	~	 Preliminary NatHERS ratings for all thermally unique dwellings have been undertaken. Refer to Appendix D for further details.
Building Systems Tuning	~	 The development will undergo commissioning and tuning of all major building services according to relevant standards (AIRAH, ASHRAE or CIBSE)
Metering strategy	~	 Utility meters provided to all individual dwellings. All major common area services to be separately submetered.
Building Users Guide	~	• A building user's guide will be developed for use by the occupants and building maintenance. The building design and ESD commitments will be reviewed to identify the systems and processes that the guests and employees interact with. The building user's guide will be a simple booklet or pamphlet with simple language to encourage the most sustainable use of the building possible.
Total Score	4.5%	
Maximum Score Available	4.5%	

3.2 WATER



The SDAPP 'Water' category aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use.

Reductions in operational water consumption may be achieved through maximisation of waterefficiency within a project, as well as through the utilisation of reclaimed water sources.

The 'Water' category rewards projects that achieve the following outcomes:

- The selection of equipment that is more water efficient than comparable standard practice equivalents;
- The use of water-efficient supplementary equipment;
- The selection of water-efficient toilets, taps and showers.

TABLE 4: ACTIONS TO MAXIMISE WATER EFFICIENCY.

Action	Criteria Targeted	Response-Strategies and Innovation
Potable Water Use Reduction (Interior Uses)	~	 31% reduction in potable water consumption (interior uses) Water efficient fittings, fixtures and appliances: Showers: 3 Stars (>6.0 but ≤7.5L/min) Toilets: 4 Stars Taps: 5 Stars Dishwashers: 4 Stars
Rainwater Collection & Reuse	~	 800m² of total roof collection area. 20,000L rainwater tank connected to toilets for flushing. Rainwater tank connected to toilets to achieve 100% rainwater collection and reuse.
Water Efficient Landscaping	~	• Drought tolerant plants will be installed in landscaping and planter boxes to reduce potable water usage for irrigation.
Total Score	5.6%	COMPULSORY COMPLIANCE – MIN 4.5% REQUIRED
Maximum Score Available	9%	

3.3 ENERGY



The SDAPP 'Energy' category aims to reward projects that are designed and constructed to reduce their overall operational energy consumption below that of a comparable standard practice building. Such reductions are directly related to reduced greenhouse gas emissions, lower overall energy demand as well as reductions in operating costs for building owners and occupants.

Through the 'Energy' category, SDAPP aims to ensure reductions in greenhouse gas emissions by facilitating efficient energy usage and encouraging the utilisation of energy generated by low-emission sources.

The 'Energy' category rewards projects that achieve the following outcomes:

- The implementation of well-designed systems, aimed at lower operating emissions;
- The selection of high efficiency equipment over less energy efficient alternatives;
- The implementation of well-designed and zoned lighting that is energy efficient and appropriate for a space's use;
- The use of efficient supplementary equipment; and
- The procurement of zero carbon and low carbon energy sources.

Action	Criteria Targeted	Response-Strategies and Innovation
Thermal Performance Rating Residential	✓	 Achieve a minimum 6.5-star NatHERS rating average for the residential development. Refer to Appendix D for the Preliminary House Energy Rating Report confirming that the above has been met.
Greenhouse Gas Emissions Reduction	\checkmark	 Greenhouse gas emissions for the development will be 10% below the benchmark.
Electricity Consumption Reduction	✓	 >10% reduction in the annual electricity consumption, through high energy efficient appliances, if installed within the base building package. All heating and cooling systems will have a minimum 4 star energy efficiency rating.
Gas Consumption Reduction	\checkmark	 >10% reduction in the annual gas consumption
Hot Water	~	 >10% reduction of energy used for hot water against the reference case. Installation of 5-star gas instantaneous domestic hot water system to each Townhouse. Installation of a 5-star centralised gas hot water system to serve the apartments.
Internal Lighting Residential (Apartments)	~	 High performance LED lighting with power density at least 20% lower than required by Table J6.2a of the NCC BCA (2016) Volume 1 Section J.
Internal Lighting Residential (Townhouses)	\checkmark	 High performance LED lighting with maximum illumination power density of 4W/sqm.
External Lighting	~	 External, common, service and lift area lighting to be controlled by motion or timer sensors to minimise energy use.
Renewable Energy Systems (Apartments)	✓	 Installation of a 2.5kWp Solar PV system (refer to Appendix A) to the roof of the apartment building. Carbon emissions abatement of 3,630 kgCO₂e/annum
Total Score	18.4%	COMPULSORY COMPLIANCE – MIN 13.75% REQUIRED
Maximum Score Available	27.5%	

TABLE 5: ACTIONS TO MAXIMISE ENERGY EFFICIENCY.



A 2.5 kWp photovoltaic array will result in an annual electrical generation of ~2,750 kWh/annum and a predicted annual saving off \$1,427 (4% annual increase in electricity costs) or \$2,542 (8% annual increase in electricity costs).

TABLE 6: CARBON ABATEMENT OPTIONS

3.4 STORMWATER



The SDAPP 'Stormwater' category aims to ensure projects are responsibly treating stormwater to reduce the amount of polluted stormwater run-off entering local waterways such as; rivers, streams, wetlands and bays. This can be achieved by the following water sensitive urban design strategies (WSUD); rainwater tanks, raingardens, porous paving and landscaping.

To demonstrate compliance, a score of 100% must be achieved using the Stormwater Treatment Objective – Relative Measure (STORM) tool, demonstrating that the following has been achieved:

- Suspended solids 80% retention of typical urban load
- Total Nitrogen 45% retention of typical urban load
- Total Phosphorous 45% retention of typical urban load
- Litter 70% reduction of typical urban load

TABLE 7: ACTIONS TO ACHIEVE WSUD

Action	Criteria Targeted	Response-Strategies and Innovation
Stormwater Treatment	~	 Stormwater collection from 800m² non-trafficable roof area across the development. Storage in a 20,000L rainwater tank connected to toilets for flushing serving an equivalent of 40 occupants.
Total Score	13.5%	COMPULSORY COMPLIANCE – MIN 13.5% REQUIRED
Maximum Score Available	13.5%	

Melbourne STORM Rating Report

TransactionID: Municipality: Rainfall Station: Address:	732699 PORT PHILLIP PORT PHILLIP 77 Park Street					
	South Melbourne	3205				
Assessor:	ADP Consulting	0200				
Development Type:	Residential - Multi	iunit				
Allotment Site (m2):	1,530.00					
STORM Rating %:	105					
Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof Apartment	545.00	Rainwater Tank	15,000.00	30	170.00	81.00
Roof Church	255.00	Rainwater Tank	5,000.00	10	144.80	79.50
Untreated	440.00	None	0.00	0	0.00	0.00

FIGURE 3: STORM ASSESSMENT

3.6 INDOOR ENVIRONMENT QUALITY



The SDAPP 'Indoor Environment Quality' category aims to encourage and reward initiatives that enhance the comfort and well-being of occupants. The credits within this category address issues such as natural daylight, air quality and thermal comfort.

Through the 'Indoor Environment Quality' category, SDAPP aims to achieve sustainability performance improvements in a manner that also improves occupants' experience of the

space. While it is possible to reduce a project's energy intensity by simply providing occupants with poor lighting quality for example, the 'Indoor Environment Quality' category recognises that buildings are designed for people and that reductions in energy use should never be made at the expense of the occupants' health and wellbeing.

By rewarding both energy efficiency and encouraging occupant well-being, the BESS rating system promotes and rewards a holistic approach to sustainability that results in multiple benefits.

The 'Indoor Environment Quality' category rewards projects that achieve the following outcomes:

- Increased comfort and wellbeing
- Reduced exposure to pollutants

TABLE 8: ACTIONS TO MAXIMISE INDOOR ENVIRONMENT QUALITY.

Action	Criteria Targeted	Response-Strategies and Innovation
Thermal Comfort Double Glazing	~	 High performance double glazed window systems will be used for the development. Refer to Appendix D for the Preliminary House Energy Rating Report outlining the preliminary building fabric and glazing.
Daylight Access Residential	~	 100% of dwellings have an external window in all bedrooms, this is greater than the BESS requirement of 90% Adequate daylight to residential areas
Shading Residential	\checkmark	• Provisions for shading to the living areas through eaves to the balcony areas.
Total Score	9.1%	COMPULSORY COMPLIANCE – MIN 8.25% REQUIRED
Maximum Score Available	16.5%	

3.7 TRANSPORT



The SDAPP 'Transport' category aims to reward projects that facilitate a reduction of the dependency of occupants on private car use as an important means of reducing overall greenhouse gas emissions. The use of motor vehicles directly contributes to climate change in two ways - through the high amounts of energy required to produce cars and build and maintain supporting road transport infrastructure and services; and the direct emissions that result from

car operations.

If reliance on individual motor vehicle transportation is to be reduced, it is necessary to maximise alternative transportation options. Rather than limiting access to private fossil fuel vehicles, the 'Transport' category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage the use of public transport options, cycling or walking, and the selection of sites that are close to local amenities.

The 'Transport' category rewards projects that achieve the following outcomes:

- The selection of sites that have readily accessible public transport options;
- The selection of sites within close proximity of a diversity of amenities;
- The facilitation and encouragement of the use of alternative transport options, such as bicycles or electric vehicles.
- Providing a Green Travel Plan to residents, visitors and staff.

Action	Criteria Targeted	Response-Strategies and Innovation
Bicycle Parking Residential	~	 The development provides 20 bicycle spaces for the residents of the apartments. The development provides 4 bicycle spaces for visitors. Located on Ground Level.
Walkability and Transit Score	✓	 Walkscore.com measures the walkability of any address worldwide by assessing proximity to nearby amenities such as schools, groceries, shopping, parks, errands and entertainment. Amenities within a 5 minute walk are given maximum points, decreasing to a maximum walk distance of 30 minutes. The site rated as 'Walkers Paradise' with a walk score of 96, meaning daily errands can be completed without the need for a car or bike for transport (Figure 5). Transit Score measures how well a location is served by public transit based on the distance and type of nearby transit lines. This development achieves a transit score of 94 "Riders Paradise". The close proximity of trains, trams and buses will benefit the development through reduced reliance on cars and reduced greenhouse gas emissions.
Total Score	0%	
Maximum Score Available	0%	

TABLE 9: ACTIONS TO MAXIMISE SUSTAINABLE TRANSPORT.







FIGURE 4B: 4NO. BICYCLE SPACES – BASEMENT – VISITORS



FIGURE 5: WALKSCORE AND TRANSIT SCORE

3.8 WASTE MANAGEMENT AND BUILDING MATERIALS



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The SDAPP 'Materials and Waste' categories aim to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated or the recycling of as much of the waste generated as possible.

The 'Materials' category rewards projects that achieve the following outcomes:

- Use of products and materials with lower impact
 - Reduction in waste to landfill
- Adoption of a demolition and construction material recycling target
- Preparation of an operational Waste Management Plan

TABLE 10: ACTIONS FOR SUSTAINABLE MATERIAL SELECTION.

Action	Criteria Targeted	Response-Strategies and Innovation			
Operational Waste Convenience of Recycling	~	• Recycling facilities will be as accessible as the general waste bins to minimise the recyclable materials entering the general waste stream.			
Waste Management Plan	\checkmark	• Preparation of a Waste Management Plan for both the construction and operational period for the development.			
Building Re-Use	\checkmark	• The existing church located on site will be re-used for the townhouses (Figure 6).			
Building Materials	~	 Timber: All timber used in the development will be FSC accredited timber Structural Steel: supplied by a steel supplier that is accredited to the Environmental Sustainability Charter of the Australian Steel Institute Reinforcing Steel: Produced using energy-reducing processes (measured by average mass by the steel maker annually) 95% of all internally applied paints, adhesives, sealants and carpets meet stipulated 'Total VOC Limits' as per Table 13.1.1 of the Green Star Design and As-Built v1.2 Submission guidelines 			
Construction and Demolition Phase Recycling	\checkmark	• The development will adopt recycling target of 80% for the construction period.			
Total Score	3.6%				
Maximum Score Available	5.5%				



FIGURE 6: BUILDING RE-USE

3.9 URBAN ECOLOGY

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The SDAPP 'Land Use & Ecology' category aims to reduce the negative impacts on sites' ecological value as a result of urban development and reward projects that minimise harm and enhance the quality of local ecology.

The 'Land Use & Ecology' category rewards projects that achieve the following outcomes:
Site sustainability.

Reducing ecological impacts from occupied sites.

TABLE 11: ACTIONS FOR LAND USE AND ECOLOGY.

Action	Criteria Targeted	Response-Strategies and Innovation
Vegetation	\checkmark	• The site will be covered in vegetation through the inclusion of landscaping and planter boxes.
Total Score	1.3%	
Maximum Score Available	5.5%	

3.10 INNOVATION



The SDAPP 'Innovation' category aims to recognise the implementation of innovative practices, processes and strategies that promote sustainability in the built environment. The 'Innovation' category also rewards projects that can demonstrate that sustainability principles have been incorporated not at a project level, but also in a broader sense. This may include, for instance, collaboration between building owners and tenants, disclosure of the financial impacts of sustainability or delivering sustainable education content to site workers.

The Innovation category rewards projects that achieve the following outcomes:

- Meeting the aims of an existing credit using a technology or process that is considered innovative;
- Implementing a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development;
- Delivering a substantial improvement on the benchmark required to achieve full points;
- Addressing an Innovation Challenge; and
- Addressing a 'global sustainability' issue as covered by other international sustainability rating systems.

Action	Criteria Targeted	Response-Strategies and Innovation
Contractor Education	~	 The aim of the Contractor Education Innovation is to increase the knowledge and skillset of contractors and subcontractors of sustainable practises and outcomes to better equip them to deliver sustainable developments in the future. This can be achieved by satisfying the following requirements: Education sessions on climate change and health impacts of bare minimum building practices. Site specific training highlighting the sustainable solutions and outcomes of the project. Training must inform of any certification that the project is aiming to achieve and why this is important.
Total Score	0.9%	
Maximum Score Available	9%	

TABLE 11: ACTIONS FOR INNOVATION.

4. Implementation Schedule

The following implementation schedule is provided to provide guidance on the responsibilities for implementation of the ESD initiatives outlined in this report:

	Responsible Party		
	Responsible Party		
Natural Ventilation	Architect		
Natural Lighting			
Individual Control of Indoor Environment	Architect		
	Services Engineer		
Mechanical Ventilation	Services Engineer		
Thermal Insulation	Architaat		
Shading	Architect		
Llaura Energy Define	Architect		
House Energy Rating	ESD Consultant		
Heating / Cooling / AC systems			
Domestic Hot Water			
Artificial Lighting	Services Engineer		
Control Systems	3		
Energy Management and Metering			
Water Efficient Fixtures	Architect		
	Services Engineer		
Public Area Water Consumption	Owner's Corporation		
Deinweten Henvestige	Services Engineer		
Rainwater Harvesting	Architect		
Mata dala Osta da a	Architect		
Materials Selection	Builder		
Bicycle Use	Architect		
Waste Management	Waste Management Consultant		
Construction Waste Management	Builder		
	Services Engineer		
Building Operation and Maintenance	Builder		
5 1	Equipment Suppliers		
	Services Engineer		
Building Users Guide	Waste Management Engineer		
	Architect		
Commissioning of Building Systems	Builder		

TABLE 13: IMPLEMENTATION SCHEDULE

5. BESS Assessment Summary

BESS provides a framework for benchmarking the ESD achievement of a building design. The tool includes credits under a range of categories which may be used to guide ESD and tally a score which corresponds to the following benchmarks:

- +50% Best Practice
- +70% Excellence

A BESS assessment has been completed for the development to provide a guide to the sustainability initiatives that will be implemented in the design.

In summary, the preliminary assessment of the development achieves a total BESS score of 57 out of 100 (Table 14). This highlights the high commitment to sustainable development in the design of the building.

TABLE 14: BESS SUMMARY					
SDAPP Criteria	Score Achieved				
Management	100%				
Water	62%				
Energy	67%				
Stormwater	100%				
IEQ	55%				
Transport	0%				
Waste	66%				
Urban Ecology	24%				
Innovation	10%				
BESS SCORE	57%				



FIGURE 7: PERFORMANCE OF EACH CATEGORY IN BESS.

Appendix A – PV Calculation

The solar photovoltaic system will be situated on the roof of the apartment building, ensuring uninterrupted solar access. The electricity generated will offset the base building power usage, and the system will be managed by the embedded network provider.

TABLE	15:	CARBON	ABATEMENT	OPTIONS

System Type	Energy	Carbon Factor	Carbon Emissions
Photovoltaic system 2.5 kWp	2,750 kWh/annum	1.32 kgCO ₂ -e/kWh	3,630 kgCO ₂ -e/annum

A 2.5 kWp PV installation is approximately 9 x 300W panels, each panel measuring roughly 1.1m x 1.7m. Final PV capacity will be confirmed after design has progressed further and spatial coordination between services has been completed.

The analysis has allowed for two scenarios for increasing electricity costs as follows:

- Optimistic 8% annual increase
- Conservative 4% annual increase

TABLE 16: PV PACKBACK ANALYSIS AND AVAERAGE ANNUAL ELECTRICITY SAVINGS.

(AU\$)	Comment
3,750	Based on 300w high efficiency Monocrystalline panels
3,500	Approximate cost - this will vary depending on display format and depth of information recorded.
7,250	
	(AU\$) 3,750 3,500 7,250

Annual Costs	(AU\$/annum)	Comment
Average Annual Maintenance	210	Allows \$30/kW for checking of system electrics plus \$15/panel for cleaning.
Other Costs		
Inverter Replacement	750	Allows \$300/kW for replacing Inverter every ten years.
Annual Savings		
Conservative Analysis	(Au\$/yr)	Comment
Average Appuel Electricity Sovings	1 407	*Assumes an increase of 4% pa average over 25 years.
Average Annual Electricity Savings	1,427	*Based on a starting cost of 35c/kWh.
Optimistic analysis	(AU\$/yr)	Comment
Average Appual Electricity Savings	2,542	*Assumes an increase of 8% pa average over 25 years.
Average Annual Electricity Savings		*Based on a starting cost of 35c/kWh.



FIGURE 8: 2.5 KW PV SYSTEM PAYBACK



FIGURE 9: 2.5 KW ARRAY CUMULATIVE SAVINGS

A 2.5 kWp photovoltaic array will result in an annual electrical generation of ~2,750 kWh/annum and a predicted annual saving off \$1,427 (4% annual increase in electricity costs) or \$2,542 (8% annual increase in electricity costs).

Appendix B – Stormwater Calculation

Melbourne Water's Stormwater Treatment Objective – Relative Measure (STORM) Calculator is a simple analysis method for stormwater treatment and water sensitive urban design (WSUD). It rates the performance of treatment measures such as rainwater tanks, wetlands, and infiltration systems relative to best practice targets, and calculates a weighted average score. A STORM score of 100 or greater indicates that treatment measures are of sufficiently high standard.

In order to demonstrate compliance, a score of 100% must be achieved using the Stormwater Treatment Objective – Relative Measure (STORM) tool, demonstrating that the following has been achieved:

- Suspended solids 80% retention of typical urban load
- Total Nitrogen 45% retention of typical urban load
- Total Phosphorous 45% retention of typical urban load
- Litter 70% reduction of typical urban load

As design progresses, the site stormwater management strategy will consider flows from the development as well as the streets, driveways and other impervious surfaces. The overall stormwater strategy will be detailed in the civil engineer's WSUD report, and will be designed to ensure that council's best practice targets are met.

A provisional STORM rating has been carried out based on the following WSUD measures:

- Stormwater collection from 800m² non-trafficable roof area across the development.
- Storage in a 20,000L rainwater tank connected to toilets for flushing to an equivalent of 40 occupants.

The development achieves a STORM rating of 105% as shown in Figure 10.

Melbourne Water	STOR	M Rating F	Report			
TransactionID:	732699					
Municipality:	PORT PHILLIP					
Rainfall Station:	PORT PHILLIP					
Address:	77 Park Street					
	South Melbourne					
	VIC	3205				
Assessor:	ADP Consulting					
Development Type:	Residential - Multi	unit				
Allotment Site (m2):	1,530.00					
STORM Rating %:	105					
Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof Apartment	545.00	Rainwater Tank	15,000.00	30	170.00	81.00
Roof Church	255.00	Rainwater Tank	5,000.00	10	144.80	79.50
Untreated	440.00	None	0.00	0	0.00	0.00

FIGURE 10: STORM ASSESSMENT



STORMWATER COLLECTION AREAS

This section provides the rainwater collection area mark-ups used for STORM calculations. Different colour highlights are used to denote different types of areas:

- Blue: non-trafficable roof area. These areas have minimal or no foot traffic and rainwater collected from these surfaces do not require enhanced treatment before re-use.
- Green: planting/vegetated/pervious area. These areas can be deducted from the total site areas as they do not contribute to stormwater run-off.





Appendix C – BESS Report



Review your project results and commitments below.

You will need to finalise your project in order to generate a BESS report for endorsement by Council. To do this, first make sure that:

- The information you have supplied is accurate
- You have supplied all required evidence. You can do this by uploading a document or indicating that you will
 provided a printed copy. Where something needs to be indicated on your design drawings, provide a
 drawing reference number.

Once you are satisfied, select 'Finalise Report'.

After a project is finalised it will be locked for editing. If you need to make changes after finalising a report, you should copy your project to a new version.

This BESS report outlines the sustainable design commitments of the proposed development at 77 Park St South Melbourne VIC 3205. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Port Phillip City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

77 Park St, South Melbourne 3205 South Melbourne	Project number
Site area: 1530 m ² \cdot Building Floor Area: 4355 m ² \cdot Date of Assessment: 22 Feb 2019 \cdot	19350
Version: V3, 1.5.1-B157 · Applicant: t.monkhouse@adpconsulting.com.au	Published http://bess.net.au/projects/19350

Your BESS sc	ore is	% of Total	Category	Score	Pass
		4 %	Management	100 %	
	\cap /	5 %	Water	62 %	~
+ h/	U_{\wedge}	18 %	Energy	67 %	~
	/0	13 %	Stormwater	100 %	~
		9 %	IEQ	55 %	~
		0 %	Transport	0 %	
I I I I I I 0% 10% 20% 30% 40% 50% 60	 % 70% 80% 90% 100%	3 %	Waste	66 %	
50% +	70% +	1 %	Urban Ecology	24 %	
Best Practice	Excellence	0 %	Innovation	10 %	



How did this Development Perform in each Environmental Category?



How does each Dwelling or Non-Residential Space type perform?



Sustainable design commitments by category

The sustainable design commitments for this project are listed below. These are to be incorporated into the design documentation and subsequently implemented.

Management

100% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Management 1.1 Pre-Application Meeting			100 %
Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential			100 %
Management 3.1 Metering			100 %
Management 3.3 Metering			100 %
Management 4.1 Building Users Guide			100 %

Management 1.1 Pre-Application Meeting

100%

Score Contribution	This credit contributes 39% towards this section's score.
Aim	To encourage the involvement of suitably qualified ESD professionals in the project team from the early design stage.

Questions

Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?

Project wide

Yes

Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential

100%

Score Contribution	This credit contributes 26% towards this section's score.
Aim	To encourage and recognise developments that have used modelling to
	inform passive design at the early design stage

Have preliminany NatHE	RS ratings been undertaken for all thermally unique dwellings?
have preliminary matric	in o ratings been undertaken for an thermany unique dweinings:
Townhouse	Apartment
Yes	Yes
Management 3.1 N	letering 100 ⁴
Score Contribution	This credit contributes 10% towards this section's score.
Aim	To provide building users with information that allows monitoring of energy and water consumption
Questions	
Have utility meters beer	n provided for all individual dwellings?
Apartment	
Yes	
Yes Management 3.3 M Score Contribution	letering 1009 This credit contributes 10% towards this section's score.
Yes Management 3.3 M Score Contribution Aim	letering 1009 This credit contributes 10% towards this section's score. To provide building users with information that allows monitoring of energy and water consumption
Yes Management 3.3 M Score Contribution Aim Questions	letering 1009 This credit contributes 10% towards this section's score. To provide building users with information that allows monitoring of energy and water consumption
Yes Management 3.3 M Score Contribution Aim Questions Have all major commor	letering 1004 This credit contributes 10% towards this section's score. 1004 To provide building users with information that allows monitoring of energy and water consumption 1004 area services been separately submetered? 1004
Yes Management 3.3 M Score Contribution Aim Questions Have all major commor Apartment	letering 1009 This credit contributes 10% towards this section's score. To provide building users with information that allows monitoring of energy and water consumption area services been separately submetered?
Yes Management 3.3 M Score Contribution Aim Questions Have all major commor Apartment Yes	letering 1009 This credit contributes 10% towards this section's score. Image: Construction of the section
Yes Management 3.3 M Score Contribution Aim Questions Have all major commor Apartment Yes Management 4.1 B	letering 100 This credit contributes 10% towards this section's score. Image: Constraint of the section of the sectin of the section of the section of the sectin of the section of t

Dishwashers

Aim To e the	encourage and recognise initiatives that will help building users to building efficiently	use
Questions		
Will a building users guide be	produced and issued to occupants?	
Proiect wide		
Yes		
Water	62% - contributing 5% to overall score	}
Credit	Disabled Scoped out	Score
Water 1.1 Potable Water Use Re	duction (Interior Uses)	50 %
Water 2.1 Rainwater Collection &	Reuse (Additional Uses)	100 %
Water 3.1 Water Efficient Landso	aping	100 %
Water Approachs What approach do you want to Water?	use Use the built in calculation tools	
Project Water Profile Questi	ons	
Are you installing a rainwater tan	k? Yes	
Water fixtures, fittings and c	onnections 3 Bedroom Tournhausage GF 1 Bedroom Apt GF 2 Bedroom	1 Apt
Showerhead	3 Star WELS (> 6.0 3 Star WELS (> 6.0
Bath	Scope out Scope out Scope out	
Kitchen Taps	> 5 Star WELS rating > 5 Star WELS rating > 5 Star WELS	3 ratin
Bathroom Taps	> 5 Star WELS rating > 5 Star WELS rating > 5 Star WELS	Sratin

> 4 Star WELS rating > 4 Star WELS rating > 4 Star WELS rating

	3 Bedroom Townhouses	GF 1 Bedroom Apt	GF 2 Bedroom Apt
WC	> 4 Star WELS ratin	g > 4 Star WELS rating	g > 4 Star WELS rating
Urinals	Scope out	Scope out	Scope out
Washing Machine Water Efficiency	> 4 Star WELS ratin	g > 4 Star WELS rating	g > 4 Star WELS rating
Connected to which Tank	-1	Roof	Roof
Rainwater connected to: Toilets	No	Yes	Yes
	L1-L4 1 Bedroom Apt	L1-L4 2 Bedroom A	pt3 Bedroom Apt
Showerhead	3 Star WELS (> 6.0 but <= 7.5)	3 Star WELS (> 6.0 but <= 7.5)	3 Star WELS (> 6.0 but <= 7.5)
Bath	Scope out	Scope out	Scope out
Kitchen Taps	> 5 Star WELS ratin	g > 5 Star WELS rating	g > 5 Star WELS rating
Bathroom Taps	> 5 Star WELS ratin	g > 5 Star WELS rating	g > 5 Star WELS rating
Dishwashers	> 4 Star WELS ratin	g > 4 Star WELS rating	g > 4 Star WELS rating
WC	> 4 Star WELS ratin	g > 4 Star WELS rating	g > 4 Star WELS rating
Urinals	Scope out	Scope out	Scope out
Washing Machine Water Efficiency	> 4 Star WELS ratin	g > 4 Star WELS rating	g > 4 Star WELS rating
Connected to which Tank	Roof	Roof	-1
Rainwater connected to: Toilets	Yes	Yes	No

Rainwater Tanks

	Roof
What is the total roof area connected to the rainwater tank? Square Metres	800.0
Tank Size Litres	20000.0

Water 1.1 Potable Water Use Reduction (Interior Uses)

50%

Score Contribution	This credit contributes 50% towards this section's score.
Aim	Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.

Criteria	Percentage reduction in potable water use
Questions	
Percentage Achieved ?	Percentage %
Project wide	
%	
Calculations	
Annual Water Consumpt	on (kL) (Reference)
Project wide	
6732	
Annual Water Consumpt	on (kL) (Proposed)
Project wide	
4590	
% Reduction in Potable \	Nater Consumption Percentage %
Project wide	
31 %	

Water 2.1 Rainwater Collection & Reuse (Additional Uses)

100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	What is the additional reduction in potable (mains) water use due to rainwater harvesting? Additional water uses for rainwater include non- potable demands such as irrigation, pools, commercial process uses and taps for washdown. Note: tank water will only be available for additional uses if it not required for internal uses. If the property uses an alternative water source, the alternative water source is deemed to meet 90% of additional non-potable water use requirements. You are using the built in calculation tools. This credit is calculated from information you have entered above in the rainwater tanks section.
Criteria	What is the additional reduction in potable (mains) water use due to using rainwater or an alternative water source?

Percentage Achieved ? Percentage %
Project wide
%
Calculations
Rainwater collection & reuse (additional uses) Percentage %
Project wide
100 %

Water 3.1 Water Efficient Landscaping

100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping) and specifying water efficient irrigation (e.g. drip irrigation with timers and rain sensors). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.

Questions

Will water efficient landscaping be installed?

Project wide

Yes

Energy

67% - contributing 18% to overall score

Credit	Disabled	Scoped out	Score
Energy 1.2 Thermal Performance Rating - Residential			50 %
Energy 2.1 Greenhouse Gas Emissions			100 %
Energy 2.3 Electricity Consumption			100 %
Energy 2.4 Gas Consumption			100 %

Energy 2.5 Wood Consumption	N/A
Energy 3.1 Carpark Ventilation	100 %
Energy 3.2 Hot Water	100 %
Energy 3.3 External Lighting	100 %
Energy 3.4 Clothes Drying	16 %
Energy 3.5 Internal Lighting - Residential Single Dwelling	100 %
Energy 3.6 Internal Lighting - Residential Multiple Dwellings	100 %

Dwellings Energy Approachs

What approach do you want to use for	Lise the built in calculation tools
Energy?	

Project Energy Profile Questions

Are you installing a solar photovoltaic (PV) system?	Yes
Gas Supply	Natural Gas

Dwelling Energy Profiles

	3 Bedroom Townhouses	GF 1 Bedroom Apt	GF 2 Bedroom Apt
Below the floor is	Ground or Carpark	Ground or Carpark	Ground or Carpark
Above the ceiling is	Outside	Another Occupancy	Another Occupancy
Exposed sides	2	2	2
NatHERS Annual Energy Loads - Heat MJ/sqm	54.6	54.6	54.6
NatHERS Annual Energy Loads - Cool MJ/sqm	28.8	28.8	28.8
NatHERS star rating	7.0	7.0	7.0
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	l Gas Instantaneous 5 star	l Gas Instantaneous 5 star	l Gas Instantaneous 5 star

	3 Bedroom Townhouses	GF 1 Bedroom Apt	GF 2 Bedroom Apt
Clothes Line	D Private outdoor clothesline	A No drying facilities	s A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer
	L1-L4 1 Bedroom Apt	L1-L4 2 Bedroom Ap	ot3 Bedroom Apt
Below the floor is	Another Occupancy	Another Occupancy	Another Occupancy
Above the ceiling is	Another Occupancy	Another Occupancy	Outside
Exposed sides	2	2	2
NatHERS Annual Energy Loads - Heat MJ/sqm	54.6	54.6	54.6
NatHERS Annual Energy Loads - Cool MJ/sqm	28.8	28.8	28.8
NatHERS star rating	7.0	7.0	7.0
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	l Gas Instantaneous star	51 Gas Instantaneous { star	51 Gas Instantaneous 5 star
Clothes Line	A No drying facilities	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer

Solar Photovoltaic systems

	PV Apartments
System Size (lesser of inverter and panel capacity) ^{kW peak}	2.5
Orientation (which way is the system facing)?	North
Inclination (angle from horizontal) Angle (degrees)	35.0
Which Building Class does this apply to?	Apartment

Score Contribution	This credit contributes 28% towards this section's score.	
Aim	Reduce reliance on mechanical systems to achieve thermal comfo summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.	ort in s
Criteria	What is the average NatHERS rating?	
Questions		
NATHERS Rating ? Si	Stars	
Average NATHERS Rat	ting (Weighted) Stars	
Townhouse	Apartment	
7.0 Energy 2.1 Greenho	7.0 Iouse Gas Emissions	100%
7.0 Energy 2.1 Greenho Score Contribution	7.0 House Gas Emissions This credit contributes 9% towards this section's score.	100%
7.0 Energy 2.1 Greenho Score Contribution Aim	7.0 House Gas Emissions This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions	100%
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria	7.0 ouse Gas Emissions This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark	100%
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria Questions	7.0 Nouse Gas Emissions This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark	100%
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria Questions Criteria Achieved ?	7.0 ouse Gas Emissions This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark	100%
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria Questions Criteria Achieved ? Calculations	7.0 Pouse Gas Emissions This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark	100%
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria Questions Criteria Achieved ? Calculations Reference Building with	This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark	1009
7.0 Energy 2.1 Greenho Score Contribution Aim Criteria Questions Criteria Achieved ? Calculations Reference Building with Fownhouse	This credit contributes 9% towards this section's score. Reduce the building's greenhouse gas emissions Are greenhouse gas emissions >10% below the benchmark h Reference Services (BCA only) kg co2 Apartment	100%

Townhouse	Apartment
13047.4	97835.3

% Reduction in GHG E	missions Percentage %	
Townhouse	Apartment	
68 %	55 %	
Energy 2.3 Electric	ty Consumption	100%
Score Contribution	This credit contributes 9% towards this section's score.	
Aim	Reduce consumption of electricity	
Criteria	Is the annual electricity consumption >10% below the benchmark	
Questions Criteria Achieved ?		
Calculations		
Reference kWh		
Townhouse	Apartment	
30749.6	156904.6	
Proposed kWh		
Townhouse	Apartment	
8178.1	65212.2	
Improvement Percentag	e %	
Townhouse	Apartment	
73 %	58 %	

Energy 2.4 Gas Consumption

100%

Score Contribution	This credit contributes 9% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual gas consumption >10% below the benchmark?

QUESTIONS		
Criteria Achieved ?		
Calculations		
Reference MJ		
Townhouse	Apartment	
93177.1	681596.8	
Proposed MJ		
Townhouse	Apartment	
64591.2	394170.9	
Improvement Percenta	ge %	
Townhouse	Apartment	
30 %	42 %	
Energy 2.5 Wood	Consumption	N/A
This credit was scope	d out: No wood heating system present	
Aim	Reduce consumption of wood	
Criteria	Is the annual wood consumption >10% below the benchmark?)
Energy 3.1 Carpar	k Ventilation	100%
Score Contribution	This credit contributes 9% towards this section's score.	

system), or (b) use Carbon Monoxide monitoring to control the operation and speed of the ventilation fans

Project wide

Yes

Energy 3.2 Hot Wat	ter	100%
Score Contribution	This credit contributes 4% toward	ds this section's score.
Criteria	Does the hot water system use > the reference case?	10% less energy (gas and electricity) than
Questions		
Criteria Achieved ?		
Calculations		
Reference MJ		
Townhouse	Apartm	ient
25882.5	189332	2.4
Proposed MJ		
Townhouse	Apartm	ient
17990.3	10978-	1.2
Improvement Percentage	∋%	
Townhouse	Apartm	ient
30 %	42 %	
Energy 3.3 Externa	Lighting	100%
Score Contribution	This credit contributes 0% toward	ds this section's score.
Questions		
Is the external lighting c	controlled by a motion detector?	
Townhouse		

Score Contribution	This credit contributes 4% towards this section's score.
Criteria	Does the combination of clothes lines and efficient dryers reduce energy (gas+electricity) consumption by more than 10%?
Questions	
Criteria Achieved ?	
Calculations	
Reference kWh	
Townhouse	Apartment
3649.6	23455.2
Proposed kWh	
Townhouse	Apartment
729.9	23455.2
Improvement Percentage	%
Townhouse	Apartment
80 %	0 %

Energy 3.5 Internal Lighting - Residential Single Dwelling

100%

Score Contribution	This credit contributes 0% towards this section's score.
Aim	Reduce energy consumption associated with internal lighting

Questions

Does the development achieve a maximum illumination power density of 4W/sqm or less?

Townhouse

Yes

Energy 3.6 Internal Lighting - Residential Multiple Dwellings

100%

Project wide

Aim	Reduce energy consumption a	ssociated with internal lighting	
Questions s the maximum illumina east 20% lower than re 9) and clause 3.12.5.5 I	tion power density (W/m2) in at le quired by Table J6.2a of the NCC NCC BCA (2013) Volume 2 Sectio	ast 90% of the relevant Buildir BCA (2013) Volume 1 Section n J (Class 1 and 10)	ig Class at J (Class 2 to
Apartment			
Yes			
Stormwater	100%	o - contributing 13% to overa	ll score
Credit		Disabled Scope	d out Score
Stormwater 1.1 Stormwa	ter Treatment		100 %
Which stormwater model	ing are you Melbourne Water	STORM tool	
using?			
using? Stormwater 1.1 Sto	rmwater Treatment		100%
using? Stormwater 1.1 Sto Score Contribution	rmwater Treatment This credit contributes 100% to	owards this section's score.	100%
using? Stormwater 1.1 Sto Score Contribution Aim	rmwater Treatment This credit contributes 100% to To achieve best practice storm pollutant load (suspended solic	owards this section's score. water quality objectives throug Is, nitrogen and phosphorus)	100% h reduction of
Stormwater 1.1 Sto Score Contribution Aim Criteria	rmwater Treatment This credit contributes 100% to To achieve best practice storm pollutant load (suspended solic Has best practice stormwater r	owards this section's score. water quality objectives throug ls, nitrogen and phosphorus) management been demonstrat	100% h reduction of ed?
Stormwater 1.1 Sto Score Contribution Aim Criteria	rmwater Treatment This credit contributes 100% to To achieve best practice storm pollutant load (suspended solic Has best practice stormwater r	owards this section's score. water quality objectives throug ls, nitrogen and phosphorus) management been demonstrat	100% h reduction of ed?
Stormwater 1.1 Sto Score Contribution Aim Criteria Questions STORM score achieved	rmwater Treatment This credit contributes 100% to To achieve best practice storm pollutant load (suspended solic Has best practice stormwater r	owards this section's score. water quality objectives throug ls, nitrogen and phosphorus) management been demonstrat	100% h reduction of ed?
Stormwater 1.1 Sto Score Contribution Aim Criteria Questions STORM score achieved Project wide	rmwater Treatment This credit contributes 100% to To achieve best practice storm pollutant load (suspended solic Has best practice stormwater r	owards this section's score. water quality objectives throug ls, nitrogen and phosphorus) management been demonstrat	100% h reduction of ed?

Total Suspended Solids (kg/year) % Reduction		
Project wide		
-		
Total Phosphorus (kg/year) % Reduction		
Project wide		
-		
Total Nitrogen (kg/year) % Reduction		
Project wide		
-		
Calculations		
Min STORM Score		
Project wide		
100		
IEQ	55% - contributing 9% to overall s	core
Credit	Disabled Scoped o	ut Score
IEQ 1.2 Daylight Access - Bedrooms		66 %
IEQ 1.3 Winter Sunlight		100 %
IEQ 1.5 Daylight Access - Minimal Internal Bedrooms		100 %
IEQ 2.1 Effective Natural Ventilation		66 %
IFQ 3.1 Thermal comfort - Double Glazing		100 %

Dwellings IEQ Approachs

What approach do you want to use for IEQ? Provide our own calculations

IEQ 1.2 Daylight Acc	ess - Bedrooms	66%
Score Contribution	This credit contributes 25% towards this section's score.	
Aim	To provide a high level of amenity and energy efficiency through designatural light.	gn for
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Questions		
Percentage Achieved ?	Percentage %	
Apartment		
80 %		
IEQ 1.3 Winter Sunli	ght 1	100%
Score Contribution	This credit contributes 8% towards this section's score.	
Aim	To provide a high level of amenity and reduce need for artificial heatin winter.	ng in
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all L areas between 9am and 3pm in mid-winter?	iving
Questions		
Criteria Achieved ?		
Apartment		
Yes		
IEQ 1.5 Daylight Acc	ess - Minimal Internal Bedrooms	100%
Score Contribution	This credit contributes 8% towards this section's score.	
Aim	To provide a high level of amenity and energy efficiency through desig	gn for

Questions

Yes		
IEQ 2.1 Effective N	atural Ventilation	66%
Score Contribution	This credit contributes 25% towards this section's score.	
Aim	To provide fresh air and passive cooling opportunities.	
Criteria	What % of dwellings are effectively naturally ventilated?	
Questions		
% Achieved ?		
Apartment		
60 %		
IEQ 3.1 Thermal cc	omfort - Double Glazing	100%
IEQ 3.1 Thermal co Score Contribution	omfort - Double Glazing This credit contributes 3% towards this section's score.	1009
IEQ 3.1 Thermal co Score Contribution Aim	 Demfort - Double Glazing This credit contributes 3% towards this section's score. To provide comfortable indoor spaces and reduce energy need heating and cooling 	100% ded for
IEQ 3.1 Thermal co Score Contribution Aim Questions	 This credit contributes 3% towards this section's score. To provide comfortable indoor spaces and reduce energy need heating and cooling 	1009 ded for
IEQ 3.1 Thermal co Score Contribution Aim Questions Is double glazing (or be	 This credit contributes 3% towards this section's score. To provide comfortable indoor spaces and reduce energy need heating and cooling 	1009 ded for
IEQ 3.1 Thermal co Score Contribution Aim Questions Is double glazing (or be Townhouse	 This credit contributes 3% towards this section's score. To provide comfortable indoor spaces and reduce energy need heating and cooling etter) used to all living areas and bedrooms? 	1009 ded for

Score Contribution	This credit contributes 1% towards this section's score.
Aim	To provide comfortable indoor spaces and reduce energy needed for heating and cooling

Questions		
Is appropriate external	shading provided to east, west and north facing glazing?	
Townhouse		
Yes		
Transport	0% - contributing 0% to overall s	score
Waste	66% - contributing 3% to overall s	score
Cradit	Dischlad Saapad	out Sooro
Waste 1.1 - Construction	Waste - Building Re-Lise	
Waste 2.2 - Operational '	Waste - Convenience of Recycling	100 %
Waste 1.1 - Constru	uction Waste - Building Re-Use	100%
Score Contribution	This credit contributes 33% towards this section's score.	
Aim	To recognise developments that re-use materials on-site	
Ouestiens		
Questions If the development is or	n a site that has been previously developed, has at least 30% of the	e existing
Questions If the development is or building been re-used?	n a site that has been previously developed, has at least 30% of the	e existing
Questions If the development is or building been re-used? Project wide	n a site that has been previously developed, has at least 30% of the	existing

Waste 2.2 - Operational Waste - Convenience of Recycling

100%

Score Contribution	This credit contributes 33% towards this section's score.	
Aim	To minimise recyclable material going to landfill	
Questions Are the recycling facilities	s at least as convenient for occupants as facilities for general waste?	
Project wide		
/es		
Jrban Ecology	24% - contributing 1% to overall scc	ore
Credit	Disabled Scoped out	Score
Jrban Ecology 2.1 Vegeta	tion	50 %
Jrban Ecology 2.4 Private	Open Space - Balcony / Courtyard Ecology	16 %
Jrban Ecology 2.1 V	'egetation	50%
Score Contribution	This credit contributes 45% towards this section's score.	
Score Contribution	This credit contributes 45% towards this section's score. To encourage and recognise the use of vegetation and landscaping and around developments	g within
Score Contribution Aim Criteria	 This credit contributes 45% towards this section's score. To encourage and recognise the use of vegetation and landscaping and around developments How much of the site is covered with vegetation, expressed as a percentage of the total site area. 	g within
Score Contribution Aim Criteria Questions	 This credit contributes 45% towards this section's score. To encourage and recognise the use of vegetation and landscaping and around developments How much of the site is covered with vegetation, expressed as a percentage of the total site area. 	g within
Score Contribution Aim Criteria Questions Percentage Achieved ?	This credit contributes 45% towards this section's score. To encourage and recognise the use of vegetation and landscaping and around developments How much of the site is covered with vegetation, expressed as a percentage of the total site area. Percentage %	g within
Score Contribution Aim Criteria Questions Percentage Achieved ? Project wide	This credit contributes 45% towards this section's score. To encourage and recognise the use of vegetation and landscaping and around developments How much of the site is covered with vegetation, expressed as a percentage of the total site area. Percentage %	g within

Urban Ecology 2.4 Private Open Space - Balcony / Courtyard Ecology 16%

Score Contribution	This credit contributes 11% towards this section's score.
Aim	Encourage plants to be grown on balconies and courtyards
Juestions	
s there a tap and floor	waste on every balcony / in every courtyard?
Townhouse	
Yes	
nnovation	10% - contributing 0% to overall score
Credit	Disabled Scoped out Sco
nnovation 1.1 Innovation	10 º
nnovations	Contractor Education
	Contractor Education Befer to SMP
Description	Contractor Education Refer to SMP 1
Description Points Targeted	Contractor Education Refer to SMP 1
Innovations Description Points Targeted Innovation 1.1 Inno	Contractor Education Refer to SMP 1 vation 10%
Innovations Description Points Targeted Innovation 1.1 Innov Score Contribution	Contractor Education Refer to SMP 1 vation 10% This credit contributes 100% towards this section's score.
Innovations Description Points Targeted Innovation 1.1 Inno Score Contribution Criteria	Contractor Education Refer to SMP 1 vation 10% This credit contributes 100% towards this section's score. What percentage of the Innovation points have been claimed (10 points maximum)?
Innovations Description Points Targeted Innovation 1.1 Inno Score Contribution Criteria Questions	Contractor Education Refer to SMP 1 vation 10% This credit contributes 100% towards this section's score. What percentage of the Innovation points have been claimed (10 points maximum)?
Innovations Description Points Targeted Innovation 1.1 Inno Score Contribution Criteria Questions Criteria Achieved ?	Contractor Education Refer to SMP 1 vation 10% This credit contributes 100% towards this section's score. What percentage of the Innovation points have been claimed (10 points maximum)?
Innovations Description Points Targeted Innovation 1.1 Inno Score Contribution Criteria Questions Criteria Achieved ? Project wide	Contractor Education Refer to SMP 1 vation 10% This credit contributes 100% towards this section's score. What percentage of the Innovation points have been claimed (10 points maximum)?

Items to be marked on floorplans

Do not upload your floorplans and elevations into the BESS tool. Instead, please ensure the items below are marked on the plans and provide a document / page reference number in the comments field.

0 / 16 floorplans & elevation notes complete.

Documents and evidence

Based on the information you have entered, the following supporting evidence is required. You can choose to upload supporting documents directly to BESS, or submit a printed version as an appendix to your BESS report. Use the comments field to provide a reference (e.g. page number) if relevant.

0 / 12 supporting evidence documentation complete.

Other Supporting Documents

Please upload any other documents here that may help to support your application.

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek appropriate, independent, professional advice before acting on any of the areas covered by BESS.

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Appendix D – Preliminary House Energy Rating Report



Residential Development

Preliminary House Energy Rating Report (NatHERS)

77 Park Street South Melbourne VIC 3205

Revision: Job No: Date: 02 MEL1535 17 March 2022



MELBOURNE Level 11, 60 Albert Road South Melbourne VIC 3205 T: 03 9521 1195 SYDNEY Level 3, 8 Spring Street Sydney NSW 2000 T: 02 8203 5447 www.adpconsulting.com.au

BRISBANE Level 4, 490 Upper Edward Street Spring Hill QLD 4000 T: 07 3088 4022

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Location:	77 Park Street, South Melbourne	
Prepared by:	ADP Consulting	
	Level 11, 60 Albert Road	
	South Melbourne VIC 3205	
Project No:	MEL1535	
Revision:	Rev02	
Date:	18/03/22	

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Revision	01	02		
Date	22/02/19	18/03/22		
Comment				
Author	ТМ	ТМ		
Signature				
Technical Review	DK	VH		
Signature				
QA and	SH	JV		
Authorisation				
Signature				

1. Executive Summary

The preliminary glazing assessment noted below achieves the BCA and council requirements for the minimum and average NatHERS star ratings:

Glazing:

Total U-Value (inc. Frame) = 2.6 SHGC = 0.32

SHGC values must be +/_ 5% of specified value

Note: The values listed above are whole window system values (as per WERS), not glazing only.

2. Introduction

The mixed use development consists of development consists of class 2 apartments and townhouses. The Victorian amendment of the National Construction Code (NCC) 2016 requires that buildings achieve the following performance for the building fabric when modelled in accordance with an approved House Energy Rating Software:

- Class 2 buildings achieve:
 - o The average energy rating of all Sole Occupancy Units is not less than 6 Stars
 - Each Sole Occupancy Unit has an energy rating of not less than 5 Stars

However, to meet BESS requirements as requested by the City of Port Phillip, the following ratings are to be achieved:

- The average energy rating of all Sole Occupancy Units is not less than 6.5 Stars
- \circ Each Sole Occupancy Unit has an energy rating of not less than 5 Stars

Preliminary assessments have been undertaken to provide an indication of the building fabric performance parameters that will likely be required to meet the BCA requirement. The following documentation has been used for information in this report:

1. FK Architects, Town Planning Drawings, dated 11/03/22

3. Preliminary Rating Results

Tabulated below are the individual apartment ratings achieved from a sample set of apartments selected from the current design and typical assumptions. The sample set was chosen to reflect a typical selection of apartments but with preference given to the apartments that are likely to achieve the lowest ratings based off orientation and layout. This selection will give a good indication of the minimum rating that will be achieved.

The glazing options modelled are outlined in Table 2 and Appendix A. Results can be seen in Table 1:

Apartment	Star	Heating	Cooling
	Rating	Load	Load
G02	7	54.2	28.6
G04	7.3	39.2	36.1
G05	6.1	73.1	36.2
G07	7.8	38.9	19.4
G09	6.8	59.8	28.1
101	7.9	32.2	23
103	7.9	27.7	28.3
105	6.5	59.3	38.3
106	6.9	58.6	26.1
109	6.2	82.6	23.7
110	7.2	61.2	17
205	6	71.2	42.6
206	6.9	60.1	23.8
302	7.8	32.4	27.6
305	5.3	91.5	46.9
306	6.6	60.5	33.4
402	7.7	33.9	27.4
404	6.6	63.9	32.2
501	7.4	39.5	30.3
502	6.4	65	33.3
503	6.3	73.3	29.6
504	7.3	38.1	35.5
TH01	6.9	60.7	23.7
TH03	8	32.8	21.2
MIN	5.3		
AVG	6.95		

Table 1 – Preliminary Individual Apartment Results

4. Assumptions of Current Design

Tabulated below are the assumptions used in the rating of this development as per the current architectural drawings. Changes to any of the listed assumptions may alter the performance and invalidate the energy rating details in this report.

Building Fabric	Apartments	
Floor Construction (Between apartments)	Suspended concrete slab	
Floor Construction (Between apartments and unconditioned spaces)	Suspended concrete slab R3.0 added insulation	
Floor coverings	Tiles (bathrooms) Carpet (bedrooms) Floating Timber (living, kitchen)	
Roof construction (Exposed ceilings)	Suspended concrete slab R2.0 added insulation	
Roof construction (Level 5)	Suspended concrete slab R4.0 added insulation	
Wall construction (External)	Concrete/Lightweight R2.5 added insulation	
Wall construction (Between apartments/risers/corridors/stairs/lifts)	R1.5 added insulation	
Wall construction (Internal within Apartments)	Lightweight Uninsulated	
Glazing	Glazing: High Performance Low-E glazing Total U-Value (inc. Frame) = 2.6 SHGC=0.32 SHGC values must be +/_ 5% of specified value All windows sealed and weather-stripped	
Entry doors	Sealed and weather-stripped	
Exhaust fans	Kitchen, Bathrooms and Laundry – 1 each Sealed and weather stripped	
Recessed downlights	Uncovered and sealed	

Table 2 – Construction Assumptions

5. Discussion and Recommendations

From the results shown in Table 1 and 2 the glazing as specified below will achieve the BCA and council requirements for the minimum and average star ratings.

Glazing:

High Performance Low-E Glazing Total U-Value (inc. Frame) = 2.6 SHGC = 0.32

SHGC values must be +/_ 5% of specified value

Note: The values listed above are whole window system values (as per WERS), not glazing only.

U-Value and Solar Heat Gain Coefficient (SHGC) explained

When selecting windows and doors for your building project you will often be required to comply with certain performance values for energy efficiency. That is – you may be asked to select windows and doors with a specific U-Value or Solar Heat Gain Co-efficient (SHGC). In order to comply, the window system must perform to the set parameters. It's important to note, that these values are "whole window values", i.e. inclusive of framing, not glass alone.

These values are available for all aluminium window and door products as part of their WERS rating (<u>http://www.wers.net/wers-home</u>).

<u>U-Value</u>

The U-value is the measure of how much heat is transferred through the window. The lower the U-value the better the insulation properties of the window – the better it is at keeping the heat or cold out (& in). In all cases regardless of climate zone a window with good insulation properties will help to improve the comfort of your home.

<u>SHGC</u>

Solar Heat Gain Coefficient or SHGC is a measure of how much solar radiation passes through the window. In a cool climate, windows which have a high SHGC allow a greater amount of solar radiation to pass through, offering free solar heating for the home in winter. Glass selection has a considerable effect on the SHGC of a window or door. To comply with energy reports the SHGC must be within 10% of the set value.

Often, lower SHGC values will impact light transmission or visible transmittance (Tvw).

6. Final FirstRate Calculations and Certification

In order to complete the final FirstRate calculations (typically undertaken prior to construction) and issue star rating certificates for each dwelling, the following items are required prior to undertaking the assessments:

- Complete set of construction issue architectural drawings.
- Drawings showing wall, floor and roof build-ups including details (R-values) of insulation being provided.
- Window schedules detailing type and dimensions of all windows.
- Elevations and sections of building(s).
- Details of actual glazing being installed. This will include the following:
 - Brand/manufacturer.
 - Glazing product/build up (i.e. 6mm thick glazing/12mm air gap/6mm thick glazing etc...).
 - Glazing overall U-value including frame. If multiple types of glazing are proposed, all values are required.
 - Glazing SHGC value(s).